The Mispricing of Real Earnings Management

in the Post-Sarbanes-Oxley Era

A dissertation presented in partial fulfilment of

the requirements for the degree of

Doctor of Philosophy

in

Accountancy

at Massey University

Auckland

New Zealand

Lei Cai

2013

Acknowledgements

This study would not have been possible without the help and support of many people. First and foremost, I would like to express my profound gratitude to my supervisors, Professor Asheq Razaur Rahman, and Associate Professor Stephen Courtenay, for their continued encouragement and guidance throughout the course of my PhD. I have been constantly inspired by their dedication to research and passion to teach.

Next, I would like to thank the examiners David Lont from University of Otago, Nives Botica Redmayne from Massey University, and Koh Whee Ling (Kevin) from Nanyang Technological University (Singapore) for the insightful comments and invaluable recommendations in their examiners' reports.

I am also indebted to the numerous faculty members at Massey University. In particular, I am grateful to Professor Jill Hooks, Professor Michael Bradbury, Professor Paul Dunmore, Dr Warwick Stent, Dr Helen Bishop, Mr David Butcher, Dr Natasja Steenkamp, Dr Nicholas Smith, and Ms Trish O'Sullivan, who have guided my learning process in Accounting. I am also grateful to Professor Marti Anderson and Dr Barry McDonald, who have led me into the wonderful world of statistics. Special thanks also go to fellow PhD students, Umapathy Ananthanarayanan, Rahayu Abdul Rahman, Shahwali Khan, and Adnan Ahmad. I also wish to thank Mr Andrew Brown and Mr Lin Shi for technical support. I also acknowledge the financial support provided by the Massey University Doctoral Scholarship.

Finally, this study is dedicated to my family. I am eternally grateful to my wife Xiaokun, my daughter Anneka, my parents, and my parents-in-law for all their love and continued moral support.

Abstract

Recent studies document that there has been a shift towards real activities earnings management (REM) because accrual-based earnings management (AEM) is under enhanced scrutiny since the enactment of Sarbanes-Oxley Act of 2002 (SOX). The prior literature contends that for REM, firms reduce certain real activities to cut costs, and that such reductions can lead to adverse effects on future performance.

This study examines whether investors efficiently price or misprice REM in the post-SOX environment. I conduct a two-stage analysis. First, I estimate the REM of firms using the methods adopted in the extant literature. Since the corporate governance literature suggests that the level of earnings management of firms is influenced by the corporate governance features of firms and managerial incentives arising from certain firm features, I moderate the REM indicators to take into account the effects of these features on investors' perceptions of earnings management practices of firms. Since AEM coexists and competes with REM, I make similar estimations for accruals management. Second, I evaluate the effects of REM on both current-year stock returns and future performance.

Since REM is expected to have adverse effects on future firm performance, REM is likely to be negatively associated with future firm performance, and in an efficient market it would be priced negatively in the year in which it is reported. However, I find a positive association between REM and current-year stock returns, and a negative association between REM and future firm performance. This result indicates that the market places a positive connotation on income-increasing REM, but the actual effects of REM on future performance are negative. The inference is that the market misprices reported earnings in the year when REM is conducted.

Table of Contents

List of Figure and Tables

List of Appendix

List of Abbreviations

AEM	-	Accrual-based earnings management
CEO	-	Chief executive officer
CFO	-	Cash flows from operations
EMH	-	Efficient Market Hypothesis
GAAP	-	Generally accepted accounting principles
COGS	-	Cost of goods sold
IASB	-	International Accounting Standards Board
MBE	-	Meeting or beating earnings benchmarks
NASDAQ	-	National Association of Securities Dealers Automated Quotations
NYSE	-	New York Stock Exchange
PCA	-	Principal component analysis
REM	-	Real activities earnings management
ROA	-	Return on assets
R&D	-	Research and development expenditures
SEC	-	Securities and Exchange Commission
SEO	-	Seasoned equity offerings
SG&A	-	Selling, general and administration expenses
SIC	-	Standard industrial classification

SOX	-	Sarbanes-Oxley Act
TCL	-	The Corporate Library database
UK	-	United Kingdom
US	-	United States

Chapter 1 Introduction

1.1. Motivation

The Sarbanes-Oxley Act of 2002 (SOX) was enacted to address issues of corporate governance and managerial accountability arising from the corporate collapse of the early 2000s. From a financial reporting perspective, the general intention of SOX is to improve earnings quality[1] by reducing opportunistic managerial discretion, and providing more relevant and reliable information to the capital market (e.g., Hochberg et al., 2009; Lobo & Zhou, 2006; Ashbaugh-Skaife et al., 2008; Singer & You, 2011).

However, SOX has some unintended consequences. While the stringent governance rules of SOX have enhanced the scrutiny of managerial discretion through the use of accounting choices, it has influenced managers to manipulate earnings through altering economic activities. Cohen et al. (2008) document a significant decline in accrual-based earnings management (AEM)[2] accompanied by a significant increase in real activities earnings management (REM)[3] since the passage of SOX. The main reason for firms switching from AEM to REM is because the techniques of REM are harder to detect, and less subject to auditors' scrutiny than AEM (Gunny, 2010). Unlike AEM which is subject to regulatory oversight and has no direct cash flow effects, REM changes the firm's underlying operations which, in turn, can cause adverse economic consequences for the firm. For example, managers admit that they would cut R&D expenses, delay maintenance or advertising expenditures, and even give up long-term profitable projects, to meet short-term earnings targets (Graham et al., 2005).

[1] Dechow et al. (2010) define earnings quality as a function of the firm's fundamental performance.
[2] The terms "accrual-based earnings management", "accrual earnings management", "accruals earnings management" or "accruals manipulation" are used interchangeably.
[3] The terms "real activities earnings management", "real earnings management" or "real manipulation" are used interchangeably.

A question that naturally arises is whether investors can see through or detect the existence of REM. To shed some light on the market reaction to REM, I review the established literature on the pricing of AEM. In this literature, Subramanyam (1996) suggests that the market can price abnormal accruals in two different ways: (1) the market can efficiently price abnormal accruals as a managerial signal of future earnings reflecting the firm's economic value, or (2) the market can misprice abnormal accruals because it is the managers' intent to mask true economic value. The term "price" means that the market recognises the signalling effect and appropriately impounds relevant information into the market prices, while "misprice" implies that stock prices are incorrectly valued due to investors' fixation on reported earnings.[4] Consistent with the signalling scenario, Subramanyam (1996) finds a positive association between abnormal accruals and future profitability, and suggests that abnormal accruals are informative. However, the findings in subsequent studies demonstrate that the market misprices abnormal accruals, because investors overestimate the persistence of accruals and underestimate the future reversal of accruals (Xie, 2001; DeFond & Park, 2001).

Do investors price (or misprice) REM in the same way as they price (or misprice) AEM? There are two studies that provide some mixed results with respect to the pricing of REM. Chen et al. (2010) find that firms using REM perform better in the subsequent period than AEM firms, thus the market rewards REM firms with a higher equity premium. In contrast, Lin et al. (2006) posit that investors appear to recognize the means of REM for achieving the benchmarks, thus the market discounts REM as opportunistic managerial discretion.

[4] Sloan (1996) introduces the notion of mispricing by showing that investors fixate on reported earnings, and fail to fully recognise the negative future earnings in firms with high accruals.

The above results indicate that the controversy remains on the motivation of REM: efficient contracting versus managerial opportunism. To determine the motivation of REM, prior studies examine the economic consequences of REM on future performance with inconclusive results. Consistent with the efficient contracting hypothesis, Gunny (2010) and Chen et al. (2010) find that firms engaging in REM to meet earnings benchmarks have higher subsequent operating performance, suggesting that managers engage in REM to signal future firm value. On the contrary, Zang (2012), Leggett et al. (2009), and Cohen & Zarowin (2010) find that REM has negative impacts on subsequent operating performance, suggesting that REM reflects suboptimal business decisions and managerial opportunism.

Unfortunately, most studies in earnings management suffer from a measurement problem. The inferences are largely based on the ability of the estimation models to partition managerial discretion into discretionary and nondiscretionary components. With respect to abnormal accruals, Healy (1996) and Bernard & Skinner (1996) point out that the residuals from estimation models like the Jones (1991) model or the modified Jones (1991) model, not only capture discretionary accruals, but also include nondiscretionary accruals and unintentional misstatements. Similarly, this misclassification problem should be of concern in REM estimation models. Cohen et al. (2011) provide that the residuals estimated from traditional REM models are misspecified with high Type I error rates.[5] Subramanyam (1996) suggests that opportunistic earnings management does not occur on average, but occurs in specific situations when managers are motivated by, e.g., compensation plans and debt covenant violations. This implies that a possible way to reduce the measurement error is to

[5] Type I error occurs when a true null hypothesis is incorrectly rejected. The rate of the type I error is the significance level α, which indicates the possible probabilities of a type I error.

control for various reporting incentives that stimulate managers to engage in earnings management.

With respect to earnings management measures, Bowen et al. (2008) consider the effects of corporate governance and economic determinants in measuring AEM, and examine the consequences of AEM attributable to corporate governance on future firm performance. They cannot find negative effects of AEM on future firm performance, and suggest that AEM *per se* is not opportunism. A problem is that they do not consider the joint use of AEM and REM. Fields et al. (2001) and Chen (2009) criticize studies only focusing on AEM as they provide partial evidence and may lead to inconclusive results. Furthermore, most agree that corporate governance can reduce AEM (e.g., Klein, 2002; Peasnell et al., 2005; Jeanjean, 2000; Cornett et al., 2008). However, the effects of corporate governance on REM have not yet been researched extensively.

1.2. Research Objective

The research objective of this dissertation is to empirically examine whether the stock market efficiently prices or misprices REM. To test this issue, I follow the procedures used by Subramanyam (1996).[6] This involves, first, an examination of the anticipated effects of REM on concurrent stock returns, and second, an examination of actual consequences of REM on future firm performance.

I adopt the two-stage analysis of Bowen et al. (2008). In the first stage, I estimate the levels of REM and AEM from a set of corporate governance variables and firm-specific economic determinants. The predicted values estimated in this stage are used as

[6] Subramanyam (1996) examines the market pricing of abnormal (discretionary) accruals in two steps. He first examines the association between abnormal accruals and contemporaneous stock returns. Next, he examines the association between abnormal accruals and future profitability.

the proxies for the investors' perceived earnings quality[7] keeping in view the level of corporate governance and firm-based incentives to manage earnings. The pricing issues are tested in the second stage in two steps. The first step tests the anticipated effects of REM by examining the association between predicted REM and concurrent stock returns. The second step tests the actual consequences of REM by examining the association between predicted REM and future firm performance.

1.3. Summary of Findings

Mispricing normally occurs when REM is driven by managerial opportunism based on the investor fixation hypothesis of Sloan (1996). Thus, I expect REM to be positively associated with concurrent stock returns, but negatively associated with future firm performance.

Using a sample of United States (US) firms in the post-SOX period, I find that the results are consistent with the mispricing hypothesis. The findings show that both the predicted REM and AEM (predicted values from the first stage regressions) are positively associated with concurrent stock returns, but only the predicted REM measures are negatively associated with future operating performance and future stock returns. In addition, the validity tests show that the predicted REM measures are significantly higher in the MBE firms (firms meeting or beating earnings benchmarks) than the non-MBE firms. Taken together, these results suggest that managers engage in opportunistic REM to achieve short-term earnings targets, while sacrificing long-term firm performance. It seems that investors cannot see through the methods of REM, and the market responds to the reported earnings positively, until adverse future performance indicators later come to light.

[7] There are various other measures for earnings quality such as persistence, smoothness, timeliness, loss avoidance, investor responsiveness, and restatements (Dechow et al., 2010).

This dissertation provides insights into the market reaction to earnings quality under a more stringent corporate governance environment, and contributes to the market efficiency and contracting literature in several ways. First, it extends the mispricing literature on AEM by showing the evidence of the adverse effects of REM through the market's overpricing of REM. One possible explanation for this phenomenon is because investors fixate on reported earnings, and fail to weigh all available information. The findings support Sloan (1996)'s investor fixation hypothesis by challenging the assumptions of market efficiency and the rationality of economic actors, and suggest that investors may not be able to see through the techniques of REM.[8] Second, this study brings to the attention of regulators and investors the point that REM may be just as harmful as AEM. Although managers can engage in both AEM and REM to achieve their targets, the former is only subject to accruals reversal, but the latter can have real economic impacts on firm performance. Third, as suggested by Subramanyam (1996) that opportunistic earnings management does not occur on average, but occurs in specific situations, I attempt to address the measurement issue by using the predicted discretion measures, which take into account the effect of corporate governance and other incentives on managerial discretion.[9] In addition, these relevant corporate governance variables capture the characteristics of contemporaneous governance reforms in the post-SOX period.

1.4. Outline of the Dissertation

The remainder of the dissertation is structured as follows: Chapter 2 provides a comprehensive review of the earnings management literature from both the market

[8] If the market is efficient and the investors are rational, then earnings management would not cause any damage as long as it is fully disclosed (Marnet, 2008).

[9] It is important to note that the earnings management measures are estimated in the tests, rather than empirically observed. Thus, the inferences are subject to the standard caveats regarding inherent measurement errors in the estimation models as used in prior research.

reaction and contracting perspectives with a special emphasis on REM studies. The research hypotheses are developed in Chapter 3. Chapter 4 specifies the research methodology, including sample selection, research design, and measurement issues. The empirical results and analyses are presented in Chapter 5. Finally, the conclusion, limitations, and opportunities for future research are discussed in Chapter 6.

Chapter 2 Background, Literature Review, and Research Question

This chapter provides the background of this dissertation, reviews studies relevant to the dissertation, and identifies the research question. The chapter is laid out as follows: Section 2.1 provides a brief background of the nature of recent corporate governance reforms and the implications of these reforms for accounting. It is argued here that the regulations of SOX have led firms to shift from the use of AEM to REM for managing earnings. I argue that this shift can cause adverse economic effects for firms, and, therefore, there is a need for examining the nature of these economic consequences. Section 2.2 introduces the definitions of earnings management based on the two most commonly referenced motivations: managerial opportunism and efficient contracting. The literature in section 2.3 provides evidence that managers can use different methods of earnings management to achieve earnings targets. Section 2.4 examines the trade-off between AEM and REM. In section 2.5, the market reaction literature is reviewed to show that the market not only efficiently prices but also misprices abnormal accruals, which implies that the mispricing of REM could be similar to that of AEM mispricing. Section 2.6 reviews the current studies on market reaction to REM. Section 2.7 considers the consequences of REM on future firm performance. Section 2.8 discusses the need to consider the effect of corporate governance on earnings management measures. Finally, a summary of this chapter leads to the research question in the last section.

2.1. Background

Following a number of spectacular corporate failures and financial scandals in the early 2000s, major legislation, SOX was enacted to address issues of corporate governance and managerial accountability in the US. The SOX legislation requires the

Securities and Exchange Commission (SEC) to implement much more stringent governance rules on public companies, covering issues such as board independence, accounting oversight, and corporate responsibility. For example, SOX Section 302 sets out managerial responsibilities for financial statements, Section 304 specifies the penalties for financial restatements due to managers' misconduct, and Section 404 provides rules with respect to internal control over financial reporting. These governance rules require management not only to certify the financial reports, but also to take responsibility for any misleading or erroneous statements, thereby enhancing personal liability for wrongdoing and misconduct.

Contemporaneously, the New York Stock Exchange (NYSE) and the National Association of Securities Dealers Automated Quotations (NASDAQ) also adopted new listing rules. For example, the NYSE requires that an audit committee must be made up wholly of independent outside directors, and requires registrants to have a code of conduct. The aim of these regulations is to protect investors by improving the accuracy and reliability of corporate disclosures, and to restore investor confidence, since many of the corporate failures involved accounting irregularities that enabled firms to vastly overstate reported earnings.

The SOX has opened up opportunities for examining the implications of governance regulations for accounting. There are two competing views about the consequences of SOX. Proponents of SOX argue that the stringent corporate governance rules are expected to improve disclosure and transparency by reducing insider misconduct and mismanagement, thereby restoring public confidence toward the stock market (Hochberg et al., 2009). For example, Linck et al. (2009) study the impact of SOX and other contemporary reforms on directors and boards, and suggest that SOX dramatically affects corporate board structure, activities, and costs. They find that post-

SOX boards are larger and more independent, and that audit committees meet more often. They suggest that the better governance structures should promote higher financial reporting quality. Lai (2003) finds that SOX enhances auditor independence, which increases the likelihood of qualified audit opinions, and mitigates opportunistic discretionary accruals. Lobo & Zhou (2006) and Zhou (2008) investigate the change in managerial discretion over the period of SOX, and find a decrease in the use of discretionary accruals and an increase in conservatism after SOX. Ashbaugh-Skaife et al. (2008) investigate how the effectiveness of firms' internal controls mandated by SOX affects the reliability of financial information. They posit that if a firm has weak internal controls, managers can more readily override the controls, and intentionally prepare biased accrual estimates. Their results show that SOX improves the effectiveness of internal controls, which in turn enhances the quality of accruals. Singer & You (2011) study the effect of SOX section 404 on earnings quality, and find that compliant firms have a significantly larger reduction in the magnitude of absolute abnormal accruals, suggesting that SOX improves earnings quality.

On the other hand, opponents argue that SOX is ineffective in preventing corporate wrongdoing. For example, Zingales (2009) contends that, except for an enhancement in investor confidence, there is very little in the SOX rules that would have contributed to reducing the accounting scandals. Romano (2005) argues that SOX does little to improve audit quality, because many of the restrictions of SOX are optional and not required for listed companies. Larcker & Tayan (2011) contend that despite the increased "federalization" of corporate governance, there is little evidence that the legislative mandate improves corporate outcomes. In particular, they argue that board structure does not equate to board quality.

One concern is that under SOX the increased personal liabilities of managers may provide the motivation to make discretionary choices that are not expressly prohibited by SOX. Graham et al. (2005) show that managers are more likely to take economic actions (REM) that could have negative long-term consequences to manage earnings than use within-GAAP accounting choices (AEM) in the post-SOX period.[10] In their survey, managers admit that they would delay maintenance or advertising expenditures, and would even give up positive net present value (NPV) projects to meet short-term earnings benchmarks. To confirm this, Cohen et al. (2008) document a significant decrease in AEM and a corresponding significant increase in REM after SOX. This shifting occurs because within-GAAP accounting discretion is more likely to draw auditor scrutiny than real operational decisions on production and pricing that do not violate GAAP standards. Although these actions can have a significant impact on earnings quality and adversely affect future firm performance, REM generally does not result in a qualified audit opinion or the enforcement of SEC.

In additional, an emerging literature examines the changes in accounting earnings management and expectations management in the post-SOX period. In this regard, Koh et al. (2008) find that managers are more likely to engage in expectations management instead of accounting management in the post-SOX period. However, contrary to Koh et al. (2008), Bartov & Cohen (2009) document a decline in both accounting earnings management and expectations management, and suggest that this decline is associated with an increase in REM.

To further examine the unintended consequences of SOX on managerial discretionary choice, the next section introduces definitions and motivations of earnings management.

[10] See section 2.7 for more details about the different consequences of AEM and REM.

2.2. Definition and Motivation of Earnings Management

The existing literature provides two dominant strands of thought on earnings management. The issue is whether managers exercise their discretion in an opportunistic or efficient manner.

On the opportunistic perspective, earnings management commonly refers to "*the purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain*" (Schipper, 1989, p.92).

It is said to occur "… *when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers*" (Healy & Wahlen, 1999, p.368).

The above two definitions capture both the contracting and informational dimensions of earnings management. The contracting dimension emphasizes that managers engage in earnings management to influence contractual outcomes. The informational dimension emphasizes that earnings management is used to mislead stakeholders. Under these dimensions, earnings management is considered to be opportunistic and harmful, because managers may engage in earnings management to conceal the true economic value of the firm for their own self-interest, at the expense of other contracting parties.

Another school of thought contends that not all earnings management is misleading. In this school of thought, earnings management is defined as a means for managers to use their judgement to convey some privileged (insider) information about future performance to the market (Healy & Palepu, 1993, 1995; Beneish, 2001). This

definition represents the efficiency perspective of earnings management. Under this perspective, managers improve the value relevance of earnings by communicating their private information about future performance, providing incremental information content, and enhancing the informativeness of reported earnings. In addition, conservative accounting (prudence) can also be viewed as a form of beneficial earnings management (Watts, 2003). For example, Zhou (2008) simultaneously examines conservatism and earnings management, and finds that firms that report more conservatively also engage in less overall earnings management in the post-SOX era.

It is an empirical question on whether earnings management is opportunistic or efficient. Prior literature identifies some common motivations and incentives for opportunistic earnings management. The incentives for managing earnings mainly arise from capital market considerations and contracting agreements (Dechow & Schrand, 2004). The capital market incentives refer to those discretionary choices that affect stock price through influencing investors' perception, such as during seasoned equity offerings (Teoh et al., 1998a), initial public offerings (Teoh et al., 1998b), and mergers and management buyouts (Easterwood, 1997). Contracting agreements between various stakeholders and managers form direct incentives to manage earnings, such as compensation contracts (Healy, 1985; Holthausen et al., 1995; Beneish, 1999; Baker et al., 2003; Cheng & Warfield, 2005; Bergstresser & Philippon, 2006), debt contracts (DeAngelo et al., 1994; Sweeney, 1994; Jaggi & Lee, 2002), and regulation (Lobo & Zhou, 2006; Ashbaugh-Skaife et al., 2008; Zingales, 2009; Singer & You, 2011). Prior studies also document the three most common earnings goals: 1) avoid losses, 2) report increases in earnings, and 3) meet analysts' forecasts (Dechow & Skinner, 2000; Roychowdhury, 2006; Gunny, 2010; Lin et al., 2006).

In addition to the above well-cited opportunistic incentives, there are incentives that motivate managers to provide guidance to the market about the future course of the business. These incentives include managers' attempts to distinguish the firm from firms of poor reporting quality or to provide additional information to reveal blocked communication[11] arising from limited reporting under GAAP (Dye, 1988; Schipper, 1989; Louis & Robinson, 2005). Arya et al. (2003) contend that managed earnings can convey more information than unmanaged earnings where information is widely dispersed.

After introducing the definition and motivation of earnings management, the next section considers the different methods that managers can use to achieve the earnings targets.

2.3. The Methods of Earnings Management

Prior literature provides substantial evidence that managers engage in earnings management either by manipulation of accruals or by altering real operating activities.[12] AEM commonly refers to the use of within-GAAP accounting choices in financial reporting (Dechow & Skinner, 2000), whereas REM is defined as management actions that depart from normal business practices, undertaken with the primary objective of meeting certain reporting goals (Roychowdhury, 2006).

The issues related to AEM have been extensively studied in a variety of ways (e.g., Subramanyam, 1996; Xie, 2001; Klein, 2002; Xie et al., 2003; Bowen et al., 2008; Larcker et al., 2007). The examples of AEM include managers' within-GAAP judgements on allowance for bad debts (McNichols & Wilson, 1988), asset write-offs

[11] Blocked communication means that managers cannot communicate all of their private information but some communication is permitted (Richardson, 2000).

[12] I do not include classification shifting in this study, because the effect of classification shifting is mainly transitory and within the same year (see McVay, 2006), and the focus of this study is to examine the implications and consequences of earnings management between years.

(Elliott & Hanna, 1996; Francis et al., 1996), depreciation (Holthausen, 1981), and so on.

Recently, accounting scholars have turned their attention to REM. The methods of REM, include reducing discretionary expenditures such as R&D expenditures (Barber et al., 1991; Dechow & Sloan, 1991; Bushee, 1998), and SG&A expenses (Lin et al., 2006; Zang, 2012; Gunny, 2010), price discounts to temporarily increase sales or overproduction to report lower cost of goods sold (Roychowdhury, 2006; Zang, 2012), and timing of the disposal of long-lived assets and investments (Bartov, 1993; Gunny, 2010).

To empirically examine the issues of REM, Roychowdhury (2006) develops several estimation models to detect REM, and he finds that firms avoid reporting losses by offering price discounts to temporarily boost sales, engaging in overproduction to lower cost of goods sold (COGS), and reducing discretionary expenditures aggressively to improve margins. To test the existence of REM, Gunny (2010) finds that the methods of REM (reducing R&D, reducing SG&A, and overproducing) are positively associated with firms just meeting earnings benchmarks (MBE). Lin et al. (2006) show firms engaging in REM to meet or beat analyst forecasts.

2.4. Trade-off between AEM and REM

The studies in this section examine the trade-off between REM and AEM as a result of regulation changes. Ewert & Wagenhofer (2005) posit that tighter accounting standards[13] can make AEM less effective. An unintended consequence is that managers begin to engage in REM, which is potentially more costly as it may directly reduce firm

[13] Tighter accounting standards refer to an International Accounting Standards Boards (IASB) project that eliminated accounting options in several standards in 2003.

value. Their proposition is based on a rational expectations equilibrium model, but there is no empirical test.

As mentioned earlier, Graham et al. (2005) survey and interview more than 400 chief financial officers to determine the factors that drive earnings and disclosure decisions. They find that to meet short-term earnings benchmarks, managers may take economic actions that could have negative long-term consequences instead of within-GAAP accounting choices to manage earnings. For example, managers may cut R&D expenses, delay maintenance or advertising expenditures, and even give up positive NPV projects, to meet short-term earnings benchmarks. Graham et al. (2005) also find that in order to maintain predictability of earnings, managers make voluntary disclosures to reduce information risk and boost stock price.

Cohen et al. (2008) examine the trends in REM and AEM. Consistent with Graham et al. (2005), they document that the level of AEM declines significantly, while the level of REM increases significantly in the post-SOX period (2002 through 2005). Additionally, they use a sample of MBE firms, and show that the MBE firms have significantly higher REM after SOX, and concurrently less income-increasing AEM. They suggest that the consequences of REM are more costly to shareholders in future years than accruals.

Gunny (2010) provides three possible explanations why managers may prefer REM over AEM in the post-SOX period. First, aggressive accounting choices with respect to accruals are subject to higher risk for SEC scrutiny and class action litigation. Second, the ability to achieve the earnings target merely by managing accruals is limited, because accrual manipulation only takes place at year (or quarter) end. Third, managerial discretion reflected in accounting treatments is subject to auditor scrutiny,

whereas operating decisions are fully controlled by the managers. However, managers may still prefer AEM over REM, because the former can take place after the fiscal year end, whereas the latter must be done prior to fiscal year end. Also, REM involves *ex ante* decisions which are more difficult to make. It is harder to ascertain whether or not a firm is going to underperform right from the start of the year to reduce real activities than to manipulate accruals after the firm has underperformed.

Zang (2012) explicitly examines the trade-off between AEM and REM. She finds that managers use AEM and REM as substitutes, and switch from AEM to REM to reduce litigation risk. Extending Zang (2012), Yang (2008) examines the competing use of REM (in the case of abnormal R&D expenses) and AEM based on a sample of R&D intensive firms. She finds that these firms use both REM and AEM to achieve earnings targets, and the managers tend to use more AEM than REM in R&D intensive firms, implying that R&D manipulation is more costly for future earnings generation than AEM.

The trade-off literature has established the evidence that REM acts as a substitute for AEM because of regulatory and litigation pressure, suggesting that AEM and REM might have different implications related to firm performance. Unlike AEM that is more subject to regulation, REM may have real impacts on future firm performance. The next two sections discuss the issues of equity market reaction to AEM and REM respectively.

2.5. Market Reaction to AEM

How does the market react to managerial discretion in terms of AEM and REM? Extant research has examined the market effect of AEM, but few studies have provided convincing evidence regarding REM.

With respect to AEM, Francis et al. (2005) show that investors price securities based on their awareness of accruals quality.[14] Subramanyam (1996) finds a positive association between discretionary accruals and stock returns.[15] He provides two alternative explanations for this result: (1) managerial discretion improves the ability of earnings to predict future profitability (signalling), or (2) discretionary accruals are opportunistic and mispriced by an inefficient market. His further evidence supports the signalling explanation by showing that discretionary accruals are positively associated with future operating performance. Therefore, he concludes that the market efficiently prices (attaches value to) discretionary accruals.[16] Consistent with Subramanyam (1996), Louis & Robinson (2005) find that managers use discretionary accruals around stock splits to signal favourable performance. However, Bernard & Skinner (1996) criticize the findings in Subramanyam (1996) by pointing out another explanation, the positive association between discretionary accruals and stock returns could be due to measurement error. They argue that the Jones model (or modified Jones model) misclassifies discretionary and nondiscretionary accruals, and this misclassification problem is common to most earnings management papers (also see section 2.7 and section 4.2.1).[17] They point out that the estimated coefficients in these models are not precise, so that some legitimate accruals are treated as discretionary.

[14] Francis et al. (2005) measure accruals quality as the standard deviation of residuals, which is based on Dechow-Dichev type models and absolute values of abnormal accruals. They also distinguish the innate and discretionary components of accruals quality. The innate component is the predicted value from a regression on a set of firm-specific risk variables, whereas the discretionary component is the residual of the regression.

[15] In Subramanyam (1996), stock returns refer to cumulative annual stock returns measured over a twelve-month period ending three months after the fiscal year end.

[16] A third view exists, that the market is efficient with respect to all publically available information in semi-strong efficient markets. In this sense, the security is appropriately priced. However, market efficiency is a relative concept. It is relative to both the level of publically available information and the level of rationality of investors. Market prices may not reflect the "true" value in the presence of inside information, because investors are limitedly/boundedly rational, or managers provide biased information.

[17] Dechow et al. (1995) indicate that the commonly used earnings management models generally lack explanatory power, and do not work well in detecting earnings management.

Differing from Subramanyam (1996), a number of studies present evidence that investors fail to rationally price accrual-related information, which leads to mispricing of abnormal accruals.[18] Sloan (1996) proposes an investor fixation hypothesis[19] as an alternative to the efficient market hypothesis to explain the mispricing phenomenon. Consistent with irrational investor behaviour of Watts & Zimmerman (1986), the investor fixation hypothesis suggests that if investors fixate on reported earnings and overlook earnings quality, stock prices may temporarily deviate from their correct values. The concern is that the positive association between reported earnings and stock returns reflects investors' naïve fixation on reported earnings, because investors fail to fully discount the difference in the accrual and cash flow components of earnings, leading to the overpricing of accruals. Similar to the investor fixation hypothesis, Hirshleifer & Teoh (2003), and Hirshleifer et al. (2011) propose a theory of limited investor attention to explain the mispricing of accounting information. The limited investor attention theory provides that investors weigh information more heavily if it is salient or requires less cognitive processing.

Following Sloan (1996), several studies decompose accruals into certain components. Xie (2001) and DeFond & Park (2001) provide that the mispricing is largely due to abnormal accruals, because investors overestimate the persistence of these accruals or underestimate the reversal of such accruals. Beneish & Vargus (2002) show that accrual mispricing is largely due to the mispricing of income-increasing accruals, and they suggest that opportunistic earnings management partially accounts for investors' failure to understand the low persistence of income-increasing accruals

[18] Mispricing of accruals is also termed the "accrual anomaly", which means a trading strategy designed to exploit investors' misunderstanding of the persistence of earnings components earns significant abnormal returns.

[19] The investor fixation hypothesis of Sloan (1996) is also termed as "earnings fixation hypothesis" or "accrual-fixation hypothesis".

that are accompanied by abnormal insider selling. Thomas & Zhang (2002) find that mispricing of accruals is due to inventory changes.[20] Richardson et al. (2005) find that less reliable accruals[21] lead to lower earnings persistence and investors do not appear to fully anticipate this lower persistence, which leads to significant mispricing.

Jensen (2005) uses agency costs to explain the overvaluation of equity,[22] evidenced by examples of corporate failures such as Enron. Consistent with Jensen (2005), Chi & Gupta (2009) find that overvaluation is induced by income-increasing abnormal accruals, which are negatively related to future abnormal stock returns, and operating performance. Drake et al. (2009) investigate the role of disclosure quality in the pricing of accruals and cash flows, and find significant overpricing of accruals and underpricing of cash flows for firms with low-quality disclosure, but no difference for mispricing of accruals and cash flows for firms with high quality disclosure. Their results suggest that mispricing can be reduced by higher quality disclosure.

Reinforcing the evidence provided in the investor fixation hypothesis, some studies examine the behaviour of sophisticated market participants, who are presumably less subject to the information processing biases of the investor fixation hypothesis. Collins et al. (2003) examine the role of investor sophistication proxied by institutional ownership in the pricing of accruals. They find that firms with high institutional ownership exhibit less accruals mispricing relative to firms with low institutional ownership, suggesting investor sophistication can mitigate the accruals mispricing

[20] Thomas & Zhang (2002) find that inventory change is the component of the accrual measure used by Sloan (1996) that is most strongly related to next year's abnormal returns.

[21] Richardson et al. (2005) decompose accruals along broad balance sheet categories and make qualitative assessments concerning the relative reliability of each category of accruals. For example, they provide that accounts receivable and inventory accruals involve the subjective estimation of uncollectible accounts, thus, these categories are measured with relatively low reliability. While the category of payables that represent financial obligations can be measured with a high degree of reliability.

[22] Overvalued equity refers to a higher stock price than its underlying value, when the firms cannot deliver the performance to justify its value (Jensen, 2005).

phenomena. Bradshaw et al. (2001) find that even analysts and auditors as professional investor intermediaries do not appear to anticipate the future earnings problem associated with high accruals.

On the other hand, the investor fixation hypothesis has also been challenged by a number of studies. For example, Fairfield et al. (2003) provide that the mispricing documented in Sloan (1996) is a special case of a more general growth anomaly, because accruals are a component of growth in net operating assets. They find that the market appears to equivalently overvalue accruals and growth in long-term net operating assets. Kraft et al. (2006) show that the investor fixation hypothesis is subject to some selection biases and lacks controls for outlying observations. Kraft et al. (2007) demonstrate that the mispricing of accruals is also subject to the problem of omitted variables, such as book to market, industry membership, past returns, net operating assets, size, capital expenditures, and so on.

This section focused on the market reaction to accruals and the components of accruals. There is no agreement on whether the market prices or misprices the accrual-based information. One possible explanation is that these studies overlook the market effects of REM. This is especially important in the post-SOX era where REM is gaining greater prominence than AEM. In this dissertation, I contend that mispricing occurs because investors fixate on earnings and misinterpret the impacts of REM.

2.6. Market Reaction to REM

With respect to REM, Chen et al. (2010) posit that different forms of earnings management evoke different market responses, as the information conveyed about the perceived future profitability is different. Whereas AEM provides either a signal or noise for predicting future earnings, REM alters the transactions involved in operating

activities, which can result in real consequences for future performance. If the market misprices AEM, it is likely that the market also misprices REM.

To my knowledge, there are two current working papers that consider the market response to REM, but these papers (Lin et al., 2006; Chen et al., 2010) reach different conclusions. Lin et al. (2006) find that REM decreases the MBE premium, suggesting that investors appear to recognize the means for achieving earnings benchmarks, leading to the discounting of REM. In contrast, Chen et al. (2010) find that firms using REM exclusively to meet analysts' expectations outperform AEM firms, and REM firms have higher equity premiums as measured by short-window returns[23] than AEM firms, implying that REM provides a signal to the market, thus the market prices REM at a premium.

The different interpretations in the above two papers suggest that whether the market discounts or values REM depends on investor anticipation of future firm performance. The next section reviews papers examining the actual consequences of earnings management on future performance.

2.7. The Consequences of Earnings Management for Future Performance

Although managers can engage in either AEM or REM to achieve current earnings targets, different methods may have different consequences regarding future firm performance. REM is generally considered more costly than AEM, because AEM is only subject to accruals reversal and has no direct cash flow consequences. However, REM can create real impacts on subsequent firm performance (Roychowdhury, 2006). For instance, delaying the recognition of bad debts can lead to a higher bonus in the

[23] Chen et al. (2010) use short window returns from one day before to one day after the earnings announcement date. They also consider two longer return windows: from one day after the first available consensus earnings forecast for the fourth quarter to one day after the earnings announcement date, and to 90 days after the fiscal year-end.

current period, whereas cutting a necessary amount of R&D expenditure not only results in a higher bonus payment, but also may cause the firm to lose sales in future periods. The following discussion focuses on examining the real impacts of REM on future performance.

To determine whether REM provides an information signal to the market or masks true firm performance, prior studies examine the consequences of REM on future firm performance. A positive association between REM and future performance suggests that managers exercise their discretion to signal future performance in an efficient manner. Otherwise, a negative association is consistent with the managerial opportunism hypothesis.

Consistent with an efficient contracting perspective, Gunny (2010) finds that firms engaging in REM to avoid losses or meet last year's earnings have higher subsequent operating performance. She interprets this positive association as a signalling effect of future firm value. Chen et al. (2010) find that firms using REM exclusively to meet analysts' expectations have higher future operating performance than AEM firms.

Contrary to the above findings, Leggett et al. (2009) examine the consequences of REM, and find that firms using REM to meet earnings benchmarks have lower subsequent operating performance. They use three approaches to estimate discretionary expenditures: firm-specific regressions with a rolling ten-year period, firm-specific regressions, and industry models. They argue that the industry models commonly used in other REM studies restrict all firms within an industry to have the same coefficients across years. The advantage of the use of their rolling regression is that the coefficients are estimated by using data from the previous 10 years, and the advantage of their firm-

specific regression is that the estimation is based on a larger sample size, suggesting their results are more reliable.

Cohen & Zarowin (2010) also show that the decline in post-SEO performance due to REM is more severe than that attributed to AEM. Zang (2012) uses a performance matching method and shows that MBE firms that use REM have negative operating performance in subsequent years, indicating that REM choices are suboptimal business decisions.

A potential drawback in the above REM studies is that they only consider future operating performance, proxied by future return on assets (ROA) and future operating cash flows (CFO). These operating performance measures are directly linked to managers' manipulation. It is more likely that firms with higher levels of REM in the current period also have higher levels of REM in subsequent periods.

Another problem is measurement error. Similar to the problem of the Jones model in AEM estimation (mentioned in section 2.5), the residuals estimated from REM models are rudimentary and may not properly represent managerial discretion. Therefore, the results based on these rudimentary measures may be inconsistent. The corporate governance literature and the literature dealing with incentives and motivations for earnings management identify variables that can influence the perceptions of investors in investment decision making. I discuss these influences and propose refinements for the measurement of REM and AEM in the next section. Such refinements, I argue, provide a set of measures for REM and AEM that are better representations of investors' perceptions of the REM and AEM being conducted by the firm.

2.8. Role of Corporate Governance

As discussed earlier, the findings in Cohen et al. (2008) are related to corporate governance reforms after the major financial scandals. Contrary to the regulators' intention, the focus on mitigating AEM is associated with increased REM. Under tighter corporate governance rules, managers may shift from AEM to REM.

Corporate governance refers to a set of mechanisms that influence the decisions made by managers in the agency setting (Larcker et al., 2007). An agency problem arises from the potential divergence of interests between principals and agents (Jensen & Meckling, 1976). Under the contracting perspective, a key issue of corporate governance is to align the interests of managers (agents) with shareholders (principals). If improved corporate governance enhances the quality of financial reporting, then investor confidence in the financial markets increases.

An increasing amount of literature has examined the role of corporate governance in mitigating AEM. Many agree that corporate governance reduces AEM (e.g., Xie et al., 2003; Jiang et al., 2008; Jiraporn et al., 2008; Bekiris & Doukakis, 2011). However, Bowen et al. (2008) assert that the interpretation of whether managers exercise their discretion in an opportunistic or efficient manner based on the association between accounting discretion and governance quality is premature, unless such accounting discretion has negative consequences for shareholders' wealth. In a two-stage analysis, they use a *g* score complied by Gompers et al. (2003), along with several other governance variables to estimate the level of accounting discretion, and examine the association between the predicted accounting discretion attributable to these governance variables and subsequent firm performance. Their results show that some governance variables are significantly related to their earnings management measures, but they do not find a negative association between the level of accounting discretion

due to lax governance and subsequent performance. They conclude that accounting discretion *per se* does not necessarily imply managerial opportunism. In the discussion paper, Guay (2008) argues that the finding in Bowen et al. (2008) that greater accounting discretion is not associated with poor firm performance may imply little or nothing about whether accounting discretion is opportunistic, as it is difficult to determine whether specific types of discretion are used.

I argue that one potential concern in Bowen et al. (2008) is that they do not consider REM. Fields et al. (2001) and Chen (2009) criticize earnings management studies as focusing on one accounting choice at a time when most managers seek a result through the combined effects of several choices. Without taking into account REM, AEM studies cannot explain the overall effect of earnings management. Ewert & Wagenhofer (2005) posit that studies without the consideration of REM may overestimate the impacts of corporate governance on AEM, and therefore total earnings management. This bias is because the variables used to estimate AEM also affect REM. Therefore, the problem of most AEM studies is that they only reveal part of the picture of managerial discretion, because managers can use many other methods, such as REM, to achieve the same earnings targets.

Another problem in Bowen et al. (2008) and many other corporate governance studies is that they either rely on a single corporate governance index or a few dimensions of corporate governance. Larcker et al. (2007) explain that typical measures of corporate governance by indices or in numbers may not work, because corporate governance is a complex social system with multiple dimensions that interact with and influence with each other.

Furthermore, it is still an open question on how corporate governance affects REM. Current literature only provides limited evidence in this area. For example, Chen (2009) examines how firms' growth prospects and managers' equity incentives affect the trade-off between AEM and REM. Chang et al. (2006) examine the influence of internal corporate governance (measured by board characteristics, ownership structure, and leadership structure) on the wealth effect of R&D expenditure, and find that stock markets respond more favourably to the announcements of R&D expenditure increases by firms with stronger internal governance, indicating that a firm's growth opportunity has a positive interaction effect with internal governance in explaining the variation of market reactions to R&D expenditure increase. Their results imply that the market would penalize a weak governance firm if managers cut R&D expenditures to achieve a current earnings goal. Osma (2008) analyses the role of boards of directors in constraining R&D spending manipulation in a UK sample for the period of 1989 to 2002, and finds that independent boards are efficient at detecting and containing myopic R&D cuts.

The studies cited in this section indicate that corporate governance not only reduces AEM, but also has effects on REM. This study is influenced by Bowen et al. (2008), who suggest a way to reduce measurement error in the traditional earnings management estimation models. They suggest that it is necessary to capture the incentives that induce managers to engage in earnings management, such as corporate governance. For example, Bowen et al. (2008) find that managers with greater power exercise more accounting discretion. Their findings are consistent with the bonus plan hypothesis that firms where managers derive a greater proportion of their compensation through bonuses are associated with more accounting discretion, and consistent with the transient owner perspective that firms with greater institutional ownership are associated

with greater accounting discretion. Taken together, their results suggest that managers tend to exercise more aggressive accounting discretion when corporate governance is weaker.

2.9. Research Question

While most earnings management studies focus on AEM, recent studies provide evidence on the existence of REM as a substitute for AEM. For example, Cohen et al. (2008) document a decrease in AEM and an increase in REM after SOX. The concern is that REM may create real economic costs and adversely affect future firm performance. Market reaction studies generally consider the effect of AEM on stock prices, but find conflicting results. For example, Subramanyam (1996) shows that the market efficiently prices AEM, whereas Xie (2001) shows that the market misprices AEM. It is unclear whether the market prices or misprices REM. Studies that examine the consequences of REM on future firm performance also provide mixed results. A negative association between REM and future performance is interpreted as managerial opportunism, whereas a positive association represents a signalling effect or efficient contracting. In this study, I argue that it is the perceived effects of earnings management measures rather than the actual measures that affect the investors' decisions to buy, hold, or sell shares, which then leads to an increase or decrease in share prices. Thus, it is necessary to take into account the effects of corporate governance and other firm characteristics that influence the perceptions of investors on earnings management conducted by firms.

Based on the discussion in this chapter, the specific research question developed for this study is:

Does the market price or misprice REM?

Chapter 3 Hypotheses Development

The objective of this dissertation is to empirically examine whether the market efficiently prices or misprices REM. Efficient pricing means the accounting information is appropriately understood and used in market price formation. Mispricing occurs when the accounting information is misunderstood and inappropriately used in price formation. This is the view followed in the extant earnings management literature (e.g., Subramanyam, 1996; Sloan, 1996; Xie, 2001). More specifically, I examine the anticipated effects of REM on stock prices and the actual consequences of REM on future firm performance. I consider the motivation of REM based on either the efficient contracting hypothesis or the managerial opportunism hypothesis, and under two competing market efficiency hypotheses: the efficient market hypothesis (EMH) and the investor fixation hypothesis.

With regard to the motivation of REM, the evidence in prior research is consistent with either efficient contracting or managerial opportunism. If REM is driven by efficient contracting as a sign for future performance, I would expect REM to enhance the informativeness of earnings about future firm performance. For example, Gunny (2010), and Chen et al. (2010) find a positive association between REM and future performance. In contrast, if REM is driven by opportunistic motives, then I would expect the informativeness of earnings about future performance to be adversely affected. For example, Zang (2012), Leggett et al. (2009), and Cohen & Zarowin (2010) find a negative association between REM and future operating performance.

Pricing or mispricing of REM is also determined by the assumptions of market efficiency and investors' rationality. The EMH introduced by Fama (1970) claims that investors are rational in three forms. The weak form EMH claims that market prices

reflect all past publicly available information. The semi-strong form EMH claims that prices reflect all publicly available information and that prices instantly change to reflect new public information. And the strong form EMH claims that prices not only reflect all publicly available information, but also reflect even private or "insider" information. However, the strong form market efficiency that exists in a theoretical sense has not been empirically verified like the semi-strong and weak forms. In this study, the efficient market refers to the semi-strong form. Under the semi-strong form EMH, both the level of publicly available information and the level of rationality of investors are important components of price formation.

From the publicly available information perspective, mispricing likely occurs when insiders try to bias price formation by masking the true performance of the firm through REM that cannot be contemporaneously detected by the market. Although the disclosure of REM is not entirely hidden from the public, it would be very difficult for investors to observe whether a certain operational change is REM or not. In a strict sense, the market can detect and penalize the opportunistic REM, only under the strong form EMH when prices instantly reflect even private or "insider" information.

From the investors' rationality perspective, Sloan (1996) proposes an investor fixation hypothesis, which contends that investors tend to follow a simple heuristic and often fixate on reported earnings in assessing firm value, and suggests that the market can be fooled by relatively simple earnings management practices. Similarly, Hirshleifer et al. (2011) suggest that mispricing of accounting information is due to limited investor attention. Barth et al. (2001) show that investors typically do not incorporate all available information and overlook the tendency of accruals reversal in assessing the effect of persistence of accruals on future cash flows. Xie (2001) shows that mispricing occurs when investors overestimate the persistence of abnormal accruals. In this

dissertation, I apply the notion of investor fixation to REM, and contend that mispricing occurs if investors do not anticipate the adverse consequences of REM on future performance.

Table 1 provides a summary of the possible outcomes under four different scenarios. It shows that the outcomes are determined by both the motivation of REM (efficient contracting hypothesis or managerial opportunism hypothesis) and market efficiency (efficient market hypothesis or investor fixation hypothesis). In the first scenario, if REM is motivated by efficient contracting under the EMH, investors should be able to recognize the future performance signals, and price REM at a premium (Chen et al., 2010). Thus, I expect REM to be positively associated with both current stock returns and future performance.

In the second scenario, if REM is motivated by managerial opportunism under the EMH, investors should be able to detect the means of REM and they should be able to foresee the adverse impacts of REM on future performance. The market will penalize the REM firms with discounted prices (Lin et al., 2006). Because the decision making by managers is unobservable, investors suffer from moral hazard and thus discount the stock prices in order to price-protect their investment. Thus, I expect REM to be negatively associated with both current stock returns and future performance.

In the third scenario, under the investor fixation hypothesis, although investors may not incorporate all relevant information into market prices, the market would reward income-increasing REM once such REM is motivated by efficient contracting to improve firm performance, such as cutting unnecessary R&D expenditures. The point here is that efficient contracting can mitigate the concerns arising from the investor fixation hypothesis. Another point is that if the market does not reward efficient REM,

managers would lack incentives to engage in such income-increasing activities. Therefore, similar to the first scenario, I expect REM to have some positive association with both current stock returns and future performance.

In the worst possible scenario (the fourth scenario of Table 1), the market can be "fooled" by managers who want to bias price formation by masking the true performance of firms through REM. Under the investor fixation hypothesis, investors are unable to differentiate between biased and unbiased earnings numbers due to managerial manipulation. If investors fixate on the reported earnings, they will underestimate the negative impacts of REM on future performance. Only in later years when the negative effects of prior REM on the current performance is demonstrated, the market will begin to understand how REM techniques hid the "true" economic performance of the firm. In this scenario, I expect REM to be positively associated with current stock returns, and negatively associated with future performance.

The prevalence of one or more of the above scenarios in the post-SOX setting is an empirical question. In the post-SOX setting, there are pressures for higher quality reporting. However, managerial motivations and discretion for reporting remains. As discussed earlier, the increased pressure to provide higher quality accruals has led to a higher propensity among firms to use real activities management for earnings management purposes. Likewise, I draw a null hypothesis for the association between REM and current stock returns and future firm performance as follows:

H_0 (Null): REM is not associated with current stock returns, and is not associated with future firm performance.

More specifically, following Roychowdhury (2006), Zang (2012), Leggett et al. (2009), and Cohen & Zarowin (2010), opportunistic REM is expected to have adverse

effects on future firm performance. Under the investor fixation hypothesis proposed by Sloan (1996), if investors fixate on the reported earnings, they would underestimate the negative impacts of REM on future performance. In such a case, the market could be misled by REM. Thus, I state a mispricing hypothesis as:

H_1 (Mispricing): REM is positively associated with current stock returns, and is negatively associated with future firm performance.

Table 1: Summary of possible outcomes

		Market Efficiency	
		Efficient Market Hypothesis	Investor Fixation Hypothesis
Motivation of REM	Efficient Contracting Hypothesis	1) Income-increasing REM is positively associated with both current stock returns and future firm performance (Chen et al., 2010)	3) Income-increasing REM is positively associated with both current stock returns and future firm performance
	Managerial Opportunism Hypothesis	2) Income-increasing REM is negatively associated with both current stock returns and future firm performance (Lin et al., 2006)	4) Income-increasing REM is positively associated with current stock returns, while negatively associated with future firm performance (H1: Mispricing hypothesis)

Chapter 4 Research Methodology

To empirically test the hypotheses, this chapter describes the data and sample selection, the research design, and the measurement of variables.

4.1. Data and Sample Selection

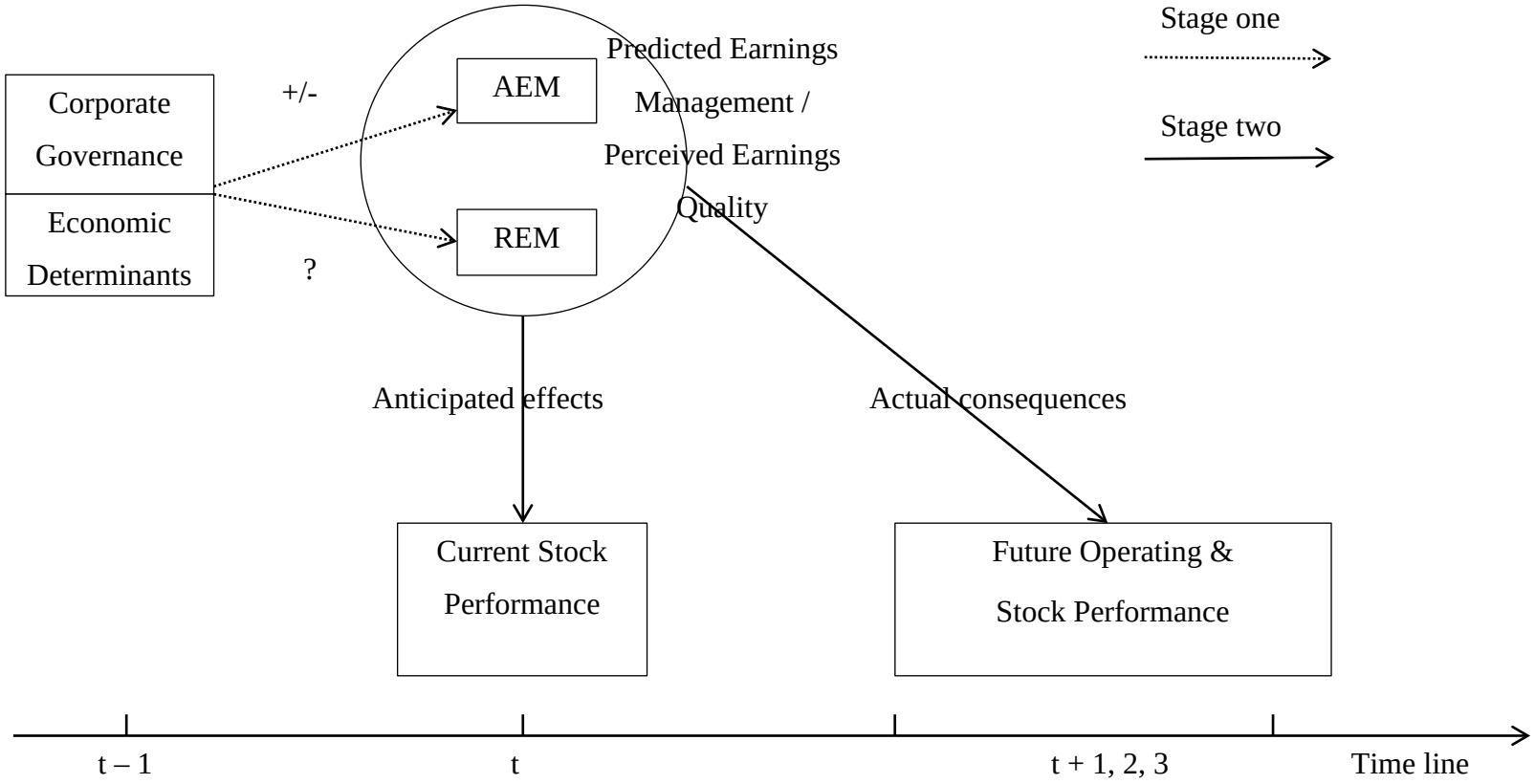
The sample is drawn from the intersection of two databases. The financial data are collected from the COMPUSTAT annual industrial and research files, including both the active and inactive US company datasets. The corporate governance data are obtained from The Corporate Library (TCL) database. TCL compiles data on more than 3,000 US firms. These firms are generally characterized by dispersed ownership concentration with strong investor protection.[24] The combined sample is restricted to one year (2005) of data for corporate governance measures.[25] The sample period coincides with the corporate governance reforms in the US after SOX, but it may limit the ability to generalize the results to the pre-SOX period. Firms in the financial industry (SIC 6000-6999) and utility industry (SIC 4400-5000) are excluded because these highly regulated industries are subject to different accounting rules and have different incentives to manipulate earnings than other industries. Further, the sample only includes those firms with a minimum of six consecutive years of data on necessary variables, because the research design requires subsequent three years for future performance measures and prior two years for some economic determinants (see the following sections). After combining COMPUSTAT and TCL with the necessary data

[24] Please note that the median TCL firm had a market capitalization of 1,685.77 million in 2005, which is around ten times larger than the median COMUPSTAT firm that had a market capitalization of $156.31 million.

[25] Due to the greater disclosure requirements, TCL provides more complete items since 2005. Also see Brown & Caylor (2006) and Larcker et al. (2007). Their governance measures are also restricted to a single year.

for various models, the final sample consists of 553 firms, and spans 16 two-digit SIC industries.

Figure 1. Research Design



4.2. Research Design

Figure 1 depicts the overall structure of the empirical tests. Following Bowen et al. (2008), I adopt a two-stage analysis.[26] In the first stage, I predict the earnings management measures by considering the effects of corporate governance and economic determinants. The hypotheses are tested in the second stage. In this stage, I first explore the anticipated effects of earnings management by examining how the predicted earnings management is associated with current stock performance. I further examine whether the actual consequences of earning management on future firm performance are consistent with the anticipated effects on current market price. The details of the two-stage analysis are discussed below.

4.2.1. Stage One: Estimation of Earnings Management

In the first stage, I estimate the level of earnings management as a function of corporate governance and firm-specific economic determinants. There are two reasons for this estimation. The first is an attempt to reduce measurement error. As indicated by Bernard & Skinner (1996), the residuals from abnormal accruals models are crude and noisy, because the AEM models may misclassify the discretionary and nondiscretionary components of accruals. This notion also applies to the REM models employed in prior studies (see section 4.4). Cohen et al. (2011) indicate that the traditional REM measures tend to be severely misspecified with Type I error rates dramatically different from 5%. The difficulty remains on how to distinguish the discretionary component from the nondiscretionary components of managerial discretion. To extract the discretionary component with reduced measurement error, the estimation models should take into account various contractual incentives where managers are particularly sensitive to manipulate earnings. For example, Zang (2012) argues that both REM and AEM are

[26] Also see Core et al. (1999) and Goh et al. (2012), who also adopt a similar two-stage analysis.

negatively correlated with their cost factors and positively correlated with earnings management incentives.

The second reason for using the predicted measures (rather than observed measures from the simple estimation models) is to capture the perceived earnings quality. Earnings quality refers to how well the earnings accurately and reliably reflect the firm's current operating performance, and whether it can be used as a good indicator for future operating performance (Dechow & Schrand, 2004). Earnings quality does not exist in a vacuum. Investors generally assess earnings quality by considering the context of a firm's corporate governance, its surrounding economic environment, and other characteristics that may cause earnings management. For example, if it is a firm with good corporate governance, investors may perceive a high level of accounting accruals as a sign of growth, while if it is a bad governance firm, high accounting accruals may imply low earnings quality.

The first-stage empirical relations are shown in the following model:

$$Earnings\ Management_{t} = f\ (Governance\ variables_{t-1}, Economic\ determinants_{t-1}) \quad (1)$$

To mitigate the problem of endogeneity or simultaneity, I impose a one-year lag for the governance variables and economic determinants.[27] Following Bowen et al. (2008), I take short-term earnings management as a function of governance structures and economic environment in the previous year, because these lag measures are less subject to concurrent managerial manipulation. The concern is the reverse causality between the independent variables and the dependent variables. Even though managers exercise their discretion in response to the firm-specific environment, the outcomes of

[27] Klein (1998) and Bowen et al. (2008) also use lag measures to mitigate the problem of endogeneity or simultaneity.

earnings management in turn affect the environment. For example, governance structures affect the level of earnings management. Contemporaneously, the level of earnings management can also cause a change in a firm's governance structures. However, the changes in governance structures are costly, and such changes are unlikely to take place in a short period of time.

I note that some specific corporate governance variables or economic determinants may have opposite effects on AEM and REM. For example, equity compensation may encourage AEM, but restrain REM, because the adverse consequences of REM could reduce managers' long-term wealth. A CEO with a high level of equity compensation ownership is less likely to cut R&D expenses, which may have long-term effects on firm performance, but more likely to engage in accruals manipulation as such accruals reverse in the following year.

4.2.2. Stage Two: Anticipated Effects of Earnings Management

To explore the anticipated effects of earnings management, I examine the effects of predicted earnings management attributed to governance variables and economic determinants on current stock returns, on the basis of a return-future earnings model. The following return-future earnings model is developed from Ohlson (1995) and Collins et al. (1994), as:

$$RET_t = \beta_0 + \beta_1 X_t + \beta_2 \Delta X_t + \beta_3 X3_t + \beta_4 RET3_t + \varepsilon_t \quad (2)$$

Where,

RET_t = current stock returns,

X_t = annual reported earnings,

ΔX_t = change in annual earnings, proxies for unobservable unexpected earnings,

$X3_t$ = sum of income before extraordinary items for the subsequent three years, a proxy for expected realized future earnings,

$RET3_t$ = annualized rate of stock return for the subsequent three years, a proxy for the unexpected component of realized future earnings, for firms in fiscal year *t*.

RET is the current one year total stock returns reflecting price appreciation plus reinvestment of monthly dividends and the compounding effect of dividends paid on reinvested dividends. There are two reasons for using current stock returns as the dependent variable. First, stock performance is forward-looking and contains investor anticipation (or expectation) of future performance. Current stock returns reflect the market expectation of future earnings or cash flows. Second, unlike current accounting measures, current stock returns are relatively less affected by managerial manipulation in the same year. However, stock can be mispriced due to the irrational behaviour of investors (Schiller, 2000). Further, Bowen et al. (2008) provide that the use of stock returns as a measure of future performance, in isolation, may result in lowering the power of discriminating between efficient contracting and opportunism, because such a test is a joint test of stock market efficiency and contracting efficiency. For example, investors in an efficient capital market would anticipate the managerial opportunism and incorporate it into the stock price. Thus, future stock returns may not be related to the opportunistic earnings management.

Applying the Ohlson (1995) model, Durnev et al. (2003) estimate a regression of current stock returns against future earnings to examine the information content in current earnings about future earnings. Lundholm & Myers (2002) examine how firm disclosure activity affects the relation between current annual stock returns, contemporaneous annual earnings and future earnings. They find that firms with more

informative disclosures "bring the future forward," so that current returns reflect more future earnings news. Luo et al. (2006) use a voluntary disclosure index and introduce ownership structure and proprietary cost into the current return-future earnings regression. Their results reveal that firms with higher voluntary disclosure levels contain more information about future performance in their current stock return, and that high management ownership and proprietary cost weaken this positive association.

Earnings management can also be viewed as a form of voluntary disclosure by managers in the efficient contracting context. I introduce the stage one predicted (investor anticipated) earnings management (*P_EM*) attributable to governance variables and economic determinants into the return-future earnings model.

$$RET_t = \beta_0 + \beta_1 \textit{ Predicted earnings management}_t + \beta_2 X_t + \beta_3 \Delta X_t + \beta_4 X3_t + \beta_5 RET3_t + \varepsilon_t \quad (3)$$

Where,

RET_t = current stock returns,

Predicted earnings management = predicted earnings management (*P_EM*) attributable to governance variables and economic determinants,

X_t = annual reported earnings,

ΔX_t = change in annual earnings, proxies for unobservable unexpected earnings,

$X3_t$ = sum of income before extraordinary items for the subsequent three years, a proxy for expected realized future earnings,

$RET3_t$ = annualized rate of stock return for the subsequent three years, a proxy for the unexpected component of realized future earnings, for firms in fiscal year *t*.

4.2.3. Stage Two: Actual Consequences for Future Performance

To confirm whether the anticipated effects of earnings management are consistent with the actual consequences, I also examine the association between the stage one predicted earnings management attributable to governance variables and economic determinants, and future firm performance in the second stage.

Future performance = f (Predicted earnings management, Control variables) (4)

I use two accounting measures and one market-based measure for future performance. The two accounting measures are future return on assets (*FutROA*) and future operating cash flows (*FutCFO*). The market-based measure is future stock returns (*FutRET*). *FutROA* is the average ROA for the subsequent three years. Even though the annual ROA is likely to be affected by accrual reversals, the average measure should smooth out the reversals. *FutCFO* is the average operating cash flows scaled by lagged total assets for the subsequent three years, and is unaffected by accrual reversals. The common problem of these two accounting measures is that they are subject to managerial discretion, and may not present the true economic performance. *FutRET* is an annualized rate that converts the 36 month comprehensive total return into an annualized return for the three year period. This market-based measure is considered to be less affected by managerial manipulation, and is more objective than the accounting measures. Since it is forward-looking, *FutRET* could be relatively meaningless regarding managerial discretion in a prior time period. A period of three years for the future performance measures is used, because prior research has shown that further years of performance add little explanatory power (Kothari & Sloan, 1992; Collins et al., 1994; Lundholm & Myers, 2002).

4.3. Measurement of AEM

Following Subramanyam (1996) and Bowen et al. (2008), I use a cross-sectional modified Jones (1991) model developed by Dechow et al. (1995) to measure AEM.[28] The rationale of this model is to estimate the normal level of accruals according to industry and year groups. The deviation from the fitted value called abnormal (or discretionary) accruals is the proxy for managerial manipulation of accruals.

In applying the modified Jones model (1991), there are three steps to estimate abnormal accruals. First, the regression of the simple Jones (1991) model is estimated, which assumes the entire change in sales is free from managerial discretion, as follow:

$$\frac{TA_t}{Assets_{t-1}} = k_0 + k_1 \frac{\Delta SALE_t}{Assets_{t-1}} + k_2 \frac{PPE_t}{Assets_{t-1}} + \varepsilon_t \quad (5)$$

Where,

TA_t = Total accruals = [Data A18 – (Data A308-Data A124)],

$Assets_{t-1}$ = Lagged total assets [Data A6],

$\Delta SALE_t$ = Change in sales [ΔData A12],

PPE_t = Gross property plant and equipment [Data A7],

for firms in fiscal year *t* (COMPUSTAT data items in brackets).[29]

The regression is run for every two-digit SIC industry code in each year, with a requirement of at least 15 observations in each group.[30] To reduce the effect of outliers, all variables are winsorized at the extreme two percentiles. For example, values higher

[28]For robustness, I also use a lagged model and a forward-looking model (see Dechow, Richardson, and Tuna, 2003, and McNichols, 2000). The results are similar to the use of modified Jones model.
[29] See Appendix 1 for COMPUSTAT annual data items used in this study.
[30] Note that only 2006 AEM measures are used in this study.

(lower) than the 98th (2nd) percentile are set equal to the value of the 98th (2nd) percentile. All variables are scaled by lagged assets to improve the comparability.

Second, the change in accounts receivable is deducted from the change in sales in the modified Jones model. The firm-specific normal accruals (*NA*) are computed from the estimated coefficients ($\hat{k}_0, \hat{k}_1,$ and $\hat{k}_2$) from the first step (in equation 5), as follow:

$$NA_t = \hat{k}_0 + \hat{k}_1 \frac{(\Delta SALE_t - \Delta REC_t)}{Assets_{t-1}} + \hat{k}_2 \frac{PPE_t}{Assets_{t-1}} \quad (6)$$

Where,

NA_t = Normal accruals,

$Assets_{t-1}$ = Lagged total assets [Data6],

$\Delta SALE_t$ = Change in sales [ΔData12],

ΔREC_t = Change in accounts receivable [Data2],

PPE_t = Gross property plant and equipment [Data7],

for firms in fiscal year *t* (COMPUSTAT data items in brackets).

Finally, the abnormal accruals (*AbAcc*) are the difference between total accruals and the fitted normal accruals, as below:

$$AbAcc_t = \frac{TA_t}{Assets_{t-1}} - NA_t \quad (7)$$

AbAcc is the proxy for AEM. A positive value of *AbAcc* indicates an income-increasing manipulation to inflate reported earnings, while a negative value indicates an income-decreasing manipulation. Since the analysis is conducted in calendar time and

accruals reverse over time, the direction of the manipulated earnings is unknown. Therefore, I also use the absolute value of abnormal accruals (|*AbAcc*|). The unsigned measure captures the combined effect of income-increasing and income-decreasing earnings management (Jiraporn et al., 2008).

4.4. Measurement of REM

I measure three types of real activities manipulation identified in the prior literature (Roychowdhury, 2006; Cohen et al., 2008, Zang, 2012; Leggett, 2009; Gunny, 2010),[31] namely,

1) Cutting discretionary research and development expenses (R&D);

2) Cutting discretionary selling, general and administration expenses (SG&A); and

3) Overproduction to decrease the cost of goods sold.

In the following three REM estimation models, all variables are winsorized at extreme two percentiles to reduce the effect of outliers and leverage points. All models are estimated cross-sectionally for each industry (two-digit SIC) and year grouping.[32] Industry-years with fewer than 15 observations are eliminated from the sample. To improve comparability, all variables are scaled by lagged assets.

4.4.1. R&D Model

The R&D model is based on prior research (Roychowdhury, 2006; Zang, 2012; Gunny, 2010), as follows:

$$Log(\frac{XRD_t}{Assets_{t-1}}) = \alpha_0 + \alpha_1 Log(\frac{XRD_{t-1}}{Assets_{t-1}}) + \alpha_2 \frac{INTF_t}{Assets_{t-1}} + \varepsilon_t \quad (8)$$

[31] I exclude timing of fixed asset sales as a real activities manipulation provided in the prior literature, because the magnitude of gain or loss from sale of PPE and investment (Data 123) scaled by lagged assets is not significant compared to other types of manipulations. The variable also lacks variation with most observations having a zero value. Graham et al. (2006), Zang (2012) and Gunny (2010) also report little evidence of timing of asset sales to manage earnings.

[32] Note that only 2006 REM measures are used in this study.

Where,

XRD_t = R&D expense [Data A46],

$Assets_{t-1}$ = Lagged total assets [Data A6],

$INTF_t$ = Internal funds [Data A18 + Data A46 + Data A14],

for firms in fiscal year *t* (COMPUSTAT data items in brackets).[33]

In applying this model, only firms with positive R&D expenses are included. As the raw *XRD* data is highly right-skewed,[34] I use the natural logarithm transformation to mitigate heteroskedasticity. The lagged R&D expense (XRD_{t-1}) proxies for the firm's innovation opportunity, and its coefficient is expected to be positive. Internal funds (*INTF*) are a proxy for the funds available for R&D investment, because the costs of using internal funds for R&D projects are considered lower than external funds. The coefficient of *INTF* is expected to be positive.

Differing from R&D models in prior studies, I exclude Tobin's Q and market value of equity as independent variables. Tobin's Q is used as a proxy for growth potential, and market value of equity is used to control for size. I include similar items as economic determinants in the first stage regressions. For example, I replace Tobin's Q with book-to-market ratio (*BM*).[35]

I multiply the residuals from the R&D estimation model by negative one, so that high values (denoted as *AbRD*) indicate that managers are cutting R&D expenses to increase reported earnings, representing income-increasing abnormal R&D.

[33] See Appendix 1 for COMPUSTAT annual data items used in this study.
[34] Cohen et al. (2011) also indicate that most REM measures are highly skewed.
[35] See section 5.5.

4.4.2. SG&A Model

Following Anderson et al. (2003), Zang (2012), and Gunny (2010), I model SG&A as a linear function of internal funds, change in sales, and the stickiness of cost behaviour,[36] as:

$$Log(\frac{XSGA_t}{Assets_{t-1}}) = \alpha_0 + \alpha_1 \frac{INTF_t}{Assets_{t-1}} + \alpha_2 \frac{\Delta SALE_t}{Assets_{t-1}} + \alpha_3 \frac{\Delta SALE_t}{Assets_{t-1}} * DS + \varepsilon_t \quad (9)$$

Where,

$XSGA_t$ = Selling, general and administrative costs [Data A189],

$Assets_{t-1}$ = Lagged total assets [Data A6],

$INTF_t$ = Internal funds [Data A18 + Data A46 + Data A14],

$\Delta SALE_t$ = Change in Sales [ΔData A12],

DS = Indicator variable equal to 1 when total sales decrease between *t-1* and *t*, otherwise 0,

for firms in fiscal year *t* (COMPUSTAT data items in brackets).[37]

In applying this model, only firms with positive SG&A expenses are included. As the raw *XSGA* data is highly right-skewed, I use the natural logarithm transformation to mitigate heteroskedasticity.[38] Similar to the R&D model, *INTF* is a proxy for the funds available for SG&A expenditures, and its coefficient is expected to be positive. The change in sales is expected to be positively associated with the level of SG&A expenses. In order to capture the asymmetric relation when sales increase and decrease,

[36] As indicated by Anderson et al. (2003), sticky cost behaviour refers to the magnitude of a cost increase associated with increased sales is greater than the magnitude of a cost decrease associated with an equal decrease in sales.
[37] See Appendix 1 for COMPUSTAT annual data items used in this study.
[38] Zang (2012) also uses the natural log transformation on SG&A.

as in Anderson et al. (2003), I include an indicator variable (*DS*) that equals to one when the current sales is lower than the sales in a prior year, and zero otherwise. I expect the coefficient on $\frac{\Delta SALE_t}{Assets_{t-1}} * DS$ to be negative because of the stickiness of SG&A expenses.

I multiply the residuals from the SG&A estimation model by negative one, so that high values (denoted as *AbSGA*) indicate that managers are cutting SG&A expenses to increase reported earnings, representing income-increasing abnormal SG&A.

4.4.3. Production Cost Model

Following Dechow et al. (1998), Roychowdhury (2006), Zang (2012), and Gunny (2010), the normal level of production cost is estimated as:

$$Log(\frac{Prod_t}{Assets_{t-1}}) = \alpha_0 + \alpha_1 \frac{SALE_t}{Assets_{t-1}} + \alpha_2 \frac{\Delta SALE_t}{Assets_{t-1}} + \alpha_3 \frac{\Delta SALE_{t-1}}{Assets_{t-1}} + \varepsilon_t \qquad (10)$$

Where,

$Prod_t$ = Production costs = Cost of goods sold + ΔInventory [Data A41+Data A303],

$Assets_{t-1}$ = Lagged total assets [Data A6],

$SALE_t$ = Net Sales [Data A12],

$\Delta SALE_t$ = Change in Sales [ΔData A12],

for firms in fiscal year *t* (COMPUSTAT data items in brackets).[39]

In applying this model, only firms with positive production costs are included. I use the natural logarithm transformation on production costs to mitigate heteroskedasticity, because of the relatively large right-skewness in the raw *Prod* data. Sales, change in sales, and lagged change in sales are used to control for any product

[39] See Appendix 1 for COMPUSTAT annual data items used in this study.

demand changes that directly affect the level of production. As in Dechow et al. (1998), I expect positive coefficients on sales and change in sales, and a negative coefficient on lagged change in sales. Unlike the models for R&D and SG&A, the control variable of *INTF* is not included, because production costs are not sensitive to this item. High residuals represent high levels of abnormal productions costs, which proxy for either sales manipulation due to abnormal price discounts or cost of goods sold (COGS) manipulation by overproduction (Roychowdhury, 2006).

I conduct principal component analysis (PCA) on *AbAcc*, *AbRD*, *AbSGA*, and *AbProd* to examine the overall effect of various types of earnings management. In PCA, I use the signed abnormal accruals (*AbAcc*) rather than the absolute value (|*AbAcc*|), because the other three abnormal REM are signed, so that positive values of these variables represent income-increasing earnings management. The results of the PCA on earnings management measures are shown in section 5.3.

4.5. Corporate Governance Variables

In the TCL database, the corporate governance variables can be grouped into four general categories: CEO, board composition, ownership structure, and other corporate governance variables including takeover defences. I exclude TCL variables without variation among the firms. For example, almost all firms have outside or outside-related directors constituting a majority of the boards after SOX.

4.5.1. CEO Variables

I focus on CEOs in this study, because they are the ultimate decision makers, and have strong influence on the firm. Cheng & Warfield (2005) provide that results based on CEOs are similar to those of all managers, and a strong CEO has incentives to increase his or her own personal wealth with adverse effects on firm performance. CEO

power is the ability to influence key decisions in the firm despite possible disapproval from others, or the ability to control the board of directors (Adams et al., 2005; Victoravich et al., 2011). CEO power is measured by CEO characteristics and CEO compensation packages.

In this study, CEO characteristics include CEO age and CEO tenure.[40] Both are used to proxy the quality of CEO, and are correlated with CEO ownership (Bhagat & Bolton, 2008). For example, CEOs near retirement, who are older and have served longer in their positions, generally are more experienced, but may also suffer from the problem of entrenchment than those with many years remaining. Even two CEOs with the same years of tenure but at different ages, or two CEOs of the same age but with different years of tenure, have different career concerns with different incentives (Gibbons & Murphy, 1992).

CEO compensation packages give CEOs direct incentives for their behaviour. In this study, CEO compensation is measured by:

1) CEO ownership (*CEOOwnership*): the percentage of outstanding shares owned by the CEO, computed as CEO shares held divided by common shares outstanding;
2) CEO restricted stock grants (*CEORstock*): the percentage of dollar value of restricted stock awards to CEO by all total compensation;
3) CEO exercisable options (*CEOExOp*): the total exercisable options held by the CEO divided by common shares outstanding;
4) CEO unexercisable options (*CEOunExOp*): the total unexcercisable options held by the CEO divided by common shares outstanding.

[40] I use the natural log of CEO age (*LnCEOAge*) to improve normality.

5) CEO bonus (*CEOBonus*): the CEO annual bonus divided by the CEO total compensation; and
6) CEO total compensation (*LnCEOTotComp*): the sum of total annual compensation, plus all long-term payment, including restricted stock, the value realized from stock options, and all other compensation, normalised by the natural log transformation.

CEO equity ownership is designed to mitigate the agency problem by aligning CEO wealth to firm performance through stock performance (Jensen & Meckling, 1976; Morck et al., 1988). While optimal equity compensation can yield positive incentive alignment effects, Cheng & Warfield (2005) document that equity compensation can also lead to incentives for earnings management. They find that managers with high equity incentives sell more shares after recognising income-increasing abnormal accruals.

Restricted stock that must be held for a specified period is designed to encourage managers to focus on long-term performance (Bhagat & Romano, 2009). Unlike options, restricted stock has no exercise price, and the incentive to boost current stock price is reduced. However, restricted stock grants only play a small role in stock-based compensation because of the small magnitude related to other equity compensation.[41]

I measure exercisable and unexercisable options separately, because they tend to have different effects on managerial incentives and behaviour. Exercisable options likely encourage managers to focus on short-term performance to boost current stock price. Jensen (2005) reports that greater exercisable options create incentives for the CEO to undertake risky projects to maximize stock price in the near term. On the other

[41] Cheng & Warfield (2005) provide that due to the small magnitude, restricted stock grants can hardly have an economically significant impact on earnings management. Thus, they do not separate restricted stock from ownership. Also see the descriptive statistics in Table 3 of this study, which show that the median *CEORstock* is zero in the sample of this study.

hand, unexercisable options give managers long-term incentives.[42] Cohen et al. (2008) find that unexercisable stock options contribute significantly to the incentives of executives to manipulate earnings.

Cash bonuses give managers direct incentives to manipulate earnings. Healy (1985) argues that managers have incentives to manipulate earnings in order to increase their cash bonus. Holthausen et al. (1995) find that managers use discretionary accruals to maximize their annual bonus compensation. However, they find no consistent evidence that REM decisions with regard to advertising, capital investment, or R&D are influenced by the annual bonus compensation contract. In addition, I include CEO total compensation to control for the magnitude of total compensation.[43]

4.5.2. Board Composition

I proxy for the effectiveness of board monitoring with various board composition parameters, as follows:

1) Percentage of directors who are active CEOs of other firms (*ActiveCEODir*),
2) Percentage of fully independent directors on a given board (*OutsideDir*),
3) Percentage of directors with tenure exceeding 15 years on a given board (*Over15YrsDir*),
4) Percentage of directors with more than four corporate directorships on a given board (*Over4BoardsDir*),
5) Percentage of directors over the age of 70 on a given board (*OverAge70Dir*), and
6) Percentage of directors who own zero shares of stock for a given company (*ZeroShareDir*).

[42] Generally, option plans are limited to five years, which are not really long-term, as indicated by the results of Cohen et al. (2008).
[43] I use the natural log of CEO total compensation (*LnCEOTotComp)* to improve normality.

The corporate governance literature suggests that some outside directors, who are interlocked or 'grey' are less effective monitors. An interlocked director is defined as an executive of one firm that serves as an outside director of another firm. A 'grey' director has disclosed conflicts of interest, such as special consulting contracts, a significant business relationship between the firm and the director's main employer, a family relationship between the director and a top manager, and interlocking board memberships between the director and the CEO (Yermack, 2004). Both interlocked directors and grey directors are considered to be less independent. Core et al. (1999) argue that older directors or busy directors who serve on too many boards are less effective in monitoring. Additionally, female directors[44] and directors who own zero shares are considered to be more independent than male directors and directors who receive share compensation. However, Larcker & Tayan (2011) provide that the prominent observable attributes of corporate governance in prior literature have been shown to have little bearing on governance quality.

4.5.3. Ownership Structure

The measures of ownership structure include insider ownership (*Insiders*), block ownership (*Block*), and institutional ownership (*Institution*).[45] Insider ownership is the percentage of outstanding shares held by top management and directors.[46] Block ownership is the percentage of outstanding shares held by any 5% or greater shareholders. The institutional ownership is the percentage of outstanding shares held by institutions. Generally, these shareholders have a strong influence on managerial

[44] See Adams & Ferreira (2009); Campbell & Vera (2010); Carter et al. (2010)
[45] These measures are obtained from TCL. However, it is difficult to differentiate between insiders and block holders, because many of block holders are often the top management or directors.
[46] Insider ownership includes CEO ownership, but the former includes shares held by other managers and directors.

decisions. Block owners and institutional owners are characterized as sophisticated investors, who can more effectively monitor managerial discretion.

4.5.4. Other Corporate Governance Variables

Other corporate governance variables include the magnitude of directors' base pay, audit fees, and takeover defence provisions. I use the natural log of the dollar value of director base pay (*LnDirBasePay*) to control for the magnitude of director compensation. I use the audit fee percentage (*AudiFees*) computed as audit and audit-related fees paid to an independent audit firm divided by total fees paid, as a proxy for audit quality. The takeover defence provisions provided in TCL include classified board, dual class stock, cumulative voting, poison pill, business combination provision, fair price provision, constituency provision, advance notice requirement, shareholder fill vacancies, and director removal for cause only. The aggregated measure (*Anti-Takeover*) is the sum of these takeover defence mechanisms, where one indicates the presence of the takeover defence provision and zero otherwise. .

Since corporate governance is a complex human system with multiple and interacting dimensions, isolating any single dimension is unlikely to yield a sound explanation (Goergen et al., 2010). Thus, it is desirable to look at these governance variables together, because each corporate governance measure may not work in isolation. Following Larcker et al. (2007), I conduct PCA to extract the common dimensions of corporate governance measures. The results of PCA on the above corporate governance measures are shown in section 5.4.

4.6. Economic Determinants

I control for various economic determinants in both the first and second stage regressions. The economic determinants include leverage (*LEV*), book-to-market ratio

(*BM*), free cash flows (*FCF*), natural log of market capitalization (*LnMarketCap*), return on assets (*ROA*)[47], standard deviation of ROA over prior three years (*StdROA*), operating cash flows scaled by lagged total assets (*CFO*), standard deviation of operating cash flows over prior three years (*StdCFO*), current stock returns (*RET*),[48] standard deviation of stock returns over prior three years (*StdRET*), and natural log of sales (*LnSALE*).

LEV is calculated as total debt (long term debt + current portion of long term debt) divided by total assets. Firms have incentives to exercise discretion either to avoid covenant violations or to prevent adverse effects on debt ratings. DeFond & Jiambalvo (1994) find that managers in highly leveraged firms have incentives to make income increasing discretionary accruals to avoid debt covenant violation.

I use *BM* to proxy for growth opportunities. It is computed as the total common equity divided by the market value of equity, which is equal to market price multiplied by common shares outstanding. To maintain access to capital, growth firms have relatively strong incentives to meet earnings benchmarks to avoid increases in the cost of capital. A growth firm also tends to smooth earnings, because earnings volatility increases perceived firm risk. McNichols (2000, 2002) shows large accruals in growth firms.

Frequent access to capital markets provides incentives for earnings management. A firm's *ex ante* demand for financing is measured as free cash flows (*FCF*) scaled by current assets. *FCF* is computed as operating net cash flow minus cash dividends minus capital expenditures.

[47] ROA is measured as income before extraordinary items scaled by lagged total assets.
[48] *RET* is also used as the dependent variable in the return-future earnings model.

Large firms are likely to face more political costs and have incentives to manipulate earnings downward. I use *LnMarketCap* (in the first stage) and *LnSALE* (in the second stage) to control for size.

I use *StdCFO*, *StdROA*, and *StdRET* as proxies for risk, and use *ROA*, *CFO*, and *RET* to control for current operating and stock performance in the different models (see model 14 - 16 in section 5.7).

Additionally, I use two-digit SIC dummies to account for any unobserved variation across industries (see section 5.5 - 5.7).

(All variables used in this dissertation are summarized in Table 2.)

Table 2: Variables definitions

Panel A: Earnings management variables

Categories	Variables	Description	Model
AEM	AbAcc	Abnormal accruals (scaled by lagged total assets) are the residuals from the modified Jones (1991) model, proxy for income-increasing accruals management. Higher values of AbAcc indicate higher level of accruals manipulation to inflate earnings.	Dechow et al. (2003)
	|AbAcc|	It is the absolute value of AbAcc. Higher values of |AbAcc| indicate higher level of accruals manipulation.	Dechow et al. (2003)
REM	AbRD	Abnormal R&D expenses (scaled by lagged total assets) are the residuals from normal R&D model. I multiply the residuals by negative one, such that higher values of AbXRD indicate higher level of R&D manipulation.	Roychowdhury (2006); Zang (2012); Gunny (2010)
	AbSGA	Abnormal SG&A expenses (scaled by lagged total assets) are the residuals from normal SG&A model. I multiply the residuals by negative one, such that higher values of AbSGA indicate higher level of SG&A manipulation.	Anderson et al. (2003); Zang (2012); Gunny (2010)
	AbProd	Abnormal production costs (scaled by lagged total assets) are the residuals from normal production costs model. Higher values of AbProd indicate higher level of production costs manipulation.	Roychowdhury (2005); Zang (2012)

Table 2 (Continued)

Panel B: Corporate governance variables

Categories	Variables	Description	Source
CEO variables	LnCEOAge	The natural log of the age of CEO.	TCL
	CEOTenure	Number of years of service of CEO.	TCL
	CEOOwnership	It is the percentage of outstanding shares held by the CEO, computed as CEO shares held divided by common share outstanding.	TCL
	CEORstock	It is the percentage of dollar value of restricted stock awards to CEO all total compensation.	TCL
	CEOExOp	It is computed as total exercisable options of CEO divided by common share outstanding.	TCL
	CEOUnExOp	It is computed as total unexercisable options of CEO divided by common share outstanding	TCL
	CEOBonus	It is computed as CEO annual bonus divided by CEO all total compensation.	TCL
	LnCEOTotComp	The natural log of CEO all total compensation, which is the sum of total annual compensation, plus all long-term payment, including restricted stock, the value realized from stock options, and all other compensation.	TCL
Board Composition	ActiveCEODir	Percentage of directors who are active CEOs of other firms.	TCL
	OutsideDir	Percentage of fully independent directors on a given board.	TCL
	Over15YrsDir	Percentage of directors with tenure exceeding 15 years on a given board.	TCL
	Over4BoardsDir	Percentage of directors with more than 4 corporate directorships on a given board.	TCL
	OverAge70Dir	Percentage of directors over the age of 70 on a given board.	TCL
	WomenDir	Percentage of female directors on a given board.	TCL
	ZeroShareDir	Percentage of directors who own zero shares of stock for a given company.	TCL

Table 2 (Continued)

Categories	Variables	Description	Source
Ownership Structure	Insiders	Estimated percentage of outstanding shares held by top management and directors as reported in the company's most recent proxy statement.	TCL
	Block	Estimated percentage of outstanding shares held by any 5% or greater shareholders, as reported in the company's most recent proxy statement.	TCL
	Institution	Percentage of outstanding shares held by institutions.	TCL
Other Corporate Governance variables	LnDirBasePay	The natural logarithm of the dollar amount of reported director base payment.	TCL
	AuditFees	Total audit and audit-related fees paid to the independent audit firm, as a percentage of total fees paid.	TCL
	Anti-Takeover	An aggregate measure of 10 takeover defences indicators, including TDEffectiveClassifiedBoard, TDDualClassStock, TDCumulativeVoting, TDPoisonPill, TDBusinessCombinationProvison, TDFairPriceProvision, TDConstituencyProvision, TDAdvanceNoticeRequired, TDSHFillVacancies, and TDDirectorRemovalForCauseOnly.	TCL

Table 2 (Continued)

Panel C: Economic determinants

Categories	Variables	Description	Source
Economic determinants	LEV	Leverage, computed as long-term debt (data A9) divided by total assets (data A6).	COMPUSTAT
	BM	Book-to-market ratio, a proxy for growth and investment opportunities, computed as total common equity (data A60) divided by market value of equity, which equals to close price (data A24) times common shares outstanding (data A25).	COMPUSTAT
	FCF	Free cash flows scaled by current assets (data A4), proxy for access to capital market, free cash flow is computed as operating net cash flow (data A308) minus cash dividends (data A127) minus capital expenditures (data A128).	COMPUSTAT
	LnMarketCap	The natural log of market capitalization, proxy for size, where market capitalization is computed as close price (data A24) multiplied by common shares outstanding (data A25).	COMPUSTAT
	ROA	Return on assets, proxy for profitability, it is computed as income before extraordinary items (data A237) divided by lagged total assets (data A6), then multiplied by 100.	COMPUSTAT
	StdROA	Standard deviation of ROA over prior 3 years.	COMPUSTAT
	CFO	Operating cash flows (data A308) scaled by lagged total assets (data A6).	COMPUSTAT
	StdCFO	Standard deviation of operating cash flows (data A308) over prior 3 years, proxy for operating risk.	COMPUSTAT
	RET	One year total stock return, which is the annualized rate of return reflecting price appreciation plus reinvestment of monthly dividends and the compounding effect of dividends paid on reinvested dividends.	COMPUSTAT
	StdRET	Standard deviation of stock return over prior 3 years.	COMPUSTAT
	LnSALE	The natural log of sales (data A12).	COMPUSTAT

Table 2 (Continued)

Panel D: Future performance measures

Categories	Variables	Description	Source
Future performance	FutCFO	Average operating cash flows (data A308) scaled by lagged total assets (data A6) for subsequent 3 years.	COMPUSTAT
	FutROA	Average ROA for subsequent 3 years.	COMPUSTAT
	FutRET	3 year total stock return, it is an annualized rate that converts the 36 month comprehensive total return into a value that indicates what the return was on an annual basis for the 3 year period.	COMPUSTAT

Chapter 5 Empirical Results

This chapter provides the results of empirical tests conducted to examine the hypotheses. The tests were conducted according to the research design specified in Chapter 4. The results are organized as follows. Section 5.1 provides the descriptive statistics for the variables used in this study. Section 5.2 shows the correlations among the earnings management variables, and the correlations of the earnings management variables with the corporate governance variables and the economic determinants. I conduct PCA on the earnings management variables to extract the common components in Section 5.3. I also conduct PCA to explore the underlying dimensions of corporate governance variables in Section 5.4. Section 5.5 reports the results of the first stage regressions, which are used to obtain the predicted earnings management measures attributable to corporate governance and economic determinants. Section 5.6 reports the second stage results with respect to the anticipated effects of earnings management. Section 5.7 reports the second stage results with respect to the actual consequences of earnings management. In Section 5.8, I compare the levels of predicted earnings management between MBE firms and non-MBE firms as a robustness test.

5.1. Descriptive Statistics

Panel A of Table 3 presents the descriptive statistics for both AEM and REM measures in 2006. The means for *AbAcc*, |*AbAcc*|, *AbSGA*, and *AbProd* (except for *AbRD)* are significantly different from zero,[49] as this is a combined sample. The medians for *AbAcc*, *AbRD*, *AbSGA* and *AbProd* are positive, indicating that managers in more than 50% of the firms of the sample of this study may engage in both income-increasing AEM and REM.

[49] The *p*-values are less than 0.01 in t-tests (not tabulated).

Panel B of Table 3 presents the descriptive statistics for corporate governance variables and economic determinants in 2005 (used in the first stage regressions). These variables are used as independent variables in the first stage regressions. The economic determinants have been winsorized at the top and bottom 2% to avoid the influence of outliers. In this sample of 553 US firms, the median CEO tenure is 5 years. The median CEO holds more options (both *CEOExOp* and *CEOUnExOp*) than shares in their equity compensation. The median annual cash bonus comprises 18.1% of the CEO total compensation. In the median firm, the outside directors comprise 72.7% of the board composition, which is consistent with Linck et al. (2009) who suggest, that after SOX, firms are likely to have more outside directors to meet independence requirements. The median board is dominated by male directors, with only 10% female directors. This sample is characterized by high institutional share ownership, with a median of 76.8% of the common shares outstanding held by institutions. The median audit fees paid to audit firms is 84.7% of total fees. The median firm has a market capitalization of $1,661.76 million (not tabulated).

Panel C of Table 3 presents the descriptive statistics for economic determinants (2006) and future firm performance measures (2007 to 2009) used in the second stage regressions. These variables have been winsorized at the top and bottom 2% to avoid the influence of outliers. The medians of *ROA*, *CFO* and *RET* are all positive in 2006. For the future performance measures, the median firm has positive *FutCFO* and *FutROA*, but a negative *FutRET*. This is mainly due to the 2008 financial crisis.[50]

[50] The financial crisis at the macroeconomic level does not affect results in cross-sectional firm-level regressions.

Table 3: Descriptive statistics (n=553)

Panel A: Earnings management variables (for year 2006)

Variable	Mean	Std Dev	Minimum	Q1	Median	Q3	Maximum
AbAcc	0.105	0.115	-0.526	0.049	0.103	0.168	0.624
|AbAcc|	0.127	0.090	0.001	0.061	0.109	0.174	0.624
AbXRD	0.018	0.354	-2.183	-0.090	0.034	0.164	2.148
AbXSGA	0.228	0.536	-2.371	-0.109	0.205	0.565	2.285
AbProd	-0.101	0.577	-3.315	-0.307	0.053	0.260	0.893

Panel B: Governance and economic determinants (for year 2005)

Variable	Mean	Std Dev	Minimum	Q1	Median	Q3	Maximum
CEO variables							
LnCEOAge	3.984	0.129	3.526	3.892	3.989	4.078	4.500
CEOTenure	6.766	7.085	0.000	2.000	5.000	9.000	54.000
CEOOwnership	2.013	6.512	0.000	0.061	0.196	0.934	68.121
CEORstock	9.663	18.523	0.000	0.000	0.000	12.056	98.307
CEOExOp	1.045	1.415	0.000	0.287	0.725	1.381	22.795
CEOUnExOp	0.473	0.526	0.000	0.137	0.331	0.651	6.064
CEOBonus	22.460	19.721	0.000	4.983	18.140	36.723	98.341
LnCEOTotComp	14.721	1.496	0.000	13.864	14.679	15.612	19.256
Board composition							
ActiveCEODir	28.571	13.101	0.000	16.667	27.273	37.500	75.000
OutsideDir	71.133	14.897	18.182	62.500	72.727	83.333	100.000
Over15YrsDir	13.668	16.777	0.000	0.000	10.000	22.222	83.333
Over4BoardsDir	13.619	14.534	0.000	0.000	11.111	21.429	77.778
OverAge70Dir	7.813	12.094	0.000	0.000	0.000	12.500	66.667
WomenDir	9.319	9.148	0.000	0.000	10.000	14.286	50.000
ZeroShareDir	19.913	22.388	0.000	0.000	12.500	33.333	100.000
Ownership structure							
Insiders	10.491	15.373	0.000	2.500	5.070	11.000	92.800
Block	20.592	15.122	0.000	9.300	19.300	29.100	97.970
Institution	67.418	27.888	0.000	58.900	76.800	87.200	99.800
Others							
LnDirBasePay	10.233	0.588	7.824	9.903	10.309	10.597	12.206
AuditFees	81.547	14.288	0.000	73.080	84.728	92.619	100.000
Anti-Takeover	3.738	1.526	0.000	3.000	4.000	5.000	8.000
Economic determinants (after winsorized at extreme 2%)							
LEV	0.147	0.150	0.000	0.000	0.120	0.253	0.566
BM	0.395	0.245	-0.059	0.218	0.356	0.526	1.059
FCF	0.103	0.155	-0.370	0.021	0.110	0.191	0.467
LnMarketCap	21.424	1.525	18.581	20.308	21.231	22.336	24.993
StdCFO	0.041	0.034	0.004	0.018	0.031	0.053	0.157
ROA	4.556	9.724	-30.238	2.156	5.582	9.722	21.719

Table 3 (Continued)

Panel C: Economics determinants and performance measures (after winsorized at extreme 2%)							
Variable	**Mean**	**Std Dev**	**Minimum**	**Q1**	**Median**	**Q3**	**Maximum**
Economic determinants (for year 2006)							
ROA	4.499	9.629	-33.974	2.086	5.705	9.510	21.231
STDROA	4.149	4.927	0.292	1.088	2.307	5.156	24.008
CFO	0.113	0.089	-0.102	0.064	0.108	0.163	0.334
STDCFO	0.039	0.034	0.004	0.015	0.028	0.051	0.152
RET	16.110	30.377	-37.691	-3.084	12.773	30.465	114.606
STDRET	29.586	20.989	3.628	14.593	24.475	37.448	97.292
LnSALE	7.193	1.584	4.006	6.052	7.100	8.159	10.783
Future performance (for year 2007 to 2009)							
FutCFO	1.329	12.430	-46.839	-0.788	4.258	8.269	19.867
FutROA	0.108	0.076	-0.083	0.064	0.105	0.148	0.301
FutRET	-5.745	15.313	-47.043	-13.856	-3.884	4.125	26.491

Note: All variables are defined in Table 2.

5.2. Correlations

Panel A of Table 4 shows the Spearman correlations among various earnings management measures. Consistent with Zang (2012), the correlations among *AbAcc*, *AbRD*, *AbSGA*, and *AbProd* are all positive and significant (p-value <0.01), suggesting that firms with high levels of AEM also tend to have high levels of REM.

Panel B of Table 4 shows the Spearman correlations of each earnings management variable with the corporate governance variables and the economic determinants.

Table 4: Correlations (n=553)

Panel A: Spearman correlations among earnings management variables

	AbAcc		|AbAcc|		AbRD		AbSGA		AbProd	
AbAcc	1.000									
|AbAcc|	0.860	***	1.000							
AbRD	0.146	***	0.136	***	1.000					
AbSGA	0.127	***	0.121	***	0.266	***	1.000			
AbProd	0.123	***	0.093	**	0.246	***	0.330	***	1.000	

Panel B: Spearman correlations of earnings management variables with governance variables and economic determinants

	AbAcc		|AbAcc|		AbRD		AbSGA		AbProd	
Governance variables										
LnCEOAge	0.041		0.013		0.065		0.070	*	0.092	**
CEOTenure	0.001		-0.040		-0.079	*	-0.059		-0.128	***
CEOOwnership	-0.081	*	-0.047		0.010		-0.073	*	0.015	
CEORstock	0.047		0.025		0.156	***	0.072	*	0.055	
CEOExOp	-0.068		-0.048		-0.059		-0.128	***	-0.064	
CEOUnExOp	-0.082	*	-0.103	**	-0.128	***	-0.082	*	-0.056	
CEOBonus	0.061		0.050		0.063		0.045		0.096	**
LnCEOTotComp	0.018		-0.007		0.008		0.019		-0.149	***
ActiveCEODir	0.007		-0.050		0.014		-0.008		-0.008	
OutsideDir	0.011		-0.065		0.105	**	0.032		0.046	
Over15YrsDir	0.125	***	0.080	*	0.005		-0.075	*	-0.068	
Over4BoardsDir	0.041		0.038		0.050		-0.033		-0.037	
OverAge70Dir	0.063		0.059		0.024		0.009		0.004	
WomenDir	0.025		0.007		0.062		-0.056		-0.119	***
ZeroShareDir	-0.096	**	-0.038		-0.177	***	-0.080	*	-0.165	***
Insiders	-0.072	*	-0.038		-0.082	*	-0.162	***	0.025	
Block	-0.018		-0.011		-0.009		0.015		0.026	
Institution	-0.048		-0.066		-0.028		0.068		-0.035	
LnDirBasePay	0.068		0.049		0.098	**	0.115	**	0.077	*
AuditFees	0.008		-0.022		0.061		-0.004		0.003	
Anti-Takeover	0.036		-0.024		0.118	***	-0.012		0.178	***
Economic determinants										
LEV	0.068		0.049		0.163	***	0.214	***	0.142	***
BM	-0.066		-0.051		0.209	***	0.324	***	0.276	***
FCF	-0.031		-0.053		-0.201	***	-0.117	***	-0.270	***
LnMarketCap	0.072	*	0.057		-0.056		0.077	*	-0.171	***
StdCFO	-0.060		-0.012		-0.142	***	-0.108	**	-0.100	**
ROA	0.044		0.022		-0.292	***	-0.205	***	-0.225	***

Note: ***, **, * represent significance at 1%, 5%, and 10% respectively. All variables are defined in Table 2.

5.3. PCA on Earnings Management

As the earnings management measures are positively and significantly correlated (shown in Panel A of Table 4), I use PCA to extract their common components. The standardized principal components scores are used due to the different scales between the AEM and REM measures.[51]

Table 5 shows the PCA of the four income-increasing earnings management variables, namely, *AbAcc*, *AbRD*, *AbSGA*, and *AbProd*. I use the first two principal components (*EM1* and *EM2*) with eigenvalues greater than unity to represent the overall level of earnings management.

The first principal component (*EM1*) has an eigenvalue of 1.507, which explains 37.7% of the total variation. It represents an overall level of earnings management with roughly equal weights among the original four variables. All loadings are positive and greater than 0.4. A high value of *EM1* stands for high levels of *AbAcc*, *AbRD*, *AbSGA*, and *AbProd*.

The second principal component (*EM2*) explains a further 25.3% of the variation. In total, the first two components (*EM1* and *EM2*) together explain 63% of the total variation. *EM2* mainly represents a high level of *AbAcc* with a positive loading of 0.712, and a low level of *AbProd* with a negative loading of -0.579. The last two components (*EM3* and *EM4*) with eigenvalues lower than one are excluded from the analysis.

[51] Note that I use log transformations in all REM models (see section 4.4).

Table 5: PCA on earnings management variables

Panel A: Eigenvalues of the Correlation Matrix

	Eigenvalue	Difference	Proportion	Cumulative
EM1	1.507	0.495	0.377	0.377
EM2	1.012	0.243	0.253	0.630
EM3	0.768	0.055	0.192	0.822
EM4	0.714		0.178	1.000

Panel B: Eigenvectors

	EM1	EM2	EM3	EM4
AbAcc	0.407	0.712	0.265	0.507
AbRD	0.556	0.265	-0.607	-0.502
AbSGA	0.544	-0.294	0.687	-0.382
AbProd	0.478	-0.579	-0.301	0.587

Note: EM1, EM2, EM3, and EM4 are the principal components of earnings management variables.

5.4. PCA on Corporate Governance

Following Larcker et al. (2007), I conduct PCA to explore the underlying dimensions of corporate governance (shown in Table 6). Goergen et al. (2010) argue that corporate governance is a complex social system with multiple dimensions that interact with and influence each other, thus it advocates a holistic approach that looks at all related factors together. Isolating a single governance factor is unlikely to yield a sound explanation. To better understand the effects of corporate governance as a whole, I obtain eight principal components (*CG1* to *CG8*) with eigenvalues greater than one from the twenty-one original corporate governance variables.

The eight principal components together explain 58.9% of total variations in the original data. In the following discussion, I interpret the principal components of the corporate governance variables that have an absolute loading greater than 0.3.

The first principal component (*CG1*) with an eigenvalue of 3.085 expresses 14.7% of the total variation. It is mainly positive for *OutsideDir*, *WomenDir*, and *LnDirBasePay*, and negative for *CEOTenure* and *Insiders*. *CG1* represents firms that have a less entrenched CEO with less insider ownership, and more outside directors who may demand higher levels of compensation. Based on these characteristics, I assign the name "*OutsideDir*" to *CG1*.[52]

The second principal component (*CG2*) has an eigenvalue of 1.870, and expresses a further 8.9% of the variation. It is positive for *LnCEOAge* and *Over15YrsDir*, while negative for *CEOUnExOp* and *ZeroShareDir*. It represents the

[52] . The assigned name is an attempt to give a meaningful name for each principal component and may not either indicate the highest loading or be unique as interpreted by others.

firms that have an old CEO with less unexercisable options, more over_15_years directors, and less zero shares directors. *CG2* is named "*OldCEO*".

The third principal component (*CG3*) explains 7.1% of the variation with an eigenvalue of 1.495. It is positive for *LnCEOAge, CEOTenure,* and *Anti-Takeover*. It is common for firms with older CEOs and long tenure to have a strong anti-takeover defence system. As I have already used "*Old CEO*" for *CG2*, and *Anti-Takeover* has the highest loading of 0.395, I assign "*Anti-Takeover*" to *CG3*.

The fourth principal component (*CG4*) explains 6.7% of the variation with an eigenvalue of 1.402. It is positive for *LnCEOTotComp* and *Block,* and negative for *CEOOwnership, CEOBonus,* and *ActiveCEODir*. It represents block ownership firms with low levels of CEO stock compensation and bonus, and less active CEO directors on the board. I name *CG4* "*Block*".

The fifth principal component (*CG5*) explains 6.1% of the variation with an eigenvalue of 1.288. It is positive for *AuditFees* and *CEOOwnership*, negative for *Over15YrsDir* and *Institution*. As *AuditFees* has the highest loading of 0.498, I name *CG5* "*AuditFees*".

The sixth principal component (*CG6*) explains 5.5% of the variation with an eigenvalue of 1.159. It is positive for *CEORstock*, and negative for *CEOBonus*, *OverAge70Dir,* and *AuditFees*. As *CEORstock* has the highest loading of 0.446, I name *CG6* "*CEORStock*".

The seventh principal component (*CG7*) explains 5.1% of the variation with an eigenvalue of 1.061. It is positive for *Institution* and *ActiveCEODir*, and negative for *Anti-Takeover*. As *Instituion* has the highest loading of 0.499, I name *CG7* "*Institution*".

The eighth principal component (*CG8*) explains 4.8% of the variation with an eigenvalue of 1.008. It is positive for *CEOUnExOp*, *CEOBonus*, *Over4BoardDir*, and *CEOExOp*. As *CEOUnExOp* has the highest loading of 0.486, and both *CEOExOp* and *CEOUnExOp* have positive loadings, I name *CG8* "*Options*".

Table 6: PCA on corporate governance variables

Panel A: Eigenvalues of the Correlation Matrix

	Eigenvalue	Difference	Proportion	Cumulative
CG1	3.085	1.215	0.147	0.147
CG2	1.870	0.375	0.089	0.236
CG3	1.495	0.093	0.071	0.307
CG4	1.402	0.114	0.067	0.374
CG5	1.288	0.129	0.061	0.435
CG6	1.159	0.098	0.055	0.490
CG7	1.061	0.053	0.051	0.541
CG8	1.008	0.077	0.048	0.589
CG9	0.931	0.050	0.044	0.633
CG10	0.881	0.051	0.042	0.675
CG11	0.831	0.070	0.040	0.715
CG12	0.760	0.052	0.036	0.751
CG13	0.708	0.015	0.034	0.785
CG14	0.693	0.010	0.033	0.818
CG15	0.683	0.056	0.033	0.850
CG16	0.627	0.017	0.030	0.880
CG17	0.609	0.018	0.029	0.909
CG18	0.591	0.053	0.028	0.937
CG19	0.538	0.120	0.026	0.963
CG20	0.418	0.057	0.020	0.983
CG21	0.361		0.017	1.000

Note: CG1- CG20 are the principal components of corporate governance variables.

Table 6 (Continued)

Panel B: Eigenvectors

	CG1	CG2	CG3	CG4	CG5	CG6	CG7	CG8
LnCEOAge	-0.088	**0.352**	**0.320**	0.094	0.205	-0.147	0.205	0.187
CEOTenure	**-0.316**	0.254	**0.350**	0.080	0.072	0.036	0.170	0.113
CEOOwnership	-0.292	0.154	-0.097	**-0.361**	**0.307**	0.063	-0.104	0.118
CEORstock	0.152	0.128	-0.174	0.297	0.115	**0.446**	0.005	-0.006
CEOExOp	-0.149	-0.213	0.280	0.234	0.134	0.191	-0.209	**0.311**
CEOUnExOp	-0.080	**-0.391**	0.062	0.091	-0.108	0.127	0.075	**0.486**
CEOBonus	0.121	-0.028	-0.062	**-0.395**	-0.180	**-0.398**	-0.069	**0.437**
LnCEOTotComp	0.229	0.263	0.030	**0.345**	0.001	0.191	0.007	0.255
ActiveCEODir	0.094	-0.048	0.299	**-0.332**	0.270	0.253	**0.349**	-0.203
OutsideDir	**0.327**	-0.033	0.203	-0.051	0.197	-0.043	-0.099	-0.049
Over15YrsDir	-0.295	**0.317**	0.101	0.115	**-0.362**	0.066	-0.102	-0.062
Over4BoardDir	0.225	0.092	-0.215	0.070	0.214	-0.160	0.215	**0.374**
OverAge70Dir	-0.199	0.296	-0.195	0.237	-0.162	**-0.344**	-0.044	-0.075
WomenDir	**0.305**	0.175	-0.088	-0.050	-0.007	0.144	-0.282	0.198
ZeroShareDir	-0.179	**-0.315**	-0.237	0.107	-0.151	0.118	0.278	-0.018
Insiders	**-0.319**	0.163	-0.255	-0.171	0.233	0.180	-0.122	0.270
Block	-0.013	-0.290	0.219	**0.354**	0.135	-0.299	-0.243	-0.004
Institution	0.149	0.079	0.247	-0.013	**-0.315**	-0.092	**0.499**	0.152
LnDirBasePay	**0.355**	0.218	-0.165	0.046	-0.039	0.034	0.044	-0.045
AuditFees	0.007	-0.010	-0.051	0.204	**0.498**	**-0.381**	0.056	-0.132
Anti-Takeover	0.143	0.097	**0.395**	-0.169	-0.159	0.032	**-0.434**	-0.032

Note: CG1, CG2 … CG8 are the principal components of corporate governance variables. I name CG1 as OutsideDir, CG2 as OldCEO, CG3 as Anti-Takeover, CG4 as Block, CG5 as AuditFees, CG6 as CEORstock, CG7 as Institution, and CG8 as Options. All variables are defined in Table 2.

5.5. Stage One Estimation

Table 7 reports the first-stage regressions, which are used to estimate earnings management from the corporate governance variables and economic determinants, with controls for industry effects.

$$Earnings\ Management_t = \alpha + \sum\beta\ Governance\ variables_{t-1} + \sum\gamma\ Economic\ determinants_{t-1} + \sum\lambda\ Industry\ dummies_{t-1} + \varepsilon_t \quad (11)$$

The governance variables and the economic determinants are defined in Table 2. Industry dummies are based on two-digit SIC codes. As mentioned in section 4.2.1, all independent variables are measured one year prior to the earnings management variables to avoid potential endogeneity or simultaneity bias.

In Panel A of Table 7,[53] I estimate each of the earnings management measures, *AbAcc*, |*AbAcc*|, *AbRD*, *AbSGA*, and *AbProd* respectively in columns 1 through 5, as well as their principal components, *EM1* and *EM2* in columns 6 and 7, on the basis of the original 21 corporate governance variables. The adjusted R^2 for these earnings management measures are as follows: *AbAcc* (32.43%), |*AbAcc*| (41.43%), *AbRD* (16.71%), *AbSGA* (24.08%), *AbProd* (29.81%), *EM1* (32.41%), and *EM2* (26.92%). These estimation models have significant explanatory power in explaining the variations of the earnings management measures.

With regard to the overall level of earnings management represented by *EM1* (in column 6), ten of the twenty-one governance variables are significantly associated with *EM1* at conventional significance levels. The standardized coefficient of *LnCEOAge* is positive (0.105, with p-value<0.05), suggesting that older CEOs are more likely to

[53] In this panel, the standardized coefficients are reported due to the different magnitudes of the corporate governance variables.

engage in income-increasing earnings management. The negative coefficients of *CEOOwnership* (-0.098, p-value<0.05), *CEOExOp* (-0.089, p-value<0.05), and *CEOUnExOp* (-0.127, p-value<0.01) suggest that equity compensation provides incentives to reduce managers' short-run income-increasing activities. Recall that these are the measures in a prior year. The exercisable options might have already been exercised in the prior year. Because the portion of exercisable options is always positively correlated with the unexercisable options, both *CEOUnExOp* and *CEOExOp* represent the total options held by the CEO. The coefficient of *CEOBonus* is positive and highly significant (0.142, p-value<0.01). It is consistent with the bonus plan hypothesis of the prior literature, which suggests that earnings-based bonus plans induce earnings management.

Looking at the board composition variables, the positive coefficient of *OutsideDir* (0.105, p-value<0.05) on *EM1* is mainly due to its positive coefficient on *AbRD* (0.122, p-value<0.05) in column 3, suggesting that outside directors are less effective monitors for R&D manipulation. The negative coefficients of *Over4BoardsDir* (-0.109, p-value<0.05) and *ZeroShareDir* (-0.134, p-value<0.01), indicate such directors are effective monitors. Although the general intuition is that busy directors are less effective, the sign of Over4BoardsDir shows that they are more effective in monitoring SG&A and production costs manipulations (see the negative and significant coefficients in columns 4 and 5). The positive coefficient of *Block* (0.090, p-value<0.05) is consistent with the argument that block owners are characterized as sophisticated investors, who are more effective monitors. The positive coefficient of *LnDirBasePay* (0.209, p-value<0.01) can be explained by the argument that highly paid directors are less effective because they are more likely to collude with CEOs, who may have the power to affect director compensation.

The coefficients on the economic determinants suggest that higher leverage (*LEV*) and less growth (*BM*) firms (0.135 and 0.264, p-values<0.01, in column 6) encourage SG&A manipulation (also see column 4). The negative coefficient of *StdCFO* is opposite to the general expectation that riskier firms (*StdCFO*) should have lower earnings management.

Panel B of Table 7 reports the regressions of earnings management on the eight principal components (*CG1* to *CG8*). The results are consistent with the regressions in Panel A, but in a more interpretable manner. For the *EM1* model (column 6), the coefficients of *CG1* (*OutsideDir*) and *CG2* (*OldCEO*) are positive and highly significant (0.219 and 0.188 respectively), while *CG6* (*CEORstock*) and *CG8* (*Options*) are negative and significant (-0.105, -0.095 respectively), consistent with the notion that entrenched CEOs are more likely to engage in earning management, and equity compensation reduces the incentive for managers to maximise short-term earnings. However, the result is contrary to the intended effect of the corporate governance reforms requiring more independent directors. Perhaps independent directors are less effective monitors because they lack inside knowledge about the firm. Another explanation is that firms with higher levels of earnings management are more likely to hire independent directors to meet the SOX requirements.

The predicted values of these earnings management measures are obtained from the regressions in model 11. The predicted earnings management measures are denoted as *P_AbAcc*, |*P_AbAcc*|, *P_AbRD*, *P_AbSGA*, *P_Prod*, *P_EM1*, and *P_EM2*. Slightly differing from Bowen et al. (2008) who use the predicted excess measures attributed to governance variables only, the prediction in this study is based on the full model

including all independent variables.[54] I argue that not only the corporate governance variables, but also the economic determinants and industry effects provide important incentives for earnings management. Otherwise, the prediction is incomplete and not meaningful, especially when the corporate governance variables explain a small proportion of the variation in managerial discretion. For example, it is not sensible to separate the incentives created by CEO compensation (a corporate governance variable) from the incentives related to firm debt levels (an economic determinant). In this study, the predicted earnings management measures are attributed to governance structures, economic determinants, and industry effects. These predicted earnings management measures are used as the proxies for the perceived earnings quality.

[54] The prediction is based on twenty-one corporate governance variables, six economic determinants, and industry dummies.

Table 7: First-stage regressions

Panel A: Regressions of earnings management on original 21 corporate governance variables and economic determinants

	AbAcc		|AbAcc|		AbRD		AbSGA		AbProd		EM1		EM2	
	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
Intercept	0.000		0.000	**	0.000		0.000	***	0.000	**	0.000	**	0.000	**
Governance variables														
LnCEOAge	0.053		0.034		0.016		0.070		0.133	***	0.105	**	-0.049	
CEOTenure	0.045		-0.086	*	0.036		-0.043		-0.059		-0.008		0.087	
CEOOwnership	-0.211	***	0.069		-0.090	*	0.005		0.038		-0.098	**	-0.201	***
CEORstock	0.040		-0.008		0.076		0.005		0.084	*	0.083	*	0.003	
CEOExOp	0.005		0.040		-0.113	**	-0.056		-0.035		-0.089	**	0.008	
CEOUnExOp	-0.084	*	-0.162	***	-0.078		-0.061		-0.105	**	-0.127	***	-0.009	
CEOBonus	0.106	**	0.075	**	0.105	**	0.035		0.116	***	0.142	***	0.033	
LnCEOTotComp	-0.039		0.031		-0.008		-0.039		-0.076		-0.059		0.021	
ActiveCEODir	0.049		-0.031		0.097	**	-0.032		-0.045		0.029		0.096	**
OutsideDir	0.090		-0.062		0.122	**	0.016		0.019		0.105	**	0.083	*
Over15YrsDir	0.135	***	-0.011		0.076		-0.037		-0.119	**	0.024		0.194	***
Over4BoardsDir	-0.002		0.005		-0.037		-0.110	**	-0.120	***	-0.109	**	0.085	*
OverAge70Dir	-0.001		0.008		-0.016		0.012		-0.027		-0.015		0.007	
WomenDir	0.038		0.011		0.057		-0.115	**	-0.071		-0.036		0.114	***
ZeroShareDir	-0.099	**	-0.069	*	-0.100	**	-0.059		-0.076	*	-0.134	***	-0.041	
Insiders	0.029		0.014		0.128	**	-0.036		0.094	*	0.094	*	0.014	
Block	0.044		0.025		0.130	***	0.039		-0.001		0.090	**	0.057	
Institution	0.048		-0.006		-0.056		-0.001		0.005		-0.007		0.018	
LnDirBasePay	0.147	***	0.064		0.118	**	0.037		0.245	***	0.209	***	-0.003	
AuditFees	0.049		-0.005		0.058		-0.005		-0.010		0.038		0.058	
Anti-Takeover	0.034		-0.020		0.056		-0.065		0.145	***	0.065		-0.021	

Table 7: Panel A (Continued)

	AbAcc (1)		|AbAcc| (2)		AbRD (3)		AbSGA (4)		AbProd (5)		EM1 (6)		EM2 (7)	
Economic determinants														
LEV	-0.015		-0.007		-0.019		0.325	***	0.027		0.135	***	-0.123	**
BM	-0.013		0.036		0.094	*	0.443	***	0.087	*	0.264	***	-0.157	***
FCF	-0.050		-0.126	**	0.066		-0.059		-0.213	***	-0.091		0.113	*
LnMarketCap	-0.219	***	-0.079		-0.090		0.240	***	-0.194	***	-0.085		-0.148	**
StdCFO	-0.099	**	0.013		-0.095	**	0.011		-0.106	**	-0.110	**	-0.045	
ROA	0.116	*	0.088		-0.273	***	-0.001		0.095		-0.052		-0.039	
Industry dummies	Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Adj. R-square	32.43%		41.43%		16.71%		24.08%		29.81%		32.41%		26.92%	
F-value	6.15		8.59		3.16		4.41		5.57		6.15		4.95	
p-value	<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001	
Number of Obs.	452		452		453		453		453		452		452	

Note: The standardized coefficients are reported in this Panel. ***, **, * represent significance at 1%, 5%, and 10% respectively. EM1 and EM2 are defined in table 5. Other variables are defined in Table 2.

Table 7 (Continued)

Panel B: Regressions of earnings management on 8 principal components of corporate governance variables and economic determinants

	AbAcc		|AbAcc|		AbRD		AbSGA		AbProd		EM1		EM2	
	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
Intercept	0.849	***	0.524	***	0.986	*	-2.711	***	1.790	**	2.251	*	5.003	***
CG1 (OutsideDir)	0.028	***	0.004		0.066	***	-0.013		0.096	***	0.219	***	0.135	**
CG2 (OldCEO)	0.021	***	0.011	**	0.054	***	0.000		0.085	***	0.188	***	0.083	
CG3 (AntiTakeover)	0.015	***	-0.006		0.021		0.005		0.004		0.078	*	0.104	**
CG4 (Block)	0.005		-0.004		-0.016		-0.007		-0.077	***	-0.064		0.102	**
CG5 (AuditFees)	-0.007		0.004		0.027	*	0.001		0.021		0.030		-0.047	
CG6 (CEORstock)	-0.010	**	-0.006	*	-0.019		-0.048	**	-0.021		-0.105	**	-0.031	
CG7 (Institution)	-0.002		-0.007	*	-0.037	**	0.011		-0.049	**	-0.079	*	0.004	
CG8 (Options)	-0.004		0.000		-0.022		-0.054	**	-0.024		-0.095	**	0.014	
LEV	0.007		-0.005		0.025		1.226	***	0.319	*	1.268	***	-0.925	***
BM	-0.003		0.026		0.141	*	0.991	***	0.312	***	1.205	***	-0.764	***
FCF	-0.041		-0.079	**	0.142		-0.266		-0.751	***	-0.670	*	0.748	*
LnMarketCap	-0.018	***	-0.002		-0.018		0.091	***	-0.069	***	-0.046		-0.104	**
StdCFO	-0.372	**	0.039		-1.077	*	0.048		-1.769	**	-3.515	**	-1.377	
ROA	0.001	*	0.001	*	-0.010	***	0.001		0.006		-0.005		-0.006	
Industry dummies	Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Adj. R-square	29.47%		40.86%		14.22%		23.62%		21.99%		27.02%		22.83%	
F-value	7.5		11.74		3.58		5.82		5.39		6.76		5.6	
p-value	<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001	
Number of Obs.	452		452		453		453		453		452		452	

Note: The estimated coefficients are reported in this Panel. ***, **, * represent significance at 1%, 5%, and 10% respectively. EM1 and EM2 are defined in Table 2. CG1- CG8 are defined in Table 6. Other variables are defined in Table 2.

Table 8 reports the Spearman correlations among the predicted earnings management measures. *P_AbAcc* is positively correlated with *P_AbRD* and *P_AbSGA* at a highly significant level (p-value<0.01), but not significantly correlated with *P_AbProd*. The correlations among the predicted REM measures, *P_AbRD*, *P_AbSGA*, and *P_AbProd* are all positive at a highly significant level (p-value<0.01).

Table 8: Spearman correlations among predicted earnings management variables (n=453)

	P_AbAcc		|P_AbAcc|		P_AbRD		P_AbSGA		P_AbProd
P_AbAcc	1.000								
|P_AbAcc|	0.712	***	1.000						
P_AbRD	0.221	***	0.023		1.000				
P_AbSGA	0.154	***	0.207	***	0.431	***	1.000		
P_AbProd	0.003		-0.020		0.552	***	0.325	***	1.000

Note: ***, **, * represent significance at 1%, 5%, and 10% respectively. P_AbAcc, |P_AbAcc|, P_AbRD, P_AbSGA, and P_AbProd are the predicted values from regressions in stage one.

5.6. Stage Two: Anticipated Effects of Earnings Management

Table 9 shows the results for examining the relation between current stock returns and predicted earnings management attributable to corporate governance and economic determinants. According to the argument that current returns reflect the market expectation about future performance, I introduce the earnings management measures predicted from the first stage regressions into the return-future earnings model in Panel A in the following manner:

$$RET_t = \beta_0 + \beta_1 \, Predicted\ earnings\ management_t + \beta_2 ROA_t + \beta_3 FutROA_t + \beta_4 FutRET_t + \sum \lambda \, Industry\ dummies_t + \varepsilon_t \quad (12)$$

ROA is the proxy for current earnings. *FutROA* is the proxy for expected future earnings. *FutRET* is the proxy for the unexpected shock in the future market return. Column 1 reports the original return-future earnings model without the earnings management measures (see section 4.2.2). Consistent with prior studies (e.g., Collins et al., 1994; Lundholm & Myers, 2002; Luo et al., 2006), the coefficients of *ROA* and *FutROA* are positive and significant, and the coefficient of *FutRET* is negative but marginally significant. When I introduce the predicted managerial discretion measures into the model, the coefficients of the future performance measures, *FutROA* and *FutRET*, do not remain significant, while the coefficient of *ROA* remains significant. More importantly, all predicted earnings management measures (both AEM and REM) are positive and significant (in column 2 to 7), suggesting that investors are influenced by managerial discretion in forming their judgement to anticipate future firm performance. The results also indicate that the information about future firm performance has been captured in these earnings management measures.

In Panel B, I replace *ROA* with *CFO* and replace *FutROA* with *FutCFO* (as in equation 13). This is because cash flow measures are more objective and less influenced by managerial manipulation. The results in Panel B are consistent with and reinforce the results in Panel A.

$$RET_t = \beta_0 + \beta_1\ Predicted\ earnings\ management_t + \beta_2 CFO_t + \beta_3 FutCFO_t + \beta_4 FutRET_t + \sum\lambda\ Industry\ dummies_t + \varepsilon_t \quad (13)$$

Nevertheless, as explained in chapter 3, the positive associations between REM measures and current returns could have two different explanations: REM improves the ability of earnings to predict future performance, or REM is opportunistic and mispriced based on investor fixation hypothesis. Likewise, it is necessary to confirm the anticipated effects with actual consequences of earnings management. This confirmation is conducted in the next section.

Table 9: Second-stage regressions of current stock returns

Panel A: Using ROA and FutROA as control variables

Variables	Pred.	(1)		P_AbAcc (2)		|P_AbAcc| (3)		P_AbRD (4)		P_AbSGA (5)		P_AbProd (6)		P_EM1,2 (7)	
Intercept		5.170		-36.043		-65.317		-10.505		9.622		-6.463		-0.023	
P_AbAcc	+/-			88.841	**										
|P_AbAcc|	+/-					145.140	**								
P_AbRD	+/-							24.720	***						
P_AbSGA	+/-									21.198	***				
P_AbProd	+/-											21.821	***		
P_EM1	+/-													10.133	***
P_EM2	+/-													-6.624	
ROA	+	0.377	**	0.517	***	0.595	***	0.660	***	0.690	***	0.652	***	0.714	***
FutROA	+	0.351	**	0.123		0.126		0.196		0.207		0.210		0.247	
FutRET	-	-0.204	*	-0.015		-0.010		-0.018		-0.023		-0.014		-0.017	
Industry dummies		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Adj. R-square		6.38%		8.13%		8.01%		8.42%		10.31%		10.77%		11.41%	
F-value		2.85		2.87		2.84		2.95		3.43		3.55		3.59	
p-value		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001	
Number of Obs.		489		403		403		403		403		403		403	

Note: ***, **, * represent significance at 1%, 5%, and 10% respectively. P_AbAcc, |P_AbAcc|, P_AbRD, P_AbSGA, P_AbProd, P_EM1, and P_EM2 are the predicted values from regressions in stage one. Other variables are defined in Table 2.

Table 9 (Continued)

Panel B: Using CFO and FutCFO as control variables

Variables	Pred.		P_AbAcc		|P_AbAcc|		P_AbRD		P_AbSGA		P_AbProd		P_EM1,2	
		(1)	(2)		(3)		(4)		(5)		(6)		(7)	
Intercept		5.966	-46.262		-67.672		-7.073		17.397		-1.993		-12.644	
P_AbAcc	+/-		123.335	***										
|P_AbAcc|	+/-				166.491	***								
P_AbRD	+/-						28.427	***						
P_AbSGA	+/-								20.776	***				
P_AbProd	+/-										24.231	***		
P_EM1	+/-												13.020	***
P_EM2	+/-												-1.959	
CFO	+	29.309	48.083	**	49.362	**	58.005	**	59.955	**	60.255	**	68.187	***
FutCFO	+	22.988	-10.530		-13.139		8.106		-0.288		8.877		17.685	
FutRET	-	-0.104	0.065		0.085		0.063		0.075		0.068		0.060	
Industry dummies		Yes	Yes		Yes		Yes		Yes		Yes		Yes	
Adj. R-square		3.59%	6.27%		5.05%		5.14%		6.52%		7.76%		8.48%	
F-value		2.01	2.42		2.13		2.15		2.48		2.78		2.86	
p-value		0.0083	0.0009		0.0041		0.0037		0.0006		0.0001		<0.0001	
Number of Obs.		489	403		403		403		403		403		403	

Note: ***, **, * represent significance at 1%, 5%, and 10% respectively. P_AbAcc, |P_AbAcc|, P_AbRD, P_AbSGA, P_AbProd, P_EM1, and P_EM2 are the predicted values from regressions in stage one. Other variables are defined in Table 2.

5.7. Stage Two: Actual Consequences for Future Performance

Given the results in the previous section, I next examine the actual consequences of the predicted earnings management attributable to governance variables and economic determinants on future firm performance using the following models:

$$FutROA_t = \beta_0 + \beta_1\ Predicted\ earnings\ management_t + \beta_2 StdROA_t + \beta_3 ROA_t + \beta_4 LnSALE_t + \sum\lambda\ Industry\ dummies_t + \varepsilon_t \quad (14)$$

$$FutCFO_t = \beta_0 + \beta_1\ Predicted\ earnings\ management_t + \beta_2 StdCFO_t + \beta_3 CFO_t + \beta_4 LnSALE_t + \sum\lambda\ Industry\ dummies_t + \varepsilon_t \quad (15)$$

$$FutRET_t = \beta_0 + \beta_1\ Predicted\ earnings\ management_t + \beta_2 StdRET_t + \beta_3 RET_t + \beta_4 LnSALE_t + \sum\lambda\ Industry\ dummies_t + \varepsilon_t \quad (16)$$

Table 10 reports the results of regressions of future firm performance on the predicted earnings management measures. I use two accounting measures (*FutROA* and *FutCFO*), and a market-based measure (*FutRET*) for future performance as the dependent variables in these models. I use *StdROA*, *StdCFO*, *StdRET* as proxies for risk. *ROA*, *CFO* and *RET* are used for measuring current performance. I also control for firm size (*LnSALE)* and two-digit SIC code industry dummies.

In Panel A of Table 10, the dependent variable is *FutROA* (Equation 14). The coefficients of both *P_AbAcc* and |*P_AbAcc*| are negative but not significant (in columns 1 and 2), indicating that AEM has no effect on future profitability. All REM measures (*P_AbRD*, *P_AbSGA*, and *P_AbProd*) are negatively associated with *FutROA* at highly significant levels (columns 3 through 5), indicating the adverse effects of REM on future profitability. These results are confirmed in column 6 in that the overall level of earnings management (*P_EM1*) has a negative coefficient at a highly significant

level. The positive and significant coefficient of *P_EM2* is mainly due to the effect of *P_AbProd*, because *P_AbProd* is negatively associated with *P_EM2* (see Table 5). The explanatory powers of these models are relatively high with adjusted R^2 greater than 30%.

In Panel B and Panel C of Table 10, I replace the *FutROA* with *FutCFO* (Model 15) and *FutRET* (Model 16) respectively. The results in Model 15 and Model 16 are consistent with Model 14. However, the explanatory power of the stock returns model is much lower than that of the models based on accounting measures (adjusted R^2 lower than 10%). This is likely to be due to the market prices being affected by other market factors in addition to managerial discretion.

The results in Table 10 show that AEM has no adverse effect on future performance, but REM has significant adverse effects on future firm performance. The adverse effects on future performance provide strong evidence supporting the opportunism hypothesis of earnings management.

Taken together, Table 9 and Table 10 show that REM measures are positively associated with current returns, while negatively associated with future firm performance (*FutROA*, *FutCFO*, and *FutRET*). The results support the alternative mispricing hypothesis (H1) by pointing out that the market overprices REM in the year of REM, because investors appear to underestimate the negative effects of income-increasing REM on future firm performance.

Table 10: Second-stage regressions of future performance

Panel A: Using FutROA as the dependent variable

Variables	Pred.	P_AbAcc (1)		|P_AbAcc| (2)		P_AbRD (3)		P_AbSGA (4)		P_AbProd (5)		P_EM1,2 (6)	
Intercept		-5.191		4.525		0.686		-9.876		-2.439		-8.329	
P_AbAcc	+/-	-2.660											
|P_AbAcc|	+/-			-22.320									
P_AbRD	+/-					-11.394	***						
P_AbSGA	+/-							-6.679	***				
P_AbProd	+/-									-6.264	***		
P_EM1	+/-											-3.161	***
P_EM2	+/-											2.994	**
StdROA	-	-0.002		0.004		-0.023		-0.031		-0.049		-0.045	
ROA	+	0.610	***	0.604	***	0.546	***	0.536	***	0.558	***	0.505	***
LnSALE	?	1.197	***	1.235	***	1.383	***	1.593	***	1.233	***	1.505	***
Industry dummies		Yes		Yes		Yes		Yes		Yes		Yes	
Adj. R-square		32.45%		32.64%		34.88%		34.53%		34.50%		35.66%	
F-value		11.82		11.92		13.06		12.88		12.86		12.86	
p-value		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001	
Number of Obs.		429		429		429		429		429		429	

Note: ***, **, * represent significance at 1%, 5%, and 10% respectively. P_AbAcc, |P_AbAcc|, P_AbRD, P_AbSGA, P_AbProd, P_EM1, and P_EM2 are the predicted values from regressions in stage one. Other variables are defined in Table 2.

Table 10 (Continued)

Panel B: Using FutCFO as the dependent variable

Variables	Pred.	P_AbAcc (1)		|P_AbAcc| (2)		P_AbRD (3)		P_AbSGA (4)		P_AbProd (5)		P_EM1,2 (6)	
Intercept		0.168	**	0.249	***	0.220	***	0.136	**	0.187	***	0.157	***
P_AbAcc	+/-	-0.018											
|P_AbAcc|	+/-			-0.187	*								
P_AbRD	+/-					-0.102	***						
P_AbSGA	+/-							-0.038	***				
P_AbProd	+/-									-0.049	***		
P_EM1	+/-											-0.026	***
P_EM2	+/-											0.016	**
StdCFO	-	-0.335	***	-0.316	***	-0.360	***	-0.333	***	-0.348	***	-0.340	***
CFO	+	0.556	***	0.547	***	0.461	***	0.505	***	0.498	***	0.456	***
LnSALE	?	0.002		0.003		0.004	**	0.004	**	0.003		0.005	**
Industry dummies		Yes		Yes		Yes		Yes		Yes		Yes	
Adj. R-square		44.52%		44.88%		48.78%		46.14%		47.63%		48.69%	
F-value		19.08		19.34		22.45		20.3		21.49		21.31	
p-value		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001		<0.0001	
Number of Obs.		429		429		429		429		429		429	

Note: ***, **, * represent significance at 1%, 5%, and 10% respectively. P_AbAcc, |P_AbAcc|, P_AbRD, P_AbSGA, P_AbProd, P_EM1, and P_EM2 are the predicted values from regressions in stage one. Other variables are defined in Table 2.

Table 10 (Continued)

Panel C: Using FutRET as the dependent variable

Variables	Pred.	P_AbAcc (1)		|P_AbAcc| (2)		P_AbRD (3)		P_AbSGA (4)		P_AbProd (5)		P_EM1,2 (6)	
Intercept		-6.027		11.481		-3.280		-18.702		-9.210		-9.735	
P_AbAcc	+/-	-16.929											
|P_AbAcc|	+/-			-51.909									
P_AbRD	+/-					-16.345	***						
P_AbSGA	+/-							-9.370	***				
P_AbProd	+/-									-7.709	***	-4.601	***
P_EM1	+/-											1.704	
P_EM2	+/-												
StdRET	-	-0.078	*	-0.080	*	-0.089	**	-0.078	*	-0.087	**	-0.092	**
RET	+	0.044		0.045	*	0.048	*	0.051	*	0.053	*	0.058	**
LnSALE	?	1.487	***	1.513	***	1.516	***	1.824	***	1.390	***	1.607	***
Industry dummies		Yes		Yes		Yes		Yes		Yes		Yes	
Adj. R-square		4.55%		5.01%		7.68%		7.20%		6.39%		7.80%	
F-value		2.01		2.11		2.75		2.64		2.44		2.7	
p-value		0.0076		0.0044		0.0001		0.0002		0.0007		0.0001	
Number of Obs.		402		402		402		402		402		402	

Note: ***, **, * represent significance at 1%, 5%, and 10% respectively. P_AbAcc, |P_AbAcc|, P_AbRD, P_AbSGA, P_AbProd, P_EM1, and P_EM2 are the predicted values from regressions in stage one. Other variables are defined in Table 2.

5.8. MBE Firms Analysis

In order to test whether the predicted earnings management measures attributable to corporate governance and economic determinants expose the suspected manipulator firms, I conduct t-tests to compare the levels of predicted earnings management of the MBE firms and the non-MBE firms. Degeorge et al. (1999) and Burgstahler & Dichev (1997) provide evidence that managers use their discretion to avoid reporting small losses, because small losses are more likely to lie within the bounds of managerial control. That is, managers in MBE firms are more likely to engage in earnings management and report small profits. Following Gunny (2010), I use a dummy (*D_MBE*), which is equal to one if net income (data A172) divided by lagged total assets (data A6) is between 0 and 0.05, or the ratio of changes in net income (divided by lagged net income) is between 0 and 0.05, zero otherwise.[55]

The results in Table 11 show that although the differences for the predicted values of AEM (*P_AbAcc* and |*P_AbAcc*|) are not significant, the levels of the predicted values of REM (*P_AbRD*, *P_AbSGA*, and *P_AbProd*) and *P_EM1* in the MBE firms are significantly higher than non-MBE firms.[56] The results not only confirm the validity of the predicted earnings management measures used in this study, but also suggest that managers of MBE firms are more likely to conduct REM to achieve the earnings target.

[55] I use the 5% criteria rather than the 1% criteria, because the latter yields a very small proportion of the sample (less than 5% of the sample).
[56] If the observed values are used, only the means of *AbSGA* and *EM1* are significantly different between MBE firms and non-MBE firms (not tabulated), suggesting the predicted measures reduce the noise successfully.

Table 11: T-tests for the differences of predicted earnings management between MBE firms and non-MBE firms

D_MBE	N	P_AbAcc (1)	|P_AbAcc| (2)	P_AbRD (3)	P_AbSGA (4)	P_AbProd (5)	P_EM1 (6)	P_EM2 (7)
0 (none-MBE firms)	338	0.104	0.131	0.006	0.208	-0.092	-0.028	-0.010
1 (MBE firms)	115	0.104	0.123	0.055	0.329	-0.018	0.183	-0.115
Mean Difference (0-1)	453	0.000	0.008	-0.049	-0.121	-0.074	-0.211	0.105
P-value		0.968	0.263	0.011 **	0.000 ***	0.036 **	0.002 ***	0.096 *

Note: ***, **, * represent significance at 1%, 5%, and 10% respectively. P_AbAcc, |P_AbAcc|, P_AbRD, P_AbSGA, P_AbProd, P_EM1, and P_EM2 are the predicted values from regressions in stage one. D_MBE is a dummy variable, which is equal to one if net income (data A172) divided by lagged total assets (data A6) is between 0 and 0.05, or the ratio of changes in net income (divided by lagged net income) is between 0 and 0.05, zero otherwise.

Chapter 6 Conclusion

6.1. Summary of the Dissertation

Post-SOX, the regulated corporate governance improvements are expected to enhance earnings quality by mitigating managerial opportunism. Hence, reported earnings should be more informative to the capital market. However, recent studies document that more stringent governance rules that limit the use of AEM, increase the use of REM which may adversely affect the operations of the firm, leading to adverse economic consequences in terms of reduced profitability, cash flows, and market returns. An unanswered question is whether the market can see through the economic consequences of REM or does it get "fooled" by the REM.

This dissertation investigates whether current stock prices rationally reflect the consequences of REM on future firm performance by using a sample of large US firms in the post-SOX period. Unlike previous research, I attempt to refine the measures of earnings management by controlling for a set of relevant corporate governance variables and firm-specific economic determinants in the estimation models. The predicted earnings management measures are used as the proxies for investors' perceived earnings quality.

To explore the pricing of REM, I first examine the relation between the predicted REM and current stock returns in the return-future earnings models. This helps to understand investors' perception of REM about future earnings. I find that current stock returns are positively associated with both the predicted REM and the predicted AEM at conventional significance levels. There are two alternative explanations for such positive associations, dependent upon managerial motivation to manage earnings. One explanation is that REM and AEM are efficient signals of firm level economic

information and that the market efficiently reacts to this information. Another explanation could be that REM and AEM are opportunistic measures taken by managers to mislead investors and that the market impounds an incorrect determination of their effects.

In order to further determine whether the motivation behind REM is opportunistic or whether the market efficiently interprets the implications of REM, I examine the relation between the predicted earnings management measures and a set of future firm performance measures (future profitability, future cash flows, and future market returns). I find that all predicted REM measures are negatively and significantly associated with future performance, while the association for the predicted AEM is not significant. Consistent with Zang (2012), Leggett et al. (2009), and Cohen & Zarowin (2010), the findings suggest that REM reflects suboptimal business decisions and managerial opportunism. The findings are also consistent with Bowen et al. (2008), who find that AEM has no significant association with future performance. This, I believe, is because AEM methods, being more accrual-based and because they reverse, have fewer effects on future performance than REM methods.

Taken together, the results extend the mispricing literature (e.g., Sloan, 1996; Xie, 2001) by adding that the market overprices REM-affected reported earnings in the current period by failing to consider the consequences of income-increasing REM on future performance.

6.2. Limitations

The findings of this study are subject to several caveats. First of all, it is important to note that the results of this study are based on the predicted earnings management measures, rather than the observed measures. Therefore, the quality of

inferences is subject to the completeness of the estimation models specified and the quality of independent variables used in the first stage. I am aware of the issue that using the predicted earnings management measures cannot fully eliminate the inherent measurement error.

Second, I use OLS regressions to estimate the level of earnings management in the first stage. But the relation between corporate governance and earnings management may not be linear. For example, CEO ownership and bonus contracts may provide non-linear incentives for earnings management. Because I assume linearity and use OLS, the estimates of predicted REM and AEM do not reflect such non-linear relationship.

Third, I use only a single year's measures for the corporate governance variables in the post-SOX period. This may limit the generalizability of the results to the pre-SOX period. The reason for only using 2005 corporate governance data is that the research design requires the use of the subsequent four years data for computing the earnings management measures and the future performance measures. Additionally, TCL contains more complete data for governance items only from 2005 onward. However, consistent with Gompers et al. (2003), Larcker et al. (2007), and Linck et al. (2009), my tests for the persistence and stability of these corporate governance variables show that the corporate governance data do not change much over time. The correlations of the measures of these corporate governance variables between years are quite high and significant (not tabulated). Linck et al. (2009) also find that board structures generally remain quite stable over 15 years from 1990 to 2004. They only note increased director turnover around the Sarbanes-Oxley Act.

Fourth, even though a one-year lag for governance variables and economic determinants is used in the first stage regressions, the study is still subject to the

problem of endogeneity, particularly, when the corporate governance variables between years show high serial correlations.[57]

Fifth, the sample firms drawn from TCL are generally considered to be much larger with more diffused ownership, and to be more subject to public scrutiny compared to the average COMPUSTAT firm. As a result, managerial opportunism may be less prevalent in these firms than the average COMPUSTAT firm. This also limits the generalizability of the results to the population of all US firms.

Sixth, the research design requires data for at least six consecutive years. Some firms with high levels of earnings management are likely to be delisted or no longer exist during this period.

6.3. Opportunities for Future Research

To address the limitations discussed above, this study can be improved in several ways. First, the inherent measurement problem needs to be further investigated. Second, the models to explore the relation between corporate governance and earnings management can be improved by taking into account some non-linear relations. Third, future research can use a portfolio approach, long time series data to validate the REM mispricing results found in this study. Fourth, the structure of this study could be extended to the different institutional settings in other countries. For example, it would be interesting to examine whether the consequences of REM are prevalent under a less stringent governance environment. As more years of data become available, this study could also be extended into other time periods to confirm the results of the current investigation. In addition, it would also be interesting to examine whether investor

[57] I use multiple years of corporate governance data to test the serial correlations (not tabulated).

sophistication can mitigate the REM mispricing phenomena by conducting some behavioural experimental research.

References

Adams, R.B., Almeida, H., & Ferreira, D. (2005). Powerful CEOs and their impact on corporate performance. *The Review of Financial Studies, 18*(4), 1403-1432.

Adams, R.B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics, 94*, 291-309.

Anderson, M.C., Banker, R.D., & Janakiraman, S.N. (2003). Are selling, general, and administrative costs "sticky"? *Journal of Accounting Research, 41*(1), 47-63.

Arya, A., Glover, J.C., & Sunder, S. (2003). Are unmanaged earnings always better for shareholders? *Accounting Horizons, 17*(Supplement), 111-116.

Ashbaugh-Skaife, H., Collins, D.W., Kinney, W.R., & LaFond, R. (2008). The effect of SOX internal control deficiencies and their remediation on accrual quality. *The Accounting Review, 83*(1), 217-250.

Baker, T., Collins, D.W., & Reitenga, A. (2003). Stock option compensation and earnings management incentives. *Journal of Accounting Auditing and Finance, 18*(4), 557-582.

Barber, W.R., Fairfield, P.M., & Haggard, J.A. (1991). The effect of concern about reported income on discretionary spending decisions: the case of research and development. *The Accounting Review, 66*(4), 818-829.

Bartov, E. (1993). The timing of asset sales and earnings manipulation. *The Accounting Review, 68*(4), 840-855.

Bartov, E., & Cohen, D.A. (2009). The "number game" in the pre- and post-Sarbanes-Oxley ears. *Journal of Accounting, Auditing & Finance, 24*, 505-534.

Barth, M.E., Cram, D.P., & Nelson, K.K. (2001). Accruals and the prediction of future cash flows. *Accounting Review, 76*(1), 27-58.

Beneish, M.D. (1999). Incentives and penalties related to earnings over statements that violate GAAP. *Accounting Review, 77*(4), 425-457.

Beneish, M.D. (2001). Earnings management: a perspective. *Managerial Finance, 27*(12), 3-17.

Beneish, M.D., & Vargus, M.E. (2002). Insider trading, earnings quality, and accrual mispricing. *The Accounting Review, 77*(4), 755-791.

Bekiris, F.V., & Doukakis, L.C. (2011). Corporate governance and accruals earnings management. *Managerial and Decision Economics, 32*(7), 439-456.

Bergstresser, D., & Philippon, T. (2006). CEO incentives and earnings management. *Journal of Financial Economics, 80*(3), 511-529.

Bernard, V.L., & Skinner, D.J. (1996). What motivates managers' choice of discretionary accruals? *Journal of Accounting and Economics, 22*(1-3), 313-325.

Bhagat, S., & Bolton, B. (2008). Corporate governance and firm performance. *Journal of Corporate Finance, 14*, 257-273.

Bhagat, S., & Romano, R. (2009). Reforming executive compensation: simplicity, transparency and committing to the long-term. *Yale Journal on Regulation, 26*(2), 359-372.

Bowen, R.M., Rajgopal, S., & Venkatachalam, M. (2008). Accounting discretion, corporate governance, and firm performance. *Contemporary Accounting Research, 25*(2), 351-405.

Bradshaw, M.T., Richardson, S.A., & Sloan, R.G. (2001). Do analysts and auditors use information in accruals? *Journal of Accounting Research, 39*(1), 45-74.

Brown, L.D., & Caylor, M.L. (2006). Corporate governance and firm valuation. *Journal of Accounting and Public Policy, 25*(4), 409-434.

Bushee, B.J. (1998). The influence of institutional investors on myopic R&D investment behaviour. *The Accounting Review, 73*(3), 305-333.

Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics, 24*, 99-129.

Campbell, K., & Vera, A. M. (2010). Female board appointments and firm valuation: short and long-term effects. *Journal of Management and Governance, 14* (1), 37-59.

Carter, D. A., D'Souze, F., Simkins, B. J., & Simpson, W. G. (2010). The gender and ethnic diversity of US boards and board committees and firm financial performance. *Corporate Governance: An International Review, 18*(5), 396-414.

Chang, S.C., Chen, S.S., & Lin, W.C. (2006). *The influence of corporate internal governance on the wealth effect of R&D expenditure increases.* Working Paper. Retrieved 24 March, 2010, from http://www.fin.ntu.edu.tw/~conference/conference2006/proceedings/proceeding/17/17-1(A112).pdf.

Chen, J. (2009). *The choice between real and accounting earnings management* (Unpublished doctoral dissertation). University of Houston, Houston, United States.

Chen, J., Rees, L., & Sivaramakrishnan, S. (2010). *On the use of accounting vs. real earnings management to meet earnings expectations – a market analysis.* Working paper. Available at SSRN: http://ssrn.com/abstract=1070122.

Cheng, Q., & Warfield, T.D. (2005). Equity incentives and earnings management. *Accounting Review, 80*(2), 441-476.

Chi, J.D., & Gupta, M. (2009). Overvaluation and earnings management. *Journal of Banking and Finance, 33*(9), 1652-1663.

Cohen, D.A., Dey, A., & Lys, T.Z. (2008). Real and accrual-based earnings management in the pre- and post-Sarbanes Oxley periods. *The Accounting Review, 83*, 757-787.

Cohen, D.A., & Zarowin, P. (2010). Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics, 50*, 2-19.

Cohen, D.A., Pandit, S., Wasley, C.E., & Zach, T. (2011). *Measuring real activity management.* Working Paper. Available at SSRN: http://ssrn.com/abstract=1792639.

Collins, D.W., Gong, G., & Hribar, P. (2003). Investor sophistication and the mispricing of accruals. *Review of Accounting Studies, 8*, 251-276.

Collins, D.W., Kothari, S.P., Shanken, J., & Sloan, R.G. (1994). Lack of timeliness and noise as explanations for the low contemporaneous return-earnings association. *Journal of Accounting and Economics, 18,* 289-324.

Core, J.E., Holthausen, R.W., & Larcker, D.F. (1999). Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics, 51,* 371-406.

Cornett, M.M., Marcus, A.J., & Tehranian, H. (2008). Corporate governance and pay-for-performance: The impact of earnings management. *Journal of Financial Economics, 87*(2), 357-373.

Drake, M.S., Myers, J.S., & Myers, L.A. (2009). Disclosure quality and the mispricing of accruals and cash flow. *Journal of Accounting, Auditing and Finance, 24,* 357-384.

DeAngelo, H., DeAngelo, L., & Skinner, D.J. (1994). Accounting choice in troubled companies. *Journal of Accounting and Economics, 17*(1-2), 113-143.

Dechow, P.M., Kothari, S.P., & Watts, R.L. (1998). The relation between earnings and cash flows. *Journal of Accounting and Economics, 25,* 133-168.

Dechow, P.M., Richardson, S.A., & Tuna, I. (2003). Why are earnings kinky? An examination of the earnings management explanation. *Review of Accounting Studies, 8,* 355-385.

Dechow, P.M., & Sloan, R.G. (1991). Executive incentives and the horizon problem: an empirical investigation. *Journal of Accounting and Economics, 14*(1), 51-89.

Dechow, P.M., Sloan, R.G., & Sweeney, A.P. (1995). Detecting earnings management. *The Accounting Review, 70*(2), 193-225.

Dechow, P.M., & Skinner, D.J. (2000). Earnings management: reconciling the views of accounting academics, practitioners and regulators. *Accounting Horizons, 14*, 235-250.

Dechow, P.M., & Schrand, C. (2004). *Earnings Quality*. Virginia: The Research Foundation of CFA Institute.

Dechow, P.M., Ge, W, & Schrand, C. (2010). Understanding earnings quality: a review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics, 50*, 344-401.

DeFond, M.L., & Jiambalvo, J. (1994). Debt covenants effects and the manipulation of accruals. *Journal of Accounting and Economics, 17*, 145-176.

DeFond, M.L., & Park, C.W. (2001). The reversal of abnormal accruals and the market valuation of earnings surprises. *The Accounting Review, 76*(3), 375-404.

Degeorge, F., Patel, J., & Zeckhauser, R. (1999). Earnings Management to exceed thresholds. *Journal of Business, 72*(1), 1-33.

Durnev, A., Morck, R., Yeung, B., & Zarowin, P. (2003). Does greater firm-specific return variation mean more or less informed stock pricing? *Journal of Accounting Research, 41*(5), 797-836.

Dye, R. (1988). Earnings management in an overlapping generations model. *Journal of Accounting Research, 26*(2), 195-235.

Easterwood, C.E. (1997). Takeovers and incentives for earnings management: an empirical analysis. *Journal of Applied Business Research, 14*(1), 29-48.

Elliott, J.A., & Hanna, J.D. (1996). Repeated accounting write-offs and the information content of earnings. *Journal of Accounting Research, 34*(Supplement), 135-155.

Ewert, R., & Wagenhofer, A. (2005). Economic effects of tighten accounting standards to restrict earnings management. *The Accounting Review, 80*(4), 1101-1124.

Fairfield, P.M., Whisenant, J.S., & Yohn, T.L. (2003). Accrued earnings and growth: implications for future profitability and market mispricing. *The Accounting Review, 78*(1), 353-371.

Fama, E.F. (1970). Efficient capital markets: a review of theory and empirical work. *The Journal of Finance, 25*(2), 383-417.

Fields, T.D., Lys, T.Z., & Vincent, L. (2001). Empirical research on accounting choice. *Journal of Accounting and Economics, 31*, 255-307.

Francis, J., LaFond, R., Olsson, P., & Schipper, K. (2005). The market pricing of accruals quality. *Journal of Accounting and Economics, 39*, 295-327.

Francis, J., Hanna, J.D., & Vincent, L. (1996). Causes and effects of discretionary asset write-offs. *Journal of Accounting Research, 34*(Supplement), 117-134.

Gibbons, R., & Murphy, K. (1992). Optimal incentive contracts in the presence of career concerns: theory and evidence. *Journal of Political Economy, 100*(3), 468-505.

Goergen, M., Mallin, C., Mitleton-Kelly, E., Al-Hawamdeh, A., & Chiu, I. (2010). *Corporate Governance and Complexity Theory*. Northampton, MA: Edward Elgar.

Goh, B.W., Ng, J., & Yong, K.O. (2012). *The effect of board independence on the information environment and information asymmetry*. Working Paper. Available at: http://ssrn.com/abstract=1267508

Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate governance and equity prices. *Quarterly Journal of Economics, 118*(1), 107-155.

Core, J.E., Holthausen, R.W., & Larcker, D.F. (1999). Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics, 51*, 371-406.

Graham, J.R., Harvey, C.R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics, 40*(1-3), 3-73.

Guay, W. (2008). Discussion of "Accounting Discretion, Corporate Governance, and Firm Performance". *Contemporary Accounting Research, 25*(2), 407-413.

Gunny, K. (2010). The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. *Contemporary Accounting Research, 27*(2), 855-888.

Healy, P.M. (1985). The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics, 7*(1-3), 85-107.

Hearly, P.M., & Palepu, K. (1993). The effect of firm's financial disclosure strategies on stock prices. *Accounting Horizons, 7*(1), 1-12.

Hearly, P.M., & Palepu, K. (1995). The challenges of investor communication. *Journal of Financial Economics, 38*(2), 111-140.

Healy, P.M. (1996). Discussion of a market-based evaluation of discretionary accrual models. *Journal of Accounting Research, 34* (Supplement), 107-115.

Healy, P.M., & Wahlen, J. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons, 13*, 365-383.

Hirshleifer, D., & Teoh, S.H. (2003). Limited attention, information disclosure, and financial reporting. *Journal of Accounting and Economics, 36*, 337-386.

Hirshleifer, D., Lim, S.S., & Teoh, S.H. (2011). Limited investor attention and stock market misreactions to accounting information. *The Review of Asset Pricing Studies, 1*(1), 35-73.

Hochberg, Y.V., Sapienza, P., & Vissing-Jorgensen, (2009). A lobbying approach to evaluating the Sarbanes-Oxley Act of 2002. *Journal of Accounting Research, 47*(2), 519-583.

Holthausen, R.W. (1981). Evidence on the effect of bond covenants and management compensation contracts on the choice of accounting techniques. *Journal of Accounting and Economics, 3*(1), 73-109.

Holthausen, R.W., Larcker, D.F., & Sloan, R.G. (1995). Annual bonus schemes and the manipulation of earnings. *Journal of Accounting and economics, 19*(1), 29-74.

Jaggi, B., & Lee, P. (2002). Earnings management response to debt covenant violations and debt restructuring. *Journal of Accounting, Auditing & Finance, 17*(4), 295-324.

Jeanjean, T. (2000). *Corporate governance and earnings management*. Working Paper. University of Paris-Dauphine, France.

Jensen, M.C. (2005). Agency costs of overvalued equity. *Financial Management, 34*(1), 5-19.

Jensen, M.C., & Meckling, W. H. (1976). Theory of the firm: managerial behaviour, agency costs, and ownership structure. *Journal of Financial Economics, 3*(4), 305-360.

Jiang, W., Lee, P., & Anandarajan (2008). The association between corporate governance and earnings quality: further evidence using the GOV-Score. *Advances in Accounting, incorporating Advances in International Accounting 24*, 191-201.

Jiraporn, P., Miller, G.A., Yoon, S.S., & Kim, Y.S. (2008). Is earnings management opportunistic or beneficial? An agency theory perspective. *International Review of Financial Analysis, 17*, 622-634.

Jones, J.J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research, 29*(2), 193-228.

Klein, A. (1998). Firm performance and board committee structure. *Journal of Law and Economics, 41*(1), 257-304.

Klein, A. (2002). Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics, 33*, 375-400.

Koh, K., Matsumoto, D.A., & Rajgopal, S. (2008). Meeting or beating analyst expectations in the post-scandals world: Changes in stock market reward and managerial actions. *Contemporary Accounting Research, 25*, 1067-1098.

Kothari, S.P., & Sloan, R.G. (1992). Information in earnings about future earnings: implication for earnings response coefficient. *Journal of Accounting and Economics, 15*, 143-171.

Kraft, A., Leone, A.J., & Wasley, C.E. (2006). An analysis of the theories and explanations offered for the mispricing of accruals and accrual components. *Journal of Accounting Research, 44*(2), 297-339.

Kraft, A., Leone, A.J., & Wasley, C.E. (2007). Regression-based tests of the market pricing of accounting numbers: the Mishkin test and ordinary least squares. *Journal of Accounting Research, 45*(5), 1081-1114.

Lai, K.W. (2003). *The Sarbanes-Oxley Act and auditor independence: preliminary evidence from audit opinion and discretionary accruals.* Working Paper. Available at: http://ssrn.com/abstract=438280.

Larcker, D.F., Richardson, S.A., & Tuna, I. (2007). Corporate governance, accounting outcomes, and organizational performance. *The Accounting Review*, *82*(4), 963-1008.

Larcker, D.F., & Tayan, B. (2011). *Seven myths of corporate governance*. Rock Center for Corporate Governance, closer look series no. CGRP-16, Stanford University. Available at: http://ssrn.com/abstract=1856869.

Leggett, D., Parsons, L.M., & Reitenga, A.L. (2009). *Real earnings management and subsequent operating performance*. Working paper, University of Alabama.

Lin, S., Radhakrishnan, S., & Su, L. (2006). *Earnings management and guidance for meeting or beating analyst's earnings forecasts*. Working Paper. Available at SSRN: http://ssrn.com/abstract=928182.

Linck, J., Netter, J., & Yang, T. (2009). Effects and unintended consequences of the Sarbanes-Oxley Act on the supply and demand for directors. *The Review of Financial Studies, 22*(8), 3287-3328.

Lobo, G., & Zhou, J. (2006). Did conservatism in financial reporting increase after the Sarbanes-Oxley Act? Initial evidence. *Accounting Horizons*, *20*(1), 57-73.

Louis, H., &Robinson, D. (2005). Do managers credibly use accruals to signal private information? Evidence from the pricing of discretionary accruals around stock splits. *Journal of Accounting and Economic, 39*(2), 361-380.

Lundholm, R., & Myers, L. (2002). Bringing the future forward: the effect of disclosure on the returns-earnings relation. *Journal of accounting research, 40*(3), 809-839.

Luo, S., Courtenay, S., & Hossain, M. (2006). The effect of voluntary disclosure, ownership structure and proprietary cost on the return-future earnings relation. *Pacific-Basin Finance Journal, 14*, 201-521.

Marnet, O. (2008). *Behaviour and Rationality in Corporate Governance*. New York: Routledge.

McNichols, M. (2000). Research design issues in earnings management studies. *Journal of Accounting and Public Policy, 19*, 313-345.

McNichols, M. (2002). Discussion of the quality of accruals and earnings: the role of accrual estimation errors. *The Accounting Review, 77*(Supplement), 61-69.

McNichols, M., & Wilson, G.P. (1998). Evidence of earnings management from the provision for bad debts. *Journal of Accounting Research, 26* (Supplement), 1-31.

McVay, S.E. (2006). Earnings management using classification shifting: an examination of core earnings ad special items. *The Accounting Review, 81*(3), 501-531.

Morck, R., Shleifer, A., & Vishny, R. W. (1988). Management ownership and market valuation: an empirical analysis. *Journal of Financial Economics, 20*(1-2), 293-315.

Ohlson, J.A. (1995). Earnings, book values, and dividends in equity valuation. *Contemporary Accounting Research, 11*(2), 661-687.

Osma, B.G. (2008). Board independence and real earnings management: the case of R&D expenditure. *Corporate Governance: An International Review, 16*(2), 116-131.

Peasnell, K.V., Pope, P.F., & Young, S. (2005). Board monitoring and earnings management: Do outside directors influence abnormal accruals? *Journal of Business Finance and Accounting, 32*(7-8), 1311-1346.

Richardson, S.A., Sloan, R.G., Soliman, M.T., & Tuna, I. (2005). Accrual reliability, earnings persistence, and stock prices. *Journal of Accounting and Economics, 39*, 437-485.

Richardson, V. (2000). Information asymmetry and earnings management: some evidence. *Review of Quantitative Finance and Accounting, 15*(4), 325-347.

Romano, R. (2005). The Sarbanes-Oxley Act and the making of quack corporate governance. *The Yale Law Journal, 114,* 1521-1611.

Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics 4,* 335-370.

Schiller, R. (2000). *Irrational Exuberance*. Princeton: Princeton University Press.

Schipper, K. (1989). Commentary on Earnings management. *Accounting Horizons, 3*(4), 91-102.

Singer, Z., & You, H. (2011). The effect of section 404 of the Sarbanes-Oxley Act on Earnings Quality. *Journal of Accounting, Auditing and Finance, 26*(3), 556-589.

Sloan, R.G. (1996). Do stock prices fully reflect the information in accruals and cash flows about future earnings? *The Accounting Review, 71*(3), 289-315.

Subramanyam, K.R. (1996). The pricing of discretionary accruals. *Journal of Accounting and Economics, 22,* 249-281.

Sweeney, A.P. (1994). Debt-covenant violations and managers' accounting responses. *Journal of Accounting and Economics, 17*(3), 281-308.

Teoh, S.H., Welch, I., & Wong, T.J. (1998a). Earnings management and underperformance of seasoned equity offerings. *The Journal of Financial Economics, 50,* 63-69.

Teoh, S.H., Welch, I., & Wong, T.J. (1998b). Earnings management and the long-run market performance of initial public offerings. *The Journal of Finance, 53*(6), 1935-1974.

Thomas, J.K., & Zhang, H. (2002). Inventory changes and future returns. *Review of Accounting Studies, 7*, 163-187.

Victoravich, L.M., Xu, P., Buslepp, W., & Grove H. (2011). *CEO power, equity incentives, and bank risk taking*. Working paper. Available at SSRN: http://ssrn.com/abstract=1909547.

Watts, R.L. (2003). Conservatism in accounting Part I: explanations and implications. *Accounting Horizons, 17*(3), 207-221.

Xie, B., Davidson III, W.N., & DaDalt, P.J. (2003). Earnings management and corporate governance: the roles of the board and the audit committee. *Journal of Corporate Finance, 9*, 295-316.

Xie, H. (2001). The mispricing of abnormal accruals. *The Accounting Review, 76*(3), 357-373.

Yang, L. (2008). *Earnings target and the competing use of abnormal R&D and abnormal accruals of R&D intensive firms* (Unpublished master thesis). Massey University, Auckland, New Zealand.

Yermack, D. (2004). Remuneration, retention, and reputation incentives for outside directors. *The Journal of Finance, 59*(5), 2281-2308.

Zang, A.Z. (2012). Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *The Accounting Review, 87*(2), 675-703.

Zhou, J. (2008). Financial reporting after the Sarbanes-Oxley Act: Conservative or less earnings management? *Research in Accounting Regulation, 20*, 187-192.

Zingales, L. (2009). The future of securities regulation. *Journal of Accounting Research, 47*(2), 391-425.

Appendix 1: COMPUSTAT annual data items definition

Item Number	Item Name	Definition
Data A2	Receivables-Total	This item represents claims against others (after applicable reserves) collectible in money, generally within one year.
Data A6	Assets-Total	This item represents current assets *plus* net property, plant, and equipment *plus* other noncurrent assets (including intangible assets, deferred items and investments and advances).
Data A7	PP&E(Gross)-Total	This item represents the cost of tangible fixed property used in the production of revenue.
Data A12	Sales(Net)	This item represents gross sales (the amount of actual billings to customers for regular sales completed during the period) reduced by cash discounts, trade discounts, and returned sales and allowances for which credit is given to customers.
Data A14	Depreciation and Amortization	This item represents non-cash charges for obsolescence of and wear and tear on property, allocation of the current portion of capitalized expenditures, and depletion charges.
Data A18	Income Before Extraordinary Items	This item represents the income of a company after all expenses, including special items, income taxes, and minority interest - but before provisions for common and/or preferred dividends. This item does not reflect discontinued operations (appearing below taxes) or extraordinary items.
Data A41	Cost of Goods Sold	This item represents all costs directly allocated by the company to production, such as material, labour and overhead.
Data A46	Research and Development Expense	This item represents all costs incurred during the year that relate to the development of new products or services.
Data A124	Extra. Items and Discontinued Operations	This item includes extraordinary items and discontinued operations.
Data A189	Selling, General, and Administrative Expenses	This item represents all commercial expenses of operation (such as, expenses not directly related to product production) incurred in the regular course of business pertaining to the securing of operating income.
Data A303	Inventory-Decrease(Increase)	This item represents increases or decreases in inventories as reported in the Operating Activities section on a Statement of Cash Flows
Data A308	Operating Activities-Net Cash Flow	This item represents the net change in cash from all items classified in the Operating Activities section on a Statement of Cash Flows