

New evidence on real earnings management:
An international investigation

By

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ABSTRACT

Real earnings management has attracted increasing attention in accounting research (Roychowdhury, 2006; Cohen et al., 2008; Gunny, 2010; Zang, 2012). However, real earnings management has still received relatively light testing and inconsistency and conflicts exist in existing evidence in relation to real earnings management. In addition, as most of the existing studies on real earnings management focuses on testing large economies, such as in the U.S., these studies have failed to provide findings on real earnings management in an international context. Therefore, the objective of this thesis is to test firms' real earnings management in different institutional environments and crisis periods, and the relationship between real earnings management activities and firms' future performance.

Utilising a sample of 135,722 firm-year observations for 31 countries from 1996 to 2011, this thesis finds more income-increasing real earnings management behaviours in countries with a code-law tradition, a French-civil-law tradition, lower investor protection, lower law enforcement, and countries with more concentrated ownership. The results also show a significant negative association between firms' real earnings management activities and firms' future ROA (return on assets) and future CFO (cash flow from operations). And in terms of this negative impact of REM (real earnings management) on firms' future cash generating ability, it is moderated by a stronger institutional environment. In addition, this thesis documents a negative association between REM and CRISIS. In regard to the results on the sub-components of REM, the result show that in crises, firms engage in sales manipulation and reduction of discretionary expenses to increase reported earnings. And the negative impacts of REM on firms' future ROA and future CFO is found to reduce during crises.

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ATTESTATION OF AUTHORSHIP

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the ward of any other degree or diploma of a university or other institution of higher learning.

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Date:

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CHAPTER 1

INTRODUCTION

1.1 Background and research questions

Accounting has long been called the “language of business” because of its important role in processing and maintaining financial information for a business. The primary focus of financial reporting is providing stakeholders with information about an enterprise’s performance and helping users of accounting information to make informed decisions. Accounting earnings and its components are particularly important for stakeholders to measure firms’ performance and to predict firms’ future operating cash flows (hereafter CFO) (Comiskey & Mulford, 1986; Dechow, Kothari,& Watts, 1998). Although flexibility in accounting allows managers to provide relevant and reliable accounting information to assist stakeholders to assess firms’ performance and to keep pace with business innovations, it creates opportunities for managers to carry out earnings management in an opportunistic way (Dechow & Skinner, 2000; Healy & Wahlen, 1999).

Examples of accrual-based earnings management include the manipulation of expected lives and salvage values of long-term assets, deferred taxes, and opportunistic choices among accounting methods, such as depreciation methods and inventory valuation methods, to report transactions. The main reason that accrual-based earnings management has been so pervasive during the last few decades is that manipulating accrual earnings can be convenient as it is difficult to detect and the opportunities to do so are provided by GAAP (Generally Accepted Accounting Principles) (Levitt, 1998).

Managers can manipulate reported income through accounting estimates and methods and also through real operational decisions (hereafter real earnings management or REM). To manipulate reported accounting earnings, real earnings

management usually involves decisions that affect the timing or structuring of business transactions (Ewert & Wagenhofer, 2005). In particular, income-increasing real earnings management can include changing inventory levels and timing of inventory shipments or purchases, managing expenditures such as research and development (R&D), maintenance, and advertising, selling fixed assets, giving sales discounts, and over-producing to reduce overall manufacturing costs assigned to the current period (Dechow & Skinner, 2000; Fudenberg & Tirole, 1995; Healy & Wahlen, 1999; Roychowdhury, 2006; Xu, Taylor, & Dugan, 2007). In the main tests of this thesis, I examine earnings manipulation through three operating activities:

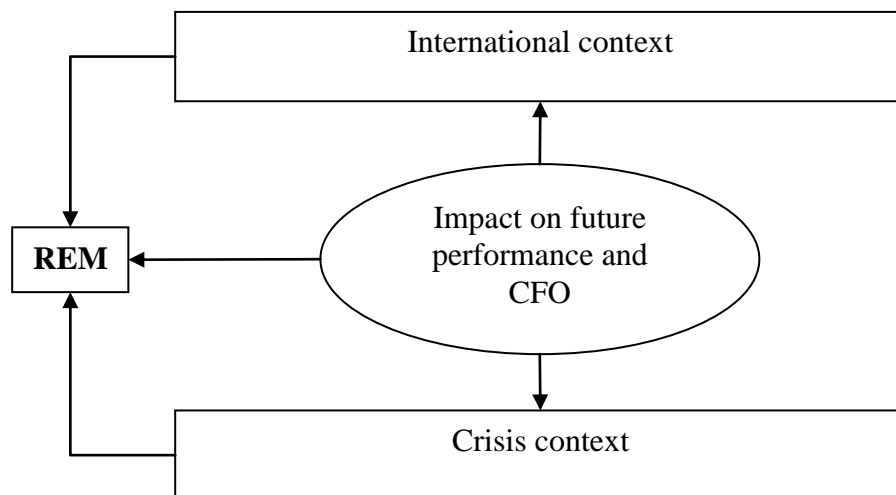
1. Sales manipulation
2. Manipulation of discretionary expenditures
3. Over production to report lower COGS (Cost of Goods Sold)

The research interest of this thesis covers firms' real earnings management behaviours in different circumstances. In particular, the thesis aims to investigate the research question of if firms' real earnings management behaviours are associated with the institutional environment in their home countries. The institutional environment was previously measured using factors such as legal tradition, shareholder protection, law enforcement and ownership concentration. In addition, this thesis tests the research question of whether real earnings management activities have negative impacts on firms' future profit and cash flow generating abilities. This research question is motivated by the inability to identify if real earnings management activities are efficient or opportunistic decision makings. Moreover, the research question of how firms' real earnings management behaviours change during financial crisis will be tested in this thesis. The motivation behind these three research questions will be discussed in more details in the next section.

1.2 Motivation for the research

The insufficient and somewhat conflicting findings in the real earnings management studies form strong motivation for testing the research questions in this research. Research studies on real earnings management are still very limited and focus on only a few topics, such as evidence in terms of firms' manipulation of real activities to avoid reporting annual losses (Roychowdhury, 2006), the changes of real earnings management behaviours especially as against the use of accrual-based earnings management (Cohen, Dy, & Lys, 2008; Zang, 2012), and the consequences of real earnings management (Gunny, 2010; Taylor & Xu, 2010), and using data mainly from the U.S.. This thesis is motivated by the lack of research on real earnings management in specific contexts, as shown in Figure 1.1 below, including three research areas.

Figure 1.1: The scope of this thesis



It is meaningful to conduct international comparative research to address the issue regarding whether particular country level characteristics exist that could explain the extent to which firms choose to engage in a particular form of earnings management.

Legal traditions and legal environment, for example, can influence a country's ability to adapt to commercial, legal and economic changes and crisis (Levine and Ahmed, 1998; Beck, Demirguc-Kunt, & Levine, 2003; Johnsen, Boone, Breach and Friedman, 2000; Acemoglu, Johnson, Robinson, and Thaicharoen, 2003¹). Such abilities are essential to evaluate or assess the way each country develops its accounting standards, protects investors, and regulates reporting standards, which are critical determinants for the pervasiveness and severity of earnings management activities.

Earnings management, especially accrual based earnings management, has already been examined in many international-based accounting studies. For instance, Leuz, Nanda and Wysocki (2003) examine systematic differences in earnings management across 31 countries and document that accrual-based earnings management is expected to decrease with higher investor protection because strong protection limits insiders' ability to acquire private control benefits. However, most of the international-based accounting studies have focused on examining accrual-based earnings management and hence fail to report evidence on real earnings management from the perspective of an international context, which can have important implications for regulators around the world.

In addition, most existing studies on real earnings management collect data from the U.S. market while only a small number of research studies have examined real earnings management in other countries. For example, Black, Sellers, & Manly (1998)

¹ The findings of Levine and Ahmed (1998) indicate that countries where the legal system emphasizes creditor rights and has strong law enforcement have better-developed banks, which are essential when countries experience economic and financial challenges. Beck et al. (2003) claim that legal origin matters for financial development of a country and legal origins differ in their ability to adapt efficiently to evolving economic conditions. Johnsen et al. (2000) tested the Asian crisis of 1997-1998 and argued that measures of institutions, particularly the effectiveness of protection for minority shareholders, explain the extent of depreciation and stock market decline better than standard macroeconomic measures. The authors argue that countries with weak legal systems are vulnerable to the effects of a sudden loss of investor confidence in the crisis period. In addition, Acemoglu et al. (2003) document a strong relationship between institutions and economic volatility or severe crisis over the postwar period. The literature again highlights the importance of examining the institutional environment due to its impact on firms' decisions related to accounting choices and earnings management.

test real earnings management in Australia, New Zealand and the United Kingdom and find no evidence that firms use asset sales to smooth earnings in these countries where the accounting rules allow revaluation of the book value of long-term assets. Whereas Herrmann, Inoue, & Thomas (2003) document that Japanese firms use income from sales of fixed assets and stock investments to minimize the gap between management earnings forecasts and reported earnings. The limited evidence on firms' real earnings management in different countries is conflicting, which sets forth the probability that institutional environment in different countries may have played a role in forming firms' decision in earnings management choices. As a result, the first research area of this thesis is at an international level to test if there is an association between country-level institutional factors and firms' real earnings management behaviour.

Another research area for this thesis is to test firms' real earnings management choices in relation to a specific crisis, which has not been directly tested before. Although there is evidence regarding firms' accrual-based earnings management behaviour during crises, the evidence is mixed and conflicts to some extent. On one hand, there is the 'big bath' perspective that companies save up earnings for future periods by engaging in income-decreasing accrual-based earnings management in financial crises, to take advantage of government support and more tolerance for poor performance in crisis periods (Chia, Lapsley, & Lee, 2007; Habib, Bhuiyan, & Islam, 2013). On the other hand, it is argued that managers may engage in income-increasing earnings management activity to meet earnings targets, to avoid violating lending covenants, to reduce pressure from stakeholders, and to preserve their reputation in crisis periods (Ahmad-Zaluki, Campbell, & Goodacre, 2011; DeFond & Jiambalvo, 1994; Habib et al., 2013; Jaggi & Lee, 2002; Saleh & Ahmed, 2005). The lack of evidence with respect to firms' real earnings management behaviour and the inconclusive findings related to firms' accrual-based earnings management behaviours

in specific crisis context serves as the motivation of this thesis to investigate the association between firms' real earnings management activities and financial crises.

Finally, there is conflicting evidence in regard to the consequences or impact of real earnings management. On one hand, Cohen et al. (2008) argue that real earnings management is both difficult to detect and more costly to the firm than accrual manipulation. On the other hand, Gunny (2010) finds that managers do not appear to use real earnings management for opportunistic reasons because firms which engage in such earning manipulation are associated with better performance in the future after controlling for other relevant factors. The inconclusive evidence regarding the consequences of real earnings management is related to different views of earnings management, which are the informational perspective, efficient contracting perspective and the opportunistic perspective. If REM is found to have positive impacts on firms' performance, the finding can provide supports for the informational perspective and efficient contracting perspective. Namely, the findings can be interpreted as that firms' accounting choices through abnormal operational decisions were driven by the incentive to provide more accurate information reflecting true value of the firm and reducing agency costs between managers, shareholders and bondholders. On the other hand, the opportunistic view claims that managers use their discretion over accountings numbers to transfer wealth from other contracting parties to the manager (Watts & Zimmerman, 1990). The finding of a negative impact of REM on firms' future performance is in line with the opportunistic view in that managers may also use their discretion over operational activities to influence their accounting results. This thesis is therefore motivated to investigate the consequences of firms' real earnings management activities, in specific international and crisis contexts. The findings can help in the understating of the circumstances under which real earnings management is used efficiently or opportunistically.

1.3 Contributions

The findings of this research will make a significant contribution to the literature of real earnings management in an international context. The findings will fill the gap in terms of the prior literature which has for the most part tested real earnings management in the U.S.. This research involves testing a large sample of data from 31 countries, including a good mix of common-law and code-law countries, developing and developed countries, and western and eastern countries. This research also incorporates important countries, such as China, into the sample, which was missing in many international earnings management studies. The findings of the research can contribute to the understanding of if country-level institutional differences contribute to real earnings management activities. This extends our understanding of earnings management activities after the evidences the relationship between institutional environments in different countries and firms' accrual-based earnings management (Leuz et al., 2003). There has been a strong trend towards financial reporting harmonisation worldwide. However, the success of such a policy will depend to a great extent on the effectiveness of country-level institutional settings in terms of ensuring that high quality accounting information is provided. Since earnings management can be considered detrimental to financial reporting quality, the findings of this research will provide important implications for the successful harmonisation of financial reporting worldwide.

This research also contributes to the broad literature of business cycle and earnings management decisions. The sample of this research covers a long period from 1996 to 2011, during which a series of economic fluctuations and prominent economic movements had taken place. However, no studies to date have tested the relationship between firms' real earnings management behaviours and economic cycles. The findings of this thesis will fill the gap in the literature regarding whether

firms engage in more or less real earnings management in a financial crisis. The findings make great contribution to the literature as no prior studies have tested or reported firms' real earnings management behaviours during a crisis. Such knowledge can be very helpful for regulators whilst developing monitoring mechanisms and supporting or subsidy policies in crises periods. Another implication of the findings is that firms' real earnings management behaviours in a crisis can be driven by incentives to send signals about the true value and future profit generation ability of the firm and to reduce agency costs between insiders and external stakeholders. These findings could have important implications for policy makers as it is important to understand in what contexts real earnings management activities are sub-optimal, opportunistic, and value destroying.

1.4 Methodology

The data utilised to test the hypotheses are collected from the Wharton Compustat Global database, the World Bank database, and the World Economic Outlook database provided by IMF (International Monetary Fund). The final sample consists of 135,722 firm-year observations and 20,968 unique firms for 31 countries from 1996 to 2011. The sample year of 1996 is chosen because many data points are missing for years before 1995 from the Wharton Compustat Global database.

The thesis adopts the modified Jones (1991) model to compute discretionary accruals, which serves as a proxy for accrual-based earnings management. Real earnings management activities are measured using abnormal CFO, abnormal discretionary expenses, and abnormal production costs, which are computed following the method of Roychowdhury (2006). The regression models for testing different hypotheses will be discussed in more detail in Chapter 4.

1.5 Findings

Overall, the results show the significant association between real earnings management and institutional environments, real earnings management and firms' future performance, and real earnings management and crisis periods. All three hypotheses are supported by the multivariate analysis results.

In particular, the results show a higher level of real earnings management activities in code-law countries, in countries with the French code-law tradition, in countries with weaker shareholder protection and law enforcement, and in countries with more concentrated ownership.

The test results also find a significant negative association between real earnings management and firms' future ROA and future CFO. This negative association between REM and future CFO is reduced in countries with a common-law tradition, stronger law enforcement, and less concentrated ownership.

The results of this thesis also show significantly lower real earnings management in the periods of a crisis. To be specific, there are significantly higher abnormal CFO and abnormal discretionary expenses and significantly lower abnormal production costs in crisis periods. This is either consistent with the Big Bath hypothesis or with the efficiency proposition in that firms may face liquidity issues as well as stronger incentives to accumulate cash to safeguard against future investment needs. The results of this thesis also report that the negative association between real earnings management and firms' future performance reduces during crisis periods, which provide some support for the efficiency or information hypothesis and the changes in real operation in crisis may not be opportunistic.

1.6 Organisation of the thesis

This thesis will be organised as follows. Chapter 2 includes a detailed review of the literature related to earnings management, especially in terms of real earnings management. In particular, Chapter 2 reviews literature in relation to the definition of earnings management, accrual-based earnings management, different forms and techniques of real earnings management, consequences of real earnings management, in regard to the international evidence on earnings management, and in terms of the association between earnings management and financial crisis.

Chapter 3 discusses the three hypotheses that are to be tested in this thesis. The first hypothesis tests the association between firms' real earnings management and the country-level institutional factors. The second hypothesis examines the association between real earnings management activities and firms' future performance. The third hypothesis investigates firms' real earnings management behaviour during the periods of financial crisis.

Chapter 4 provides a discussion on the research design and methodology used to test the hypotheses developed in Chapter 3. In particular, Chapter 4 discusses the data and sample selection process of this thesis, accrual-based and real earnings management measurements, and models for testing the three hypotheses.

Chapter 5 is the results discussion chapter that starts with the discussion of the general characteristics of the sample as well as the results of the univariate analysis. The multivariate analysis results for testing the three hypotheses are then reported and discussed followed by a number of additional and robustness tests.

The conclusion chapter, Chapter 6, provides a summary of the literature, hypotheses, research methods, and the findings of the tests and the implications of the

findings. The limitations of the research will be discussed in this chapter, which also includes a discussion on future research areas.

CHAPTER 2

PRIOR LITERATURE

2.1 Introduction

Researchers have tested a wide range of topics on earnings management, such as different techniques or types of earnings management, managers' incentives to engage in earnings management, the reasons managers prefer a particular earnings management technique, how firms' choices among different earnings management techniques have changed under different circumstances, relationship between institutional factors and earnings management, and the relationship between crisis and earnings management. And real earnings management has attracted increasing attention in the field of accounting research. This chapter aims to bring evidence from relevant literature to form a strong theoretical foundation to support the development of the hypotheses in the next chapter.

Section 2.2 reviews the literature on the definitions of accrual-based and real earnings management. Section 2.3 will briefly discuss evidence on accrual-based earnings management and the reasons managers decide to engage in accrual-based earnings management. Section 2.4 reviews evidence on different forms and techniques of real earnings management that are used by firms to influence reported earnings in different circumstances. Following this, section 2.5 discusses literature on the consequences of earnings management which is then followed by a discussion of earnings management in an international context in section 2.6. Section 2.7 reviews the literature on the association between earnings management and financial crisis. This chapter is summarised in section 2.8.

2.2 Definitions of earnings management

Accounting is used as tools for firms to communicate important internal

information to external stakeholders, who rely on such information to evaluate the performance of the firms and to make informed decisions. Discretions to how accounting information can be reported are given to managers in a way to best and most efficiently reflect firms' performance and value within the requirements of the accounting standards. And whilst these discretions may not always be used in the way to accurately present firm values, they can be used for opportunistic reasons, raising the issue of earnings management.

This concern regarding the opportunistic reporting of accounting information has been raised in many early accounting studies. As stated in Canning (1929, p.98)

“What is set out as a measure of net income can never be supposed to be a fact in any sense at all except that it is the figure that results when the accountant has finished applying the procedures which he adopts.”

Consistently, Ball and Brown (1968, p.160) comment that income is “defined only as the result of the application of a set of procedures to a set of events with no other definitive substantive meaning at all”.

To some extent, earnings management can be seen as a product of the implication of strategies that solve the agency problems between stakeholders and managers (Jensen & Meckling, 1976). For example, shareholders want managers to maximise stock prices, and in some way this is positively related to earnings. Therefore, shareholders design performance measurement systems and compensation contracts in ways that link managers' compensation to the accounting numbers of the firm. Although such contracts are essential for reducing agency costs and measuring managers' performance, they induce incentives for the managers of a company to intentionally manipulate the company's earnings to meet a certain earnings target or to perhaps mislead certain stakeholders (Dye, 1988; Burgstahler & Dichev, 1997; Healy & Wahlen, 1999; Trueman

& Titman, 1988). A more detailed discussion regarding accrual-based earnings management and real earnings management as well as relevant evidence from the literature will be discussed in the following sections.

Schipper (1989, p.92) defines earnings management as:

“A purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain [as opposed to, say, merely facilitating the neutral operation of the process]... Under this definition, earnings management could occur in any part of the external disclosure process, and could take a number of forms. A minor extension of this definition would encompass ‘real’ earnings management, accomplished by timing investment or financing decisions to alter reported earnings or some subset of it”.

Similarly, Healy and Wahlen (1999, p.368) provide the following definition for earnings management:

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

Whereas from the above definitions, earnings management involves accounting practices that follow the accounting standards and rules, in essence it can deviate from the spirit of these rules. The definitions highlight some important incentives for managers to engage in earnings management, either accrual-based or real earnings management, such as an incentive to obtain private gains, to mislead stakeholders, and to influence contractual outcomes. The above definitions also highlight two earnings management approaches, including accrual-based earnings management and earnings management through real operational activities.

2.3 Accrual-based earnings management

Accruals are components of accounting earnings that do not have immediate cash flow consequences in a particular reporting period because sometimes cash flows do not occur contemporaneously with the business activities. Managers usually have a lot of discretion over accounting judgments in regard to accruals, such as discretions in estimating the expected lives and salvage values of long-term assets, deferred taxes, and losses from bad debts, and in selecting inventory valuation and depreciation method, such as LIFO, FIFO, or weighted-average methods or straight-line or accelerated depreciation methods (Healy & Wahlen, 1999). The use of accruals to temporarily boost or drag down earnings is a well documented mechanism for earnings management through which firms achieve certain market and contractual incentives (Dechow, Sloan, & Sweeney, 1995).

2.3.1 Capital market transactions and accrual-based earnings management

Firms have incentives to manage reported earnings through manipulating accruals, especially around certain capital market transactions, in order to boost stock performance since financial information is often used by external investors and analysts to value stocks. Examples of such capital market transactions include management buyout, equity offerings and mergers and acquisitions.

DeAngelo (1988) claims that managers have an incentive to manage earnings downwards through manipulating accruals prior to management buyouts since earnings information is important for valuation in the buyouts. Similarly, Perry and Williams (1994) document evidence in relation to income-decreasing accrual-based earnings management prior to management buyout. Following DeAngelo (1988), Wu (1997) examines earnings manipulation in 87 management buyout cases between 1980 and 1987 and found income-decreasing earnings management in the year before the

management buyouts. The author comments that the preannouncement declines in earnings are specific to management buyouts and the potential benefit from earnings manipulation is estimated to be almost \$50 million on average for the sample firms. A more recent study, Hafzalla (2009) finds that managers involved in their firms' management buyouts make pessimistic discretionary disclosures, such as bad news disclosures and more pessimistic quotes, and manage earnings downwards before the buyouts transaction. As a result of the income-decreasing earnings management, managers are able to buyout their companies' stock at a lower price as financial information is linked to the valuation of the companies.

Different from management buyouts, managers have incentives to push stock prices up before equity offerings through income-increasing accrual-based earnings management. Firms are found to report income-increasing abnormal accruals prior to seasoned equity offerings (hereafter SEOs) and initial public offerings (hereafter IPOs) in order to benefit from higher proceeds from the offerings (Teoh, Welch, & Wong, 1998; DuCharme, Malatesta, & Sefcik, 2001; DuCharme, Malatesta, & Sefcik, 2004, Schivakumar, 2000, Yoon & Miller, 2002, and Kim & Park, 2005)². Although inconsistent evidence on the incentives of managers to manage earnings prior to equity offerings exists (for example, Teoh et al., 1998 and Schivakumar, 2000), it is well documented that managers do engage in income-increasing accrual-based earnings management before equity offerings and such earnings management has a positive impact on stock prices before the offering.

² Teoh et al. (1998) test earnings management around IPOs and report that issuers with usually high accruals in the IPO year experience poor stock return performance in three years thereafter. DuCharme et al. (2001) and DuCharme et al. (2004) also document accrual-based earnings management before IPOs and find a significant relationship between earnings management and subsequent firm stock returns and subsequent firm performance. And whereas the results of Shivakumar (2000) show that equity issuers' earnings management may not be designed to mislead investors, rather it may merely reflect the issuers' rational response to anticipated market behaviour at offering announcement. Yoon and Miller (2002) document earnings management prior to SEOs using a Korean sample. Using a sample of U.S. common stock offerings (excluding initial public offerings) between 1989 and 2000 Kim and Park (2005) find that SEO firms employ aggressive accounting decisions and push their offer prices up more aggressively in order to obtain higher proceeds from their offerings.

In addition, prior to initial public offers and seasoned equity offers, Erickson and Wang (1999) provide evidence that acquiring firms manage earnings upwards in the period prior to merger agreements. Their results also indicate that the degree of income-increasing earnings management is positively related to the relative size of the merger. Louis (2004) provides evidence that acquiring firms overstate their earnings in the quarter preceding a stock swap announcement. Alsharairi and Salama (2012) find significant evidence of upwards accrual-based earnings management prior to announcing merger and acquisition deals using a sample of US non-cash acquirers.

2.3.2 Contractual relationships and accrual-based earnings management

Leftwich (1983) determines that private lending agreements, which rely on accounting numbers, often deviate from the set of GAAP in order to reduce the possible conflict of interest between stockholders and bondholders. Later studies attempt to test the direct relationship between debt contracts and accrual-based earnings management and find that managers engage in accrual-based earnings management to satisfy requirements in lending contracts and to avoid debt covenant violations. In particular, Defond and Jambalvo (1994) document the evidence of positive abnormal working capital accruals in the year of violation using a sample of 94 firms that reported debt covenant violations in the annual reports. The results of Jaggi and Lee (2002) show that managers of financially distressed firms use income-increasing discretionary accruals if they are able to obtain waivers for debt covenant violations and income-decreasing discretionary accruals if debt restructuring takes place or debts are renegotiated because waivers are denied. Anand (2013) tested a large sample of 193,803 firm-quarters, 8,804 firms, and 2,035 new covenant violations from 1996 to 2007 and finds that although managers manage earnings upward in the quarters preceding a debt-covenant violation they manage downward in the quarter a violation occurs. The author also claims that managers manage earnings around the debt-covenant violation to improve their

bargaining power in the re-negotiation that follows the violation.

Also, managers' compensation contracts, such as bonuses and stock options plans, are commonly linked to the accounting numbers of the company to align the incentives of management and external stakeholders. From a compensation contracting aspect, managers are found to manipulate accounting estimates and choices in order to achieve earnings targets, such as positive earnings, increased earnings as compared to the prior year's figure, and meeting analysts' forecasts (Healy, 1985; Holthausen, Larcker, & Sloan, 1995). There is evidence that managers manipulate earnings to maximise their short-term bonus plans, such as deferring income while the earnings target in their bonus plan could not be met and when they have reached the maximum bonuses limit permitted under the compensation plan (Healy, 1985; Holthausen et al., 1995; Guidry, Leone, & Rock, 1999). Kasznik (1999) reports that firms in danger of falling short of management earnings forecast use abnormal accruals to manage earnings upwards. Bergstresser and Philippon (2006) document that earnings management through discretionary accruals is more pronounced at firms wherein the CEO's potential total compensation is more closely tied to the value of stock and option holdings. The authors also find that CEOs exercise unusually large numbers of options and sell large quantities of shares in years with high accruals.

2.4 Real earnings management

In addition to manipulating accounting choices and estimates, firms can also influence reported earnings through manipulating real business activities. In the survey conducted by Graham, Harvey, and Rajgopal (2005), 80 percent of survey participants report that they would decrease discretionary spending on research and development expenses (R&D), advertising, and maintenance to meet an earnings target, and 55.3 percent of the respondents state that they would delay the launch of a new project to meet an earnings target, even if such a delay entailed a small sacrifice in value.

Roychowdhury (2006, p.337) provides the following definition for real earnings management:

“Real activity manipulation is defined as departures from normal operational practices, motivated by managers’ desire to mislead at least some stakeholders into believing certain financial reporting goals have been met in the normal course of operations”.

Based on these studies, an increasing number of recent earnings management studies, such as Cohen et al. (2008), Gunny (2010), Eldenburg, Gunny, Hee, and Soderstrom (2011), and Zang (2012), invested effort to document evidence on real earnings management.

Extant literature has examined various forms of real earnings management through different operating activities, including controlling production, sales and inventory, selling of fixed assets, and managing discretionary expenditures such as R&D, and selling, general and administrative expenses (SGA) (Xu et al., 2007). Furthermore, some studies examine real earnings management via investing and financing activities and find that firms smooth quarterly or annual earnings through share repurchases, stock option issues, and financial instruments³. This thesis will focus on examining real earnings management through operating activities, which will be reviewed in more detail in the followings sections.

2.4.1 Discretionary expense

There is evidence that firms manage reported earnings through controlling the level of discretionary expenses, such as research and development expenses (R&D) and selling, SGA, advertising, and health care costs (Mittelstaedt, Nichols and Regier ,1995; Cohen et al., 2008; Roychowdhury, 2006).

³ See Barton (2001), Hand (1989), Hribar, Jenkins, and Johnson (2006), and Matsunaga (1995).

Since the future benefits of investing in R&D are uncertain, R&D expenses are often required to be expensed at the time it is incurred. Therefore, managers have opportunities to manipulate earnings in the current accounting period by reducing investment in R&D in the current period, especially as investing in R&D does not result in a direct increase in the current period's earnings. However, it is necessary to note that accounting rules and standards in different countries impose different requirements for reporting R&D. Whether R&D is required to be expensed or capitalised at the time it is incurred can have an important impact on managers' choices to manage earnings through reducing R&D expenses.

Baber and Fairfield (1991) employed a sample of 438 U.S. industrial firms with R&D expense greater than 1 percent of sales from 1977 to 1987 to test whether firms reduce R&D to increase earnings and meet earnings targets. Their findings illustrate that R&D spending is significantly reduced by firms to report positive or increasing earnings in the current period. Bushee (1998) documents similar results. Perry and Grinaker (1994) tested the unexpected R&D spending for 99 firms with large R&D expenditures from 1972 to 1990. They document that firms tend to cut R&D expenditures if their reported earnings do not meet analysts' expectations. In addition, Dechow and Sloan (1991) investigate 405 manufacturing firms with large R&D spending from 1974 to 1988 and find that CEOs in their final years of office spent less on R&D in order to improve earnings. Bange and De Bondt (1998) also tested a sample of 100 firms with large R&D spending between 1977 and 1986. The study reports earnings management behaviours of firms through adjusting R&D expenditures to minimise the anticipated gap between reported earnings and analysts' forecast.

Although evidence from early studies, such as the studies that are discussed above, are subject to limitations with small sample size and samples employing only firms with high R&D expenditures, their findings provide strong implications and foundations for

later work that investigates R&D expenditures and firms' earnings management behaviours. Roychowdhury (2006) investigates abnormal discretionary expenses for 17,338 firm years during 1987 to 2001 and finds results supporting the argument that firms reduce discretionary expenditures, such as R&D and SGA, to meet earnings targets and analysts' earnings forecasts. Gunny (2010) also tests a large sample from 1988 to 2000 and confirmed that firms manage R&D and SGA to boost earnings especially if they have constraints in their ability to inflate accruals. Eldenburg et al. (2011) test real earnings management behaviours of non-profit hospitals. The study documents that expenditures on non-operating and non-revenue-generating activities appear to decrease in hospitals with incentives to boost earnings in the short-term. These studies provide strong evidence that managers tend to reduce discretionary expenses, especially those that do not generate direct revenue, in order to increase reported earnings and to achieve certain earnings goals and targets.

2.4.2 Production, sales and inventory

The literature has investigated firms' behaviour to influence earnings through acceleration of sales, overproduction, and alternations in shipment schedules. To be specific, firms can grant price discounts or more lenient credit terms to temporarily increase sales volumes. The rise in sales can increase accounting earnings in the current period. Firms can also increase production more than necessary to lower the overall costs of goods sold (COGS) (by effectively transferring a portion of fixed factory overheads into closing inventory valuation) and hence to boost earnings. Shipping of inventory can affect earnings, if revenue is recognised at the point the inventory is shipped out. Jackson and Wilcox (2000) document that managers grant sales price reductions in the fourth quarter to avoid reporting losses and decreases in earnings and sales. Roychowdhury (2006) tests the abnormal production costs and abnormal CFOs of 17,338 firm years from 1987 to 2001. The study finds that firms manage earnings by

price discounts and overproduction to avoid reporting losses or to meet analysts' earnings forecasts. Cohen et al. (2008) and Gunny (2010) also find similar evidence that firms influence accounting earnings through controlling sales discounts and production levels.

2.4.3 Selling of long-term assets

Managers have control over the timing of assets' sales and can temporarily boost earnings through disposal of assets. Bartov (1993) investigates 653 firms in the years between 1987 and 1989 and suggests that firms time their sales of long-term assets and investments in order to smooth earnings and mitigate the detrimental effects of possible debt covenant breaches. Black et al. (1998) test the association between income from sales of assets and change in current pre-tax earnings before including the effect of assets' sales and find evidence that firms use asset sales to smooth earnings in Australia, New Zealand and the U.K. where the accounting rules allow revaluation of book value of long-term assets. Herrmann et al. (2003) also document evidence of Japanese firms managing earnings through sales of assets. However, the idea of employing sales of assets to increase earnings can be rather obvious and can be easily spotted by outsiders by perusing firms' financial statements. Therefore, the effectiveness and pervasiveness of this particular real earnings activity can be considered questionable.

2.4.4 Accrual-based earnings management versus real earnings management

For decades, earnings management has been an important issue in the field of accounting research as well as for regulators. Real earnings management has attracted increasing attention in the field of accounting as an alternative to accrual-based earnings management. Accruals manipulation does not consume cash and is very convenient for managers although there is evidence that accruals reverse in future periods (Teoh et al., 1998; DuCharme et al., 2001). Although the underlying incentives for firms to manage

earnings via real activities are similar to the motivations to engage in accrual earnings management⁴, executives may prefer to manage earnings through real activities rather than accruals for several reasons. Investing in a single earnings management technique alone is insufficient to explain firms' earnings management behaviours and the effects of such behaviours. Studying both real and accrual-based earnings management enables a more complete understanding of firms' earnings management choices and yields implications on the ways in which firms react to different situations in terms of switching between different earnings management techniques.

First, as documented in a survey by Bruns and Merchant (1990), managers consider earnings management through real activities as more ethical and more acceptable than earnings management through accounting manipulations. For example, while 74 percent of managers from the survey consider overproduction at year end as ethical, only 5 percent of the sample consider managing short-term earnings by making small manipulations of accounting methods as ethical, and 76 percent of managers consider making large accounting manipulations as unethical or a serious infraction.

Second, real earnings management draws less public attention and auditor scrutiny since managing earnings via real activities, such as giving sales discounts and overproduction, is more difficult for outsiders to detect. Chi, Lisic, and Pevzner (2011) find that firms resort to real earnings management when their accrual discretions are constrained by higher quality auditors. Similarly, Alsharairi and Slama (2012) argue that creditors play crucial roles in monitoring the firm, which would increase the credibility of corporate reports and restrict the use of management's discretionary power to

⁴ Holthausen (1990) examines the incentives behind earnings management and summarises and contrasts three most influential perspectives on accounting method choices – the information perspective, the efficient contracting view, and the opportunistic behaviour view. As discussed in earlier sections, executives may deliberately manipulate earnings for various reasons, such as achieving earnings targets, solving the problem of EPS (earnings per share) dilution due to stock options exercise, avoiding violating debt covenants, reducing regulatory costs and attracting more equity investment (Healy & Wahlen, 1999; Watts & Zimmerman, 1978; Xiong, 2006).

manipulate earnings prior to special business events such as mergers and acquisitions. The pressures from external monitors, such as auditors and creditors result in real earnings management becoming increasingly attractive. Furthermore, Roychowdhury (2006) argues that the realized shortfall between pre-managed earnings and the earnings target at year end can exceed the amount by which earnings can be increased by pure accrual manipulation. The study claims that this is possible because pure accrual manipulation is limited by GAAP and also by any accrual management in prior years. The above discussion implies that firms may engage in real earnings management if managers are short of accounting discretion.

The incentive to manage earnings through real activities rather than accruals can also be induced from changes in regulatory environment. The high-profile corporate and accounting scandals in America, such as accounting fraud at WorldCom, Enron, Xerox, and Royal Ahold, raise concerns about the integrity of accounting information and the subsequent passage of the Sarbanes-Oxley Act (SOX) placed financial reporting quality under greater public attention. Although there is evidence that strict accounting standards reduce earnings management (Cohen et al. 2008), SOX and increased public scrutiny might have only reduced accrual earnings management. Managers might have attempted to increase the use of costly real earnings management if they run out of accrual discretions (Ewert & Wagenhofer, 2005). Cohen et al. (2008) document that accrual-based earnings management increased steadily from 1987 until the passage of SOX in 2002 and accrual earnings management declined significantly since then. Conversely, the level of real earnings management activities declined prior to SOX and increased significantly after the passage of SOX. They also find that firms that just achieved important earnings benchmarks use less accruals and more real earnings management after SOX when compared to similar firms before SOX. Anand (2013) studies firms' earnings management around debt violations and reports evidence that the

Sarbanes-Oxley Act restrains managers from using accruals to stave off a violation. Zang (2012) documents that increasing scrutiny or constraints over accounting discretion may not eliminate earnings management activities, rather it may change managers' priority of earnings management strategies to real earnings management.

Enomoto, Kimura and Yamaguchi (2013) also tested the switch between real and accrual-based earnings management through comparing these earnings management behaviours across 38 countries. This international study finds firms' real earnings management increases and accrual-based earnings management decreases in countries with stronger investor protection. The authors support the view that whilst strong investor protection restricts accrual-based earnings management, it induces a shift to REM.

In summary, the literature has reported important findings on firms' incentives to engage in real earnings management, especially in relation to accrual-based earnings management. In terms of the findings of Cohen et al. (2008) and Zang (2012) they show that firms use real and accrual-based earnings management and tend to switch to real earnings management if greater public scrutiny and stricter legislation exist. However, the events that these studies test, such as the passage of SOX, and the data the studies use are specific to the U.S.. This makes the findings difficult to be applied to other countries and settings wherein different regulatory events exist. There are also conflicting views on whether real and accrual-based earnings management are substitutes or complements.

2.5 Consequences of real earnings management

With respect to the literature in regard to the consequences of real earnings management, it is still rather limited and still only employs data from the U.S.. It is argued that real earnings management occurs if the manager undertakes transactions

that are inefficient from the firm's perspective yet generate a desired profit or loss in the current period (Ewert & Wagenhofer, 2005). When firms engage in earnings management through manipulation of real business activities, they consume resources and deviate from the normal business practices. For example, R&D is argued to be extremely important to firms to innovate more efficient and effective ways of production and operation, develop new products and services that increase competitiveness, and hence enhance future cash flow and profitability (Seifert & Gonenc, 2011). R&D expenditures are also important for economic growth at an aggregated level (Goel & Ram, 1994; Corrado, Hulten & Sichel, 2009).

The opposing proposition claims that real activity manipulation to improve firms' financial performance and to avoid losses is not always sub-optimal or detrimental to firm value, especially if certain conditions require managers to make certain business decisions. Taylor and Xu (2010) investigate the impact of real earnings management to meet analyst forecasts regarding firms' future performance and find that firms that manipulate their business operations to meet analyst earnings forecasts do not experience significant negative decline in their subsequent operating performance. Similarly, Gunny (2010) finds that real earnings management through reducing R&D, reducing SG&A expenses, and cutting prices to boost sales, and overproduction is associated with relatively better subsequent performance. Gunny's results suggest that whereas engaging in REM is not opportunistic, it is consistent with the firm attaining current-period benefits that allow the firm to perform better in the future or with the signalling effect.

2.6 International studies

2.6.1 Legal regimes and quality of accounting information

It is meaningful to conduct international comparative research to address the issue

of whether particular country level characteristics exist that could explain the extent to which firms choose to engage in earnings management. Legal regimes and institutional factors, for example, can influence a country's ability to adapt to legal and economic changes and can affect the properties of the country's accounting information (Bushman & Smith, 2001; Beck et al., 2003). Such abilities are essential to determine how each country develops its accounting standards, protect investors, and regulate reporting standards, which are critical determinants for the pervasiveness and severity of earnings management activities.

La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997) test a sample of 49 countries and find that countries with poorer investor protections, measured using the character of legal rules and the quality of law enforcement, have smaller and narrower capital markets. La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998) also examine institutional factors in 49 countries and find that in terms of legal protections for investors, common-law countries generally have the strongest legal protections and French-civil-law countries have the weakest legal protections. These studies and a number of subsequent studies⁵ have provided a number of measures of country-level or institutional factors, such as legal origin, efficiency of judicial system, rule of law, corruption, risk of expropriation, risk of contract repudiation, law enforcement, shareholder rights, ownership concentration, and importance of equity market. These institutional measures are widely used in international comparison studies, including international earnings management studies.

Accounting information produced in common law countries, such as the U.S., the United Kingdom, Australia, Canada, and New Zealand, is said to be of a higher quality than that produced in code law countries, such as Greece, Spain, Brazil, and France

⁵Examples of important institutional factor analysis studies include La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999) and La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2000).

(Ball, Kothari, & Robin, 2000; Ali and Hwang, 2000). The quality of accounting information in the common law system is argued to be higher because the system enforces rules and regulations aimed at protecting minority shareholders' interests, which contribute to stronger equity markets (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2002). Higher investor protection in common law countries exists because the common law system adopts limited government interventions, restraints on government power, places emphasis on protecting individual rights and private property rights, enhances quality of contract enforcement, and builds a more independent judiciary that helps protect property rights (La Porta et al., 1999). On the other hand, the civil law system enhances government control, emphasizes administrative power, and builds strong central control of banks (La Porta et al., 1999; La Porta et al., 2000; Habib, 2007). The country's financial development is found to influence the effectiveness of financial analysts as monitors of the quality of accounting information (Degeorge, Ding, Jeanjean, & Stolowy, 2013).

Bushman and Smith (2001) argue that strong investor protection gives rise to high quality accounting information because stronger legal regimes arm investors with stronger legal rights, reducing information asymmetry and limiting the expropriation of investors by corporate insiders. The differences in the quality of accounting information driven by differences in institutional environment of different countries are recognized, which contributes to the strong trend of adopting an international accounting standard by different countries. As an example, International Financial Reporting Standards (IFRS) were adopted by European Union (EU) in 2005 to improve the quality of the accounting information disclosed and to ensure greater comparability and transparency of financial reporting (Habib, 2007; Iatridis & Dimitras, 2013). This policy change is argued to be the biggest change to financial reporting in Europe in 30 years (Jermakowicz & Gornik-Tomaszewsk, 2006). A number of studies have provided

evidence that forms the foundations for examining how accounting information and firms' earnings management behaviours differ across countries due to legal and institutional factors. These studies will be discussed in more detail below.

2.6.2 Legal regimes and earnings management

Using institutional measures developed in La Porta et al. (1997, 1998, 1999, and 2000) and a large sample of 70,955 firm-year observations for the period from 1990 to 1999 across 31 countries, Leuz et al. (2003) examine the relation between outside investor protection and accrual-based earnings management across countries. The study argues that insiders, such as managers and controlling shareholders, have incentives to use financial reporting discretion to overstate earnings in order to avoid outsider interference or breaching of contracts. Insiders also have an incentive to use their accounting discretion to create reserves for future periods by understating earnings in years of good performance (Leuz et al., 2003). Insiders in countries with weak investor protection and weak legal enforcement have greater private control benefits and stronger incentives to manipulate earnings because of less public scrutiny and legal punishment. The results of the study supports these propositions and shows an important link between legal institutions, private control benefits and the quality of accounting earnings reported to capital market participants. Consistent with Leuz et al. (2003), Memis and Çetenak (2012) test 1507 firms from eight different emerging countries between 2008 and 2009 and document that the efficiency of the judicial system helps decrease earnings management incentives.

Adopting the aggregated earnings management score from Leuz et al. (2003), DeFond, Hung and Trezevant (2007) identify structural factors in the financial reporting environment that can be employed to explain cross-country differences in the quality of accounting information. Using data from over 50,000 annual earnings announcements in 26 countries, the study finds higher earnings quality in countries with better enforced

insider trading laws and stronger investor protection institutions. Cahan, Liu, and Sun (2008) test firm-level data from 44 countries for 1993 to 2002 and find that managers in weak investor protection countries are more likely to use income smoothing techniques for opportunistic reasons while managers in strong investor protection countries are more likely to employ income smoothing techniques to convey their private information regarding future earnings. Such findings are consistent with the argument of Leuz et al. (2003) that earnings management decreases where investor protection increases.

Also, Chih, Shen and Kang (2008) employ data from 46 countries between 1993 and 2002 to test the extent to which financial characteristics and institutional variables have an impact on firms' earnings management behaviours. The study documents consistent results with Leuz et al. (2003) that companies in countries that foster good governance, as measured by anti-director rights and legal enforcement, show considerably less tendency to smooth earnings. The study also finds that earnings management is lower in economies with large stock markets and dispersed ownership. Francis and Wang (2008) provide additional evidence on the joint effect of investor protection and Big 4 audits on accrual-based earnings management. The study tests a large sample of firms from 42 countries over the period 1994-2004 and document that whilst earnings quality is higher for countries with stronger investor protection, it is only for firms with Big 4 auditors.

Using data from a particular industry, Shen and Chih (2005) examine earnings management of banks across 48 countries and find that banks in more than two-thirds of the 48 countries sampled are found to have managed their earnings. Shen and Chih (2005) document that stronger investor protection and greater transparency in accounting disclosure can reduce accrual-based earnings management. They also find that higher real GDP per capital is negatively associated with the degree of earnings management. Gupta, Khurana and Pereira (2008) find that short-term debts create an

incentive for borrowers to delay the recognition of bad news through earnings management. They suggest that this impact of short-term debt is especially strong in countries with weak legal regimes. There is also evidence of a significant link between cultural and cross-national differences in earnings management (Doupnik, 2008; Nabar & Boonlert-U-Thai, 2007).

2.6.3 The lack of evidence on international real earnings management behaviours

These international-based accounting studies have documented a strong relationship between country-level factors, such as investor protection and legal origin, and firms' accrual-based earnings management behaviour. Most of the international-based studies have focused on examining accrual-based earnings management and hence fail to report important findings on real earnings management to assist regulators. Researchers have only started to examine firms' real earnings management behaviours in an international context recently. Using a sample of over 21,000 firms from 41 countries, Seifert and Gonenc (2011) find that managers in countries with strong creditor rights have more incentive to reduce cash flow risks and therefore limit expenditures on R&D. They also report that the negative effect of creditor rights on R&D expenditures is stronger for firms facing or near financial distress. A working paper by Choi, Kim, and Lee (2011) document that the intensity of real earnings management increases as legal regime strengthens. They also find that the relative intensity of real earnings management over accrual-based management increases with a stronger legal regime because more firms switch from accrual-based earnings management to real earnings management due to higher relative cost of accruals earnings management in those countries. However, the study addresses a relatively short sample period of 2000 to 2004, which may be insufficient for testing earnings management behaviours across many countries since different countries may be experiencing different cycles during the sample period.

Most existing studies on real earnings management collect data from the U.S. market. Only a small number of research studies have examined real earnings management in other countries, which makes it difficult to carry out international comparisons and to derive implications for regulatory reforms. For example, Black et al. (1998) tested a sample of 503 firm years in Australia and New Zealand and 696 firm years from U.K. during 1985 – 1995. The study finds no evidence that firms use asset sales to smooth earnings in Australia, New Zealand and U.K. where the accounting rules allow revaluation of book value of long-term assets. Hermann et al. (2003) tested 3068 Japanese firm years during 1993 – 1997 to document that Japanese firms use income from sales of fixed assets and stock investments to minimize the gap between management earnings forecasts and reported earnings. However, the findings from these studies are difficult to generalise to other countries due to differences in institutional environment. Therefore, studies comparing real earnings management behaviours across countries using a longer sample period and a sample of a large number of countries can provide a valuable contribution to the earnings management literature.

2.7 Earnings management and financial crisis

2.7.1 Economic crisis and accounting

There are many different definitions and classifications of a crisis because currently we still know far too little about the causes of a crisis and its consequences. It is believed that in a crisis, there are sharp drops in economic activity, which result in widespread changes in expectations about future economic prospects (Waymire & Basu, 2011). Crisis often goes through the pre-crisis stage while asset prices are increasing and overshoot their fundamental values (the bubble stage), and the crisis stage whereas asset prices crash, currency crashes, and result in inflation crisis, banking crisis, and debt crisis (Reinhart & Rogoff, 2009; Waymire & Basu, 2011). Using the recent global economic and financial crisis as an example, the crisis stemmed from the bursting of a

real estate price bubble in the U.S. that was caused by low-interest-rate monetary policies and relaxation of lending requirements for sub-prime homebuyers (Rajan, 2010).

With regard to times of economic crisis, there are significant drops in economic activities that cause challenges for businesses and widespread changes in expectations about future economic prospects (Ribstein, 2003). For instance, the financial systems of many countries were damaged substantially by the recent economic and financial crisis and many influential investment banks and financial companies failed during the crisis. Lehman Brothers, for example, filed bankruptcy on September 14, 2008, making it the largest bankruptcy in history at \$639 billion (Fairfax, 2009). Also, the unemployment rate of the U.S. increased to 8.5%, its highest level in the past twenty-five years, by March 2009 (Fairfax, 2009). The crisis spread into a global recession around 2008 and 2009 and had devastating impacts on businesses, the economy, and the society of many countries, making studying crisis very valuable for providing evidence to support the development of policies to reduce the negative impacts of a crisis in the future.

Since accounting plays an important role in providing information for investors and regulators to monitor and evaluate the performance of businesses and to capture the health of the markets and systems, weak accounting can be an important factor in the bursting of asset bubbles, and hence the occurrence of a crisis. It is argued that fair value accounting made the current crisis worse than it would have been otherwise because it encourages risk taking in expansions and asset liquidation in downturns (Allen and Carletti, 2008; Waymire and Basu, 2011). In addition, although Barth and Landsman (2010) claim that fair value accounting played little or no role in the financial crisis, the authors comment that the transparency of information associated with asset securitizations and derivatives likely were insufficient for investors to assess the values and riskiness of bank assets and liabilities. Accounting rules and systems directly

influence the disclosure of information in the financial industry and other industry, which are linked to the occurrence of a crisis. The recent economic and financial crisis also has revealed inadequacies of the accounting practices and has led to significant accounting reforms, such as the passage of new accounting regulations. For instance, the accounting system and the audit industry are argued to be insufficient in the recent crisis to identify any of the emerging banking crises (Hopwood, 2009).

2.7.2 Evidence on economic crisis and accrual-based earnings management

The literature regarding firms' earnings management behaviours whilst they are in depressed positions or facing potential debt violations can provide useful knowledge on the way firms behave in crisis time. Firms are found to accelerate earnings when they are close to their lending covenants (DeFond & Jambalvo, 1994). This finding is consistent with managers' incentive to manage earnings in order to meet targets and requirements in the debt covenant discussed in the previous sections. Sweeney (1994) finds that although covenant violators make income-increasing accounting changes, these typically take place after the violation, indicating the possibility that the changes were made to reduce the likelihood of future covenant violations. Sweeney (1994) thinks that it is possible that firms make changes in their operations and accounting policies in response to their financial difficulties. However, distressed firms that undertake debt renegotiation subsequent to debt covenant violation are found to adopt income-decreasing accruals during debt renegotiation (Saleh & Ahmed, 2005⁶). Jaggi and Lee's (2002) findings show that firms with technical default but being successful in obtaining waivers for debt covenant violations have used income-increasing discretionary accruals. If waivers are denied or firms are restructuring their troubled debt, income-decreasing discretionary accruals are used. These results suggest that

⁶Saleh and Ahmed (2005) use four established models for detecting discretionary accruals during the recent financial crisis in Malaysia and find that the magnitude of discretionary accruals is significantly negative during the year surrounding renegotiations with lenders.

managers use income-increasing discretionary accruals if technical default is due to temporary financial difficulties and the firm is in fact in a good financial condition. If financial distress is severe that leads to debt restructuring or firms are unable to obtain waivers, managers use income-decreasing discretionary accruals to highlight financial difficulties, so that they can negotiate better terms for debt contracts.

There are a large number of studies which document accrual-based earnings management during a crisis period. However, the findings of these studies yield two theories regarding firms' incentives to manage earnings during crisis since the studies document different directions for the accrual-based earnings management activities.

On one hand, in financial crisis and economic recessions, businesses have more opportunities to receive support from the government and face less criticism for poor performance. A reduction in earnings can be viewed as acceptable and temporary in the period of a crisis as long as the company provides evidence that there is potential for improvement in the future. Supporting this view of earnings management in crisis periods, Lim and Matolcsy (1999) and Navissi (1999) argue that companies engage in income-decreasing earnings management to benefit from changes in government policies⁷. Saleh and Ahmed (2005) find that firms manipulate earnings downwards during debt renegotiation in Malaysia during the East Asian crisis years from 1997 to 1998. Similarly, Chia et al. (2007) find that service-oriented companies engage in income decreasing earnings management during the Asian Financial Crisis. In addition, Habib et al. (2013) provide evidence on earnings management in the recent economic crisis. Using New Zealand data, the study documents that distressed firms engage in more income-decreasing earnings management activities during the recent global crisis.

⁷ According to Lim and Matolcsy (1999), Australian firms manage earnings downwards to benefit from an improvement in the chances of obtaining approvals of requested price increase during price controls. Navissi (1999) finds that New Zealand manufacturing firms manipulate earnings downward to indicate financial difficulties during periods of general price inflation.

On the other hand, it is argued that managers may engage in income-increasing earnings management activity to preserve their reputation when the firms are suffering from poor earnings performance or serious financial distress in an economic recession (Jaggi & Lee, 2002; Habib et al., 2013). This is consistent with the claims that firms are more aggressive in reporting good news and delay recognition of bad news during financial crisis (less conservative and less timely in financial reporting) (Vichitsarawong, Eng, & Meek, 2010). During crisis, firms are under pressure to convey more positive information to investors to reduce the negative impact of the crisis and to other stakeholders, such as creditors and the government, to gain more opportunities for fund raising purposes and political purposes. Using Malaysian data during the 1997-1998 period of economic crisis, Ahmad-Zaluki et al. (2011) find that Malaysian IPO companies exhibit a higher level of income-increasing earnings management during the crisis period than during the non-crisis period. Akindayomi (2012) also documents an instance of aggressive earnings management of Nigerian banks to increase reported earnings during the nation's banking crisis of the 1990s.

There is also evidence of accrual-based earnings management during crisis in many studies testing different countries and crisis periods. Gul, Srinidhi, and Shieh (2004) test the effect of financial downturn in Hong Kong on the accounting conservatism of Hong Kong firms and their findings indicate that financial downturns provide incentives to managers to use their discretions in reporting more aggressively than at times of relative financial prosperity. Choi et al. (2011) find that the loss of investor confidence and the increasing use of opportunistic earnings management that occurred during the Asian financial crisis of 1997-1998 led to a significant decline in the information value of discretionary earnings component. In this study, the authors tested nine Asian countries, including Hong Kong, Indonesia, Japan, Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand. Iatridis and Dimitras (2013)

investigate earnings manipulation during the 2008 economic crisis and find that Portugal, Italy and Greece tend to engage in more earnings management as compared to Irish and Spain in order to improve their lower profitability and liquidity.

In summary, the literature on earnings management and crisis provides important findings and implications for firms' behaviours during crisis and financial difficulties. The choice of earnings management is often influenced by specific circumstances, such as the severity of financial distress of the firm. However, a lack of evidence on firms' real earnings management behaviours during crisis or financial distress exists, possibly because the measures of real earnings management are still relatively new.

2.8 Summary

This chapter reviews literature regarding real earnings management and forms theoretical foundations for developing the hypothesis for this thesis. There is a large literature on firms' manipulation of accruals to increase or decrease earnings in order to achieve earnings target, influence stock performance, and maintain contractual relationships. As compared to accrual-based earnings management, real earnings management has only started to attract more empirical studies in recent years.

The literature has tested different techniques of real earnings management (Roychowdhury, 2006), managers' choices between accrual-based and real earnings management techniques (Cohen et al., 2008; Zang, 2012), the consequences of real earnings management (Gunny, 2010), institutional environment and earnings management (La Porta et al. 1997, 1998, 1999, and 2000; Leuz et al. (2003), and evidence on accrual-based earnings management and crisis (Lim & Matolcsy, 1999; Navissi, 1999; Chia et al., 2007; Habib et al. 2013). However, many topics on real earnings management are still very lightly tested and much of the existing evidence related to real earnings management is inconsistent and somewhat conflicting.

CHAPTER 3**HYPOTHESIS DEVELOPMENT****3.1 Introduction**

Based on the findings from the accounting literature, this chapter discusses three hypotheses testing important issues related to real earnings management on a global scale. The first hypothesis aims to test the relationship between firms' real earnings management behaviour and the country-level institutional characteristics. This hypothesis is motivated by the series of studies by La Porta et al.⁸ and Leuz et al. (2003), which find that country-level legal and institutional environments affect firms' corporate governance and earnings management activities.

Hypothesis 2 investigates the impact of real earnings management on firms' future performance. This hypothesis is developed based on evidence reported in prior literature, such as Gunny (2010). Hypothesis 2 also tests the incremental effects of institutional factors on the association between real earnings management and firms' future ROA and cash flow.

The third hypothesis aims to investigate firms' real earnings management during the periods of financial crisis. The hypothesis will firstly be developed based on two views of earnings management behaviours in crises and financial distress context. Since there is little academic evidence directly related to firms' real earnings management behaviours during crises, the different types of real earnings management activities, such as sales manipulation, management of discretionary expenses and over production will be investigated. Hypothesis 3 will also examine the incremental effects of a crisis on the association between firms' real earnings management activities and firms' future performance.

⁸These studies include La Porta et al. (1997), La Porta et al. (1998), La Porta et al. (1999), La Porta et al. (2000), La Porta et al. (2002), and La Porta et al. (2008).

Sections 3.2, 3.3, and 3.4 present discussions in relation to the three hypotheses. Section 3.5 summarises the hypotheses in a table format.

3.2 Hypothesis 1: The association between country-level institutional factors and firms' real earnings management behaviour

This hypothesis investigates if there is an association between country-level institutional factors and firms' real earnings management behaviours. Country-level institutional factors, such as legal origin, legal protections for minority investors, law enforcement, and ownership concentration, are argued to influence the properties of the country's accounting information, and firms' corporate governance and transparency (La Porta et al., 2000; Doidge, Karolyi, & Stulz, 2007). A number of La Porta et al.'s studies provide important fundamental measures and concepts that capture country-level institutional environments, such as legal origin, efficiency of judicial system, rule of law, corruption, risk of expropriation, risk of contract repudiation, law enforcement, shareholder rights, ownership concentration, and importance of equity market. These institutional measures are widely used in international comparison studies, including international earnings management studies.

Legal traditions are normally categorised into common law and civil/code law traditions. Further, civil law tradition is often classified into French, German, and Scandinavian regimes (La Porta et al., 2008). La Porta et al. (1998) find that common-law countries (originating in English law) generally have the strongest and French-civil-law countries the weakest legal protections of investors. In common-law countries as compared with code-law countries, there is a higher demand for information on organisational outcome because firms deal with investors at the arm's length and accounting information plays a critical role in investors' investment decisions (Ball et al., 2000). Accounting information produced in common law countries is said to be of higher quality than that produced in code law countries

because the common law system enforces rules and regulations aimed at protecting minority shareholders' interests, which contribute to stronger equity markets (Ball et al., 2000; Ali and Hwang, 2000; La Porta et al., 2002). As a result, it is expected that common-law countries would exhibit lower earnings management because of the higher quality of accounting information and shareholder protection, which is supported by the findings of Leuz et al. (2003). On the other hand, civil-law countries are found to be associated with a heavier hand of government ownership and potentially with adverse impacts on markets, such as greater corruption, larger unofficial economy, and higher unemployment (La Porta, Lopez-De-Silanes & Shleifer, 2008). The weaker investor protection in civil-law countries, as documented by La Porta et al.'s studies, gives more power to insiders and makes investors more vulnerable in such an institutional environment. A sizable volume of prior research has investigated the association between the accrual-based earnings management and institutional environments of different countries. However, I focus on firms' real earnings management decisions because it is argued to be an important and possibly an increasingly important form of earnings management (Cohen et al., 2008; Graham et al., 2005).

Similar to accrual-based earnings management, firms' real earnings management decisions and choices can be influenced by the institutional environments in which they operate. The more corruption and large unofficial economy make it more likely for organisations in code-law countries to use their discretions to make abnormal or suboptimal real business operation decisions for opportunistic reasons. On the other hand, the higher quality of accounting information in common-law countries affects not only the financial reports but also the belief and moral standards of firms in these countries to provide information that reflects the true performance of firms. As a result, firms would be less likely to make suboptimal or opportunistic decisions in real operations in order to influence the reported earnings which are provided to the external

stakeholders. Therefore, the following hypothesis is developed:

H1A: Firms in code-law countries engage in more real earnings management activities than firms in common-law countries after controlling for the effects of accruals management.

However, although researchers reported systematic differences in different legal traditions, it is argued that there has been a great deal of mutual influence and, in some areas, convergence in between common law and civil law traditions (La Porta et al., 2008). Similarly, Armour, Deakin, Sarkar, Siems and Singh (2009) report that legal origin explains only part of the pattern of change in the adoption of shareholder protection and civil-law systems were catching up with their counterparts in the common-law systems over time. In response to the concern that the use of common-law and code-law classification may have been too broad, a French-civil-law dummy variable is constructed to investigate if real earnings management behaviour is different in French-civil-law system as compared to other legal systems, providing additional support for Hypothesis 1A regarding the association between legal origin and firms' real earnings management behaviours. This classification is used because the French-civil-law system has been found to have the weakest investor protection (La Porta et al., 1998), the worst quality of law enforcement (La Porta et al., 2000), and the French corporate governance is characterised by an interpenetration of kinship structure (family owners) and managerial bureaucracy (Coffee Jr, 1999). Such legal and institutional environment gives rise to more opportunities for opportunistic earnings management activities to expropriate outside investors.

In terms of investor protection, La Porta et al. (1997) document that countries with poorer investor protections, measured by the character of legal rules and the quality of law enforcement, have smaller and narrower capital markets. La Porta et al. (2008) claim that stronger legal protection of outside investors limits the extent of

expropriation of outside investors by corporate insiders. Strong investor protection gives rise to high quality accounting information by arming investors with stronger legal rights and reducing information asymmetry (Bushman and Smith, 2011). Investors' rights are also protected through legal enforcement, such as the enforcement of regulations and laws on accounting rules and disclosure rules. Without strong enforcements to protect shareholders' rights, the insiders would not have much of a reason to repay the creditors or to distribute profits to shareholders (La Porta et al., 2000). DeFond et al. (2007) document that annual earnings announcements are more informative in countries with better enforced insider trading laws. A number of studies test the firms' accrual earnings management behaviour across different countries. Leuz et al. (2003) find that insiders in countries with weak investor protection and weak legal enforcement have greater private control benefits and stronger incentives to engage in accrual earnings management because of less public scrutiny and legal punishment. Consistent with Leuz et al. (2003), Cahan et al. (2008), Chih et al. (2008), and Memis and Çetenak (2012) document higher earnings management and lower earnings quality in countries with weak legal regime.

Stronger shareholder protection and law enforcement promote stronger business ethics as well as the culture in the countries about how operational business decisions should be made as a way to provide information on firms' value and future performance to external stakeholders. For example, with strong emphasises on the protection of minority shareholders, firms would be aware of that manipulating production levels to manipulate earnings is unethical and can be misleading for shareholders. Without strong shareholder protection and law enforcement, firms may consider such behaviour as ethical and normal and pay little attention on the impacts of such decision on accounting quality and on shareholders' decision making. With the stronger legal protection and law enforcement, there is higher investor demand for high quality accounting

information, higher public scrutiny, and more negative consequences for the organisations if their opportunistic operational decisions to influence reported earnings are revealed. Therefore, the following hypothesis is developed:

H1B: Firms in countries with weaker investor protection and law enforcement engage in more real earnings management activities than firms in countries with stronger investor protection and law enforcement after controlling for the effects of accruals management.

Finally, as ownership concentration is argued to be related to investor protection (La Porta et al., 2000), it can influence the incentives and opportunities for earnings management. Ownership concentration is also related to legal tradition because a large number of firms in code-law countries are owned either by the state or by the families that founded or acquired the firms (La Porta et al., 1999; La Porta et al., 2000). Family-controlled firms are typically managed by family members and the controlling shareholders also have nearly full control over the managers (Claessens, Djankov & Lang 2000). As a result, insiders would have higher private benefits of control when there is concentrated ownership in firms, leading to higher incentives and more opportunities to expropriate outside investors. And because the concentrated organisations have strong control over the daily operations of the organisation, it is more convenient for them to engage in real activity manipulations. The concentration of decision making power can also lead to higher corruption and connections between organisations, which may also increase managers' incentives to engage in real earnings management to achieve specific benefits and goals for themselves or for their partnered or networked businesses. Therefore, the following hypothesis is developed:

H1C: Firms engage in more real earnings management activities in countries with more concentrated ownership than countries with less concentrated ownership after controlling for the effects of accruals management.

3.3 Hypothesis 2: The association between real earnings management and firms' future performance in different institutional environment

The importance of studying firms' real earnings management behaviours is in the negative value-destroying effects of such behaviour. Real earnings management techniques such as delaying advertising expenditures or R&D costs might have negative long-term impacts on firms' future competitiveness and performance. Graham et al.'s (2005) survey suggests that even the managers admit that they are willing to engage in real earnings management provided that the sacrifice to the firm is within an acceptable level. Cohen et al. (2008) argue that real earnings management is both difficult to detect and more costly to the firm than accrual manipulation.

However, using the U.S. data from 1988 to 2002, Gunny (2010) finds that managers do not appear to use real earnings management for opportunistic reasons because firms which engage in such earning manipulation are associated with better performance in the future after controlling for other relevant factors. In a more recent study, Gunny and Zhang (2014) find that firms that just meet analyst forecasts with more patent citations have significantly better performance than firms with fewer patent citations, which is consistent with the signalling hypothesis. This is related to the information perspective of accounting introduced by Ball and Brown (1968), Beaver (1968), and Holthausen and Leftwich (1983), which suggests that the use of accruals and other accounting method choices reflect managers' expectation regarding the future cash flows of the firm. Based on this view, earnings management allows firms to better "signal" the future performance of the organisation to the market since managers presumably have superior information about their firm's cash generating ability. Consistent with Gunny (2010) and also using data from the U.S., Taylor and Xu (2010) demonstrate that firms identified as conducting real earnings management activities do not experience a significant decline in subsequent operating performance. Zhao, Chen,

Zhang, and Davis (2012) find that although abnormal real activities in general are associated with weaker future performance, abnormal real activities intended to just meet earnings targets are associated with higher future performance.

This contrary evidence triggers the need to understand the circumstances under which real earnings management is used efficiently or opportunistically. It is believed that international real earnings management evidence would provide some useful insights into this issue because country-level factors such as investor protection and legal enforcement are identified by prior studies to have been significantly associated with earnings management behaviours (for example, Leuz et al., 2003; DeFond et al., 2007). For example, consistent with the accrual-based earnings management literature, it is possible that managers in countries with weak investor protection are likely to engage in REM for opportunistic reasons while managers in countries with strong investor protection are likely to engage in REM for efficiency reasons, which might partially explain Gunny's (2010) findings using evidence from the U.S. Therefore, the following hypothesis is developed:

H2: There is a significant association between REM and firms' future performance and this association is moderated by institutional environment.

3.4 Hypothesis 3: The association between crisis and firms' real earnings management behaviour

Hypothesis 3 investigates firms' real earnings management activities during financial crises taking into account the potential influences of the country-level institutional environment. It is believed that in a crisis, the sharp drops in economic activities result in widespread changes in expectations about future economic prospects (Waymire & Basu, 2011). The poor macroeconomic environment negatively affects firms' operating activities and firms may often experience large reduction in sales. As

discussed in Chapter 2, in financial crisis and economic recessions, businesses have more opportunities to receive support from the government and face less criticism for poor performance. A reduction in earnings can be viewed as acceptable and temporary in the period of a crisis as long as the company provides evidence that there is potential for improvement in the future. Supporting this view of earnings management in crisis periods, it is argued that companies engage in income-decreasing earnings management in financial crises (Chia et al., 2007; Habib et al., 2013). Firms are also argued to engage in income-decreasing earnings management to benefit from changes in government policies (Lim & Matolcsy, 1999; Navissi, 1999) and to gain advantage in debt renegotiation during crisis periods (Saleh & Ahmed, 2005). These findings contribute to the so called “big bath” hypothesis where firms may take advantage of the economic and political changes in crises and save up earnings for future periods.

On the other hand, it is argued that managers may engage in income-increasing earnings management activity to meet earnings targets, to avoid violating lending covenants, to reduce pressure from stakeholders, and to preserve their reputation when firms are suffering from poor earnings performance or serious financial distress in an economic recession (Jaggi & Lee, 2002; Habib et al., 2013; Ahmad-Zaluki et al., 2011; DeFond & Jiambalvo, 1994; Saleh & Ahmed, 2005). In addition, the specific economic circumstances in a crisis can also affect firms’ choices between accrual-based earnings management techniques and real earnings management techniques. For example, the realized shortfall between pre-managed earnings and the earnings target at year end can exceed the amount by which earnings can be increased by pure accrual manipulation (Roychowdhury, 2006). Namely, managers might have attempted to increase the use of real earnings management when they run out of accrual discretions (Ewert & Wagenhofer, 2005). Firms may also switch from accrual-based earnings management to real earnings management when there are changes in the regulatory environment in a

crisis period, such as the passage of more strict financial reporting regulations (Cohen et al., 2008).

Therefore, based on findings from a review of the prior literature, there is expected to be an association between firms' real earnings management and crisis as firms' earnings management incentive and behaviours change in specific crisis periods. However, the findings reported by prior studies are inconsistent and provide inconclusive evidence on the direction of firms' real earnings management behaviours during crisis periods. In addition to inconsistent findings on the direction of firms' earnings management behaviours during crisis as discussed above, there is a lack of evidence directly on firms' real earnings management behaviours during crisis or financial distress. No prior studies have specifically tested if financial crises are associated with firms' real earnings management behaviours. The understanding of firms' real earnings management activities may be better developed through investigating different real earnings management techniques, including sales manipulation, management of discretionary expenses and manipulation of production.

During a crisis or recession, there are likely to be reductions in sales due to lower consumer confidence and purchasing power. Using the U.S. as an example, consumer demand for manufactured products overall decreased by 3.2 percent and demand for automobiles and auto parts declined by 12.5 percent between 2007 and 2008 (Dooley, Yan, Mohan, and Gopalakrishnan, 2010). There are also potential reductions in investment as firms are less optimistic regarding future performance and become more conservative (Wei & Zhang, 2008; Arslan, Florackis, & Ozkan, 2006). This signifies that there is a lower demand for both consumer products and industrial products, such as building supplies, during crisis and recession. Facing the reduced demands for products and services and dropping sales, managers have incentives to boost sales in a crisis period to overcome financial difficulties, to continue business operations, and to meet

performance requirements set by stakeholders, such as creditors (Jaggi & Lee, 2002; Habib et al., 2013). Providing sales discount and offering customers more lenient credit terms are argued to be popular strategies for managers to temporarily increase sales during the year (Roychowdhury, 2006). This manipulation of sales upwards in the short-term would result in lower abnormal CFO in the current period relative to sales because lower margins are received from unit sale and cash flow is received over a longer period of time. Lower margins due to discounts also result in higher abnormal production costs than what is normally given the sales level.

There are two views on the way discretionary expenses may be managed in a crisis. On one hand, advertising is argued to have positive impacts on firm value as it is an effective process of announcing products and strategies and of promoting the brand images and value of the company (White & Miles, 1996). Similarly, prior literature reports significant value relevance of R&D expenditures as there is expected to be a positive association between R&D investment and firms' future performance (Chauvin & Hirschey, 1993; Sougiannis, 1994). And such value relevance of advertising and R&D expenditures is argued to be even more significant around the global financial crisis (Kwon, 2013). This is consistent with the claims that firms are more aggressive in reporting good news and delayed recognition of bad news during financial crisis (less conservative and less timely in financial reporting) (Vichitsarawong et al., 2010). Therefore, managers have incentives to increase discretionary expenses, such as advertising and R&D, to increase the perceived future value of the firms and to gain greater power in negotiation with the creditors during a financial crisis. The manipulation to increase discretionary expenses results in abnormally higher discretionary expenses and abnormally lower CFO relative to sales.

On the other hand, managers may reduce discretionary expenses, such as R&D, advertising, and SG&A expenses, to boost earnings in the current accounting period as

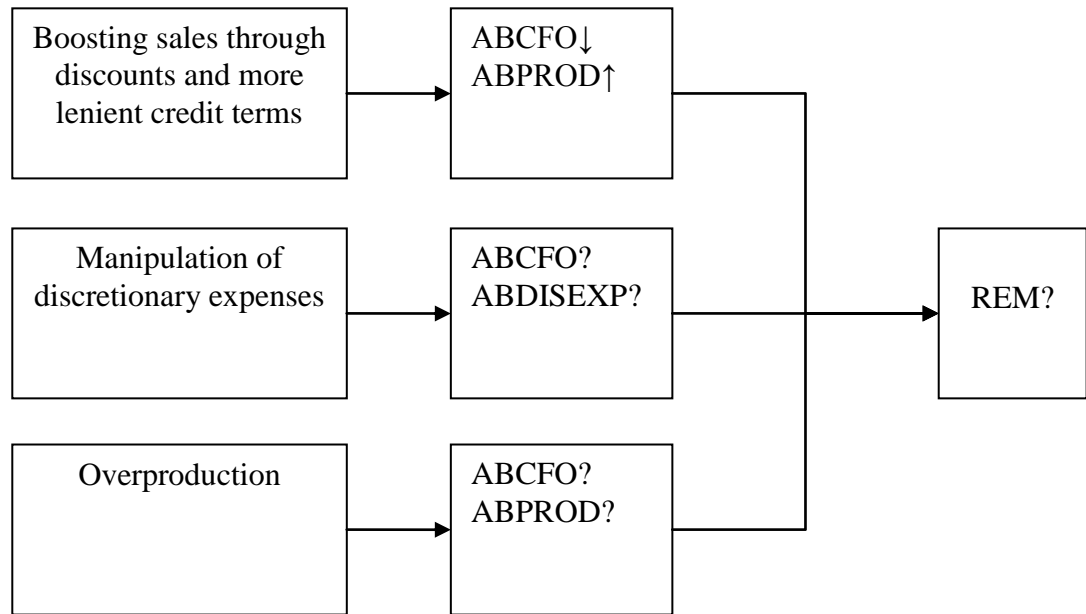
investing in these expenses does not result in a direct increase in the current period's earnings (Roychowdhury, 2006). The financial difficulties and even near collapse of the banking sectors and the capital markets during crisis periods led to a shortage in liquidity (Francis, LaFond, Olsson, & Schipper, 2004). Firms with sustainable real operations have a higher likelihood of obtaining financing from either the banks or the market (Kousenidis, Ladas, & Negakis, 2013). As a result, firms with sustainable real operations are more likely to reduce discretionary expenses in order to meet earnings targets and maintain external financing in crisis periods. This is also consistent with the findings that higher cash holdings increases firms' capability to undertake profitable investment opportunities and firms that are financially constrained are expected to accumulate cash to safeguard against future investment needs in a crisis context (Almeida, Campello, & Weisbach, 2004; Arslan et al., 2006). If this is the case, discretionary expenses are expected to be abnormally low relative to sales in crisis periods.

In terms of production level, it can be difficult for firms to increase earnings through over production during a crisis period because the company may face liquidity issues as well as the stronger incentives to accumulate cash to safeguard against future investment needs (Almeida et al., 2004; Arslan et al., 2006). However, there is evidence that the large variations in consumer demand in a crisis reduce inventory management performance and increase costs (Metters, 1997). Also, the abnormal production costs may naturally go up when the inventories are piled up because of decreases in demand in the market and poor sales performance⁹. However, these are the normal responses to the financial crisis and cannot reflect managers' real earnings management incentives. Therefore, the direction of production costs as a measure for real earnings management

⁹ The difficulty to isolate managers' incentive to engage in opportunistic earnings management from managers' normal operation decisions during crisis can be a concern here. This is why the tests of hypothesis 4, which focuses on performance consequences of REM, are conducted to make implications for clarifying the opportunistic or managerial behaviours.

technique in crisis periods is uncertain.

Figure 3.1 Different techniques of real earnings management in crises



↑:Increases ↓: Decrease ?: Unclear direction

Figure 3.1 summarises the impact of sales manipulation, management of discretionary expenses and overproduction on abnormal CFO, abnormal discretionary expenses and abnormal production costs. Taking into consideration the components of real earnings management, it is expected that firms have incentive to either increase or decrease reported earnings through the manipulation of real activities, especially through sales manipulation and the control of discretionary expenses. However, the direction of the manipulation is uncertain. Based on the discussion above, the following hypothesis is developed:

H3A: There is a significant association between crisis and firms' real earnings management behaviour.

There is expected to be an association between firms' real earnings management and crisis as firms' earnings management incentive and behaviours change in specific

crisis periods. Although the two views of firms' earnings management incentives, the big bath view and the income-increasing view conflict, they support the proposition that firms' earnings management incentives and behaviour change in specific crisis contexts. The discussion of different real earnings management techniques that may be used in crisis periods also yield important implications for why it is important to investigate the impacts of real earnings management on firms' performance and future cash flow in crises. The finding of negative impacts of real earnings management on firms' future performance in times of crises supports the opportunistic view while a finding of positive impact supports the efficiency view. Therefore, the following hypothesis is developed:

H3B: There is a significant association between REM and firms' future performance and this association is moderated by crisis.

3.5 Chapter summary

The hypotheses developed in this chapter are summarized in the table below:

Table 3.1 Summary of hypotheses

H1A	Firms in code-law countries engage in more real earnings management activities than firms in common-law countries after controlling for the effects of accruals management.
H1B	Firms in countries with weaker investor protection and law enforcement engage in more real earnings management activities than firms in countries with stronger investor protection and law enforcement after controlling for the effects of accruals management.
H1C	Firms engage in more real earnings management activities in countries with more concentrated ownership than countries with less concentrated ownership after controlling for the effects of accruals management.
H2	There is a significant association between REM and firms' future performance and this association is moderated by institutional environment.
H3A	There is a significant association between crisis and firms' real earnings management behaviour.
H3B	There is a significant association between REM and firms' future performance and this association is moderated by crisis.

CHAPTER 4**RESEARCH METHOD****4.1 Introduction**

In this chapter, the research design and methodology used to test the hypotheses developed in Chapter 3 are discussed. The chapter begins with a discussion of the data and sample selection in section 4.2. This is followed by section 4.3, which includes a discussion of the way accrual-based and real earnings management are measured in this thesis. Section 4.4 discusses the research design for each hypothesis to show how the hypotheses are tested and how the variables are defined. Section 4.5 discusses limitations of the research designs. Chapter 4.6 provides a summary of the research methods of this thesis.

4.2 Data collection

To test the hypotheses developed in Chapter 3, firms' accounting data is collected from Wharton Compustat Global database for the period between 1996 and 2012. The starting sample year of 1996 is chosen because an increasing amount of data points are missing for years before 1995 from the Wharton Compustat Global database for many countries. Data on GDP growth for different countries and years is collected from the database of World Bank and the World Economic Outlook database provided by the IMF (International Monetary Fund). The data cleaning process can be seen from Table 4.1 below. Following previous studies, such as Leuz et al. (2003) and Roychowdhury (2006), regulated industries (SIC codes between 4400 and 5000) and banks and financial institutions (SIC codes between 6000 and 6500) are deleted from the sample. There are data losses due to missing data and the calculation of lagged variables as well as future performance variables. The models for normal CFO, normal production costs, normal discretionary expenses, and accruals are estimated by every year and industry

for every country based on the one-digit SIC code. And I require at least 10 observations for each industry-year grouping for all the countries. I also require the countries that are included in the final sample to have at least 150 firm-year observations. Countries are identified using the country of incorporation variable from the Wharton Compustat Global database. As a result, the final sample comes to 135,722 firm-year observations and 20,968 unique firms for 31 countries from 1996 to 2011¹⁰.

Table 4.1 Data cleaning process

Initial data collected for 37 countries	287,430
Less: firms in regulated industries (between SIC 4400 and 5000) and banks and financial institutions (between SIC6000 and 6500)	50,975
Less: missing data and data loss due to calculation of lagged variables and future ROA/ future CFO	100,110
Less: countries with less than 150 data points	623
Final sample (firm-year observations)	135,722

4.3 Earnings management measures and control variables

4.3.1 *Measuring accrual earnings management*

To proxy for accrual-based earnings management, this thesis adopts the modified Jones (1991) model to compute discretionary accruals. Discretionary accruals are the difference between the actual accruals and the normal level of accruals. Modified Jones model is estimated for each year and industry, which means that industry-wide changes in economic conditions that affect total accruals are controlled for. The modified Jones model is employed to compute total accruals (TA) for every industry and year for each

¹⁰ More statistics and characteristics of the sample are discussed in the descriptive statistics section in Chapter 5.

country based on one-digit SIC code¹¹ as follows:

$$\frac{TA_t}{A_{t-1}} = \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{\Delta S_t}{A_{t-1}} + \alpha_3 \frac{PPE_t}{A_{t-1}} + \varepsilon_t \quad (4.1)$$

Where TA_t is the earnings before extraordinary items and discontinued operations minus the operating cash flows reported in the statement of cash flow in year t . A_{t-1} is total assets at the end of period $t-1$ (i.e. lagged assets). S_t is the operating revenue during period t . ΔS_t is the changes in sales/turnover in year t . $\Delta S_t = S_t - S_{t-1}$. PPE_t is the gross property, plant and equipment in year t . The above regression is estimated for every industry and year for each country with at least 10 observations in the particular industry and year.

The coefficient estimates from equation (4.1) are then used to estimate the firm-specific normal accruals (NA_t):

$$NA_t = \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{\Delta S_t - \Delta AR_t}{A_{t-1}} + \alpha_3 \frac{PPE_t}{A_{t-1}} + \varepsilon_t \quad (4.2)$$

Where ΔAR_t is the change in accounts receivable in year t from the preceding year. Then, discretionary accrual (DA_t) that is used to proxy for accrual-based earnings management in this thesis is measured as:

$$DA_t = \frac{TA_t}{A_{t-1}} - NA_t \quad (4.3)$$

4.3.2 Measuring real earnings management

Prior literature develops models to capture real earnings management through measuring the abnormal levels of operating cash flow (CFO), discretionary expenses, and production costs. In this thesis, the estimation models for normal CFO, discretionary expenses, and production costs for every year and industry and for every country are based on Dechow et al. (1998) and Roychowdhury (2006). First, normal

¹¹One digit SIC code is used to ensure small countries have sufficient data points to be selected and maximize the number of countries that can be contained in the final sample based on selection requirements.

CFO is expressed as a linear function of sales and change in sales in the current period. The cross-sectional regression estimating normal or expected level of CFO for every industry and year and for each country is shown below:

$$\frac{CFO_t}{A_{t-1}} = \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{S_t}{A_{t-1}} + \alpha_3 \frac{\Delta S_t}{A_{t-1}} + \varepsilon_t \quad (4.4)$$

CFO_t is cash flow from operations at the end of year t.

Using the estimated coefficients from equation (4.4) the expected or normal CFO in year t can be computed using the corresponding firm-year's S_t and A_{t-1}. Abnormal CFO (ABCFO) for every firm-year is computed as actual CFO minus the normal CFO.

I also follow Roychowdhury's (2006) estimation of normal discretionary expense:

$$\frac{DISEXP_t}{A_{t-1}} = \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{S_t}{A_{t-1}} + \varepsilon_t \quad (4.5)$$

Similarly, the normal level discretionary expense is estimated as a function of sales and total assets. This regression is again estimated for each industry and year and for every country based on one-digit SIC. Actual discretionary expense is equal to the sum of R&D expenses and SG&A expenses. As long as SG&A costs are available, R&D expenses are set to zero if they are missing. The abnormal discretionary expense (ABDISEXP) is computed using actual discretionary expense minus normal discretionary expense.

Third, production costs are defined as the sum of COGS (Costs of Goods Sold) and change in inventory during the period. Following Dechow et al. (1998), Roychowdhury (2006), and Gunny (2010), the normal level of production costs in period t is estimated for each year and industry for every country using the following regression:

$$\frac{PROD_t}{A_{t-1}} = \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{S_t}{A_{t-1}} + \alpha_3 \frac{\Delta S_t}{A_{t-1}} + \alpha_4 \frac{\Delta S_{t-1}}{A_{t-1}} + \varepsilon_t \quad (4.6)$$

The abnormal production cost (ABPROD) is computed using the actual production

costs (the sum of actual COGS and actual changes in inventory during the period) minus the normal level of production costs.

In addition to individual real earnings management measures, which include ABCOF, ABPROD, and ABDISEXP, one aggregate real earnings management measure is developed based on Cohen et al. (2008). REM is the sum of the mean abnormal CFO (ABCFO), mean abnormal production cost (ABPROD) and mean abnormal discretionary expenses (ABDISEXP), where ABCFO and ABDISEXP are multiplied by (-1) to present higher real earnings management when the REM measure increases.

However, Roychowdhury (2006) claims that real activities manipulation affects abnormal cash flows in an ambiguous direction. While reducing discretionary expenses increase cash flows price discount, channel stuffing and overproduction decreases cash flows (Zang, 2012). Therefore, based on Zang (2012), REM2 is developed to capture the real earnings management behaviours that include overproduction and reducing of discretionary expenses to boost earnings. This measure is the sum of ABPROD and ABDISEXP multiplied by -1. Since this measure is largely similar to REM, the results using REM2 will only be discussed in the additional tests in Chapter 5.

4.3.3 Control variables

A number of control variables are included in the regression models in this thesis. Firm size and growth of the firm need to be controlled for to address systematic variations in real earnings management activities due to different firm size and differences in growth opportunities (Roychowdhury, 2006). SIZE is the natural log of total assets and GROWTH is measured as the percentage increase in sales. According to Dechow et al. (1995), measurements of abnormal accruals have measurement error positively correlated with firm performance. ROA is included in the regression models to control for the measurement error related with firm performance. ROA is calculated

as income before extraordinary items divided by lagged total assets. SIZE, GROWTH and ROA are used in many earnings management studies, such as Leuz et al. (2003), Gunny (2010) and Zang (2012). Leverage is also found to be associated with firms' earnings management choices. Dechow, Sloan, and Sweeney (1996) report that earnings manipulation firms have higher leverage ratios and are more likely to violate debt covenants. Therefore, LEV, another control variable, is calculated as total liabilities divided by total assets.

In addition, prior literature provides findings in relation to the changes of firms' real earnings management behaviour overtime. Cohen et al. (2008), for example, report a negative and significant coefficient for the Time variable when RM_PROXY is the dependent variable over the period between 1987 and 2005. In their study, RM_PROXY is a real earnings management measure that sums abnormal CFO, abnormal discretionary expenses, and abnormal production and Time is a trend variable equal to the difference between the current year and 1987. The decrease of real earnings management behaviour over time can be related to the enhanced institutional environment in the world, such as stronger shareholder protection legislation and more developed financial markets, especially the catching up of code-law countries (Armour et al., 2009). The trend of globalisation, the convergence of accounting policy, and firms' cross listing activities in foreign countries may also contribute to enhanced earnings quality over time (Barth, Landsman, & Lang, 2008; Lang, Raedy, & Yetman, 2003; Land & Lang, 2002). Therefore, a TIME variable is developed, which is a trend variable equal to the difference between the current year and 1995. Also, the change in GDP is added as an additional explanatory variable to control for the effects of a country's economic development (Leuz et al., 2003; Shen & Chih, 2005). Δ GDP represents the annual growth rate of GDP for all countries collected from World Bank and International Monetary Fund (IMF).

4.4. Research design for testing the hypotheses*4.4.1 Estimation models and regression formulas for Hypothesis 1*

Hypotheses 1A, 1B, and 1C test the association between measures of real earnings management and different country-level institutional factors. The estimation models for Hypothesis 1A, 1B and 1C are listed below as:

$$REM_t = \alpha + \beta_1 INSTITUTEION + \beta_2 DA_t + \beta_3 SIZE_t + \beta_4 ROA_t + \beta_5 GROWTH_t + \beta_6 LEV_t + \beta_7 TIME_t + \beta_8 \Delta GDP_t + \epsilon_t \quad (4.7)$$

Where REM is the sum of the abnormal CFO (ABCFO), abnormal production cost (ABPROD) and abnormal discretionary expenses (ABDISEXP), where ABCFO and ABDISEXP are multiplied by (-1) to present higher real earnings management when the REM measure increases. Therefore, REM represents residuals from the CFO, production cost, and discretionary expenses models. INSTITUTEION refers to institutional environment measures, including TRADITION, FRENCH, PROTECTION, ENFORCEMENT, and OWNERSHIP. Equation 4.7 is regressed using individual institutional variables separately.

The classification of legal tradition is based on La Porta et al. (1998). TRADITION is a dummy variable that equals 0 for countries that belong to the code-law tradition and 1 for countries that belong to the common-law tradition. Therefore, β_1 is expected to be negative and significant if Hypothesis 1A is supported.

FRENCH is a dummy variable that equals 1 for countries that belong to the French-civil-law tradition and 0 otherwise. Therefore, β_1 is expected to be positive and significant to support Hypothesis 1A.

The PROTECTION variable is the “anti-director rights” index developed by La Porta et al. (1998). It is an aggregate measure of minority shareholder rights and ranges from 0 to 5. If Hypothesis 1B is correct, β_1 is expected to be negative and significant.

ENFORCEMENT represents legal enforcement, which is measured as the mean score across three legal variables from La Porta et al. (1998), including the efficiency of the judicial system, the rule of law, and the corruption index. All of these three variables range from 0 to 10. If Hypothesis 1B is correct, β_1 is expected to be negative and significant.

OWNERSHIP is the measure of ownership concentration, which is measured as the median percentage of common shares owned by the largest three shareholders in the ten largest privately owned non-financial firms (La Porta et al., 1998). To support Hypothesis 1C, β_1 is expected to be positive and significant.

4.4.2 Estimation models and regression formulas for Hypothesis 2

Hypothesis 2 investigates the impacts of real earnings management on firms' future performance and how such impacts are related to institutional environment. In order to test Hypothesis 2, two measures are developed based on Gunny (2010). AdjROA measures the difference between firm-specific ROA and the mean ROA for the same year and industry in the firm's home country. ROA is calculated as income before extraordinary items divided by lagged total assets. AdjCFO measures the difference between firm-specific CFO and the mean CFO for the same year and industry for that country. CFO is cash flow from operations divided by lagged total assets. The following equations (4.8 and 4.9) are developed to test Hypothesis 2:

$$\text{AdjROA}_{t+1} = \alpha + \beta_1 \text{REM}_t + \beta_2 \text{INSTITUTION} + \beta_3 \text{REM}_t * \text{INSTITUTION} + \beta_4 \text{SIZE}_t + \beta_5 \text{AdjROA}_t + \beta_6 \text{GROWTH}_t + \beta_7 \text{LEV}_t + \beta_8 \text{TIME}_t + \beta_9 \Delta \text{GDP}_t + \varepsilon_t \quad (4.8)$$

$$\text{AdjCFO}_{t+1} = \alpha + \beta_1 \text{REM}_t + \beta_2 \text{INSTITUTION} + \beta_3 \text{REM}_t * \text{INSTITUTION} + \beta_4 \text{SIZE}_t + \beta_5 \text{AdjROA}_t + \beta_6 \text{GROWTH}_t + \beta_7 \text{LEV}_t + \beta_8 \text{TIME}_t + \beta_9 \Delta \text{GDP}_t + \varepsilon_t \quad (4.9)$$

Based on Gunny (2010), a new variable REMQ is developed. REMQ is an indicator variable that equal to one if the sum of the residuals from the CFO model, the

production cost model, and the discretionary model, where CFO and discretionary expenses models are multiplied by (-1), is in the highest quintile, zero otherwise. This indicator variable is constructed for each country.

INSTITUTION includes TRADITION, PROTECTION, ENFORCEMENT, and OWNERSHIP. Again, equations are regressed for each institutional variable separately.

If Hypothesis 2 is supported β_1 and β_3 are expected to be significant in both equations.

4.4.3 Estimation models and regression formulas for Hypothesis 3

In order to test Hypothesis 3A, which examines firms' real earnings management behaviours during a financial crisis, a CRISIS dummy is developed added into the regression, which equals to 1 for crisis period and 0 otherwise. Crisis period is identified by the negative annual GDP growth for a particular year using GDP data from World Bank and IMF.

Hypothesis 3A is tested using the equation below:

$$\begin{aligned} \text{REM}_t = & \alpha + \beta_1 \text{CRISIS} + \beta_2 \text{DA}_t + \beta_3 \text{SIZE}_t + \beta_4 \text{ROA}_t + \beta_5 \text{GROWTH}_t + \beta_6 \text{LEV}_t \\ & + \beta_7 \text{TIME}_t + \beta_8 \Delta \text{GDP}_t + \varepsilon_t \end{aligned} \quad (4.10)$$

In equation 4.10, the dummy variable CRISIS measures the proportionate difference in real earnings management of firms in the crisis period relative to non-crisis period holding the control variables constant. Hypothesis 3A is also tested using subcategories of real earnings management, including ABCFO, ABDISEXP, and ABPROD as the dependent variables. The equations for testing subcategories of real earnings management include:

$$\begin{aligned} \text{ABCFO}_t = & \alpha + \beta_1 \text{CRISIS} + \beta_2 \text{DA}_t + \beta_3 \text{SIZE}_t + \beta_4 \text{ROA}_t + \beta_5 \text{GROWTH}_t + \beta_6 \text{LEV}_t \\ & + \beta_7 \text{TIME}_t + \beta_8 \Delta \text{GDP}_t + \varepsilon_t \end{aligned} \quad (4.11)$$

$$\begin{aligned} \text{ABDISEXP}_t = & \alpha + \beta_1 \text{CRISIS} + \beta_2 \text{DA}_t + \beta_3 \text{SIZE}_t + \beta_4 \text{ROA}_t + \beta_5 \text{GROWTH}_t \\ & + \beta_6 \text{LEV}_t + \beta_7 \text{TIME}_t + \beta_8 \Delta \text{GDP}_t + \varepsilon_t \end{aligned} \quad (4.12)$$

$$\begin{aligned} \text{ABPROD}_t = & \alpha + \beta_1 \text{CRISIS} + \beta_2 \text{DA}_t + \beta_3 \text{SIZE}_t + \beta_4 \text{ROA}_t + \beta_5 \text{GROWTH}_t + \beta_6 \text{LEV}_t \\ & + \beta_7 \text{TIME}_t + \beta_8 \Delta \text{GDP}_t + \varepsilon_t \end{aligned} \quad (4.13)$$

To support Hypothesis 3A, β_1 is expected to be significant for equations 4.10, 4.11, 4.12 and 4.13.

To test H3B, equation 4.14 is developed:

$$\begin{aligned} \text{AdjROA}_{t+1} \text{ or } \text{AdjCFO}_{t+1} = & \alpha + \beta_1 \text{REM}_t + \beta_2 \text{CRISIS} + \beta_3 \text{CRISIS} * \text{REM}_t + \beta_4 \text{SIZE}_t \\ & + \beta_5 \text{AdjROA}_t + \beta_6 \text{GROWTH}_t + \beta_7 \text{LEV}_t + \beta_8 \text{TIME}_t + \beta_9 \Delta \text{GDP}_t + \varepsilon_t \end{aligned} \quad (4.14)$$

If H3B is supported, β_1 and β_3 are expected to be statistically significant.

A detailed variable definition for all variables used in equations described above testing the hypotheses is presented in GLOSSARY.

4.5 Limitations

Firstly, the research design cannot differentiate firms' real earnings management behaviour and the normal managerial decision making. Managers' real earnings management activities may be their rational responses to economic circumstances (Roychowdhury, 2006). This is often an issue in earnings management studies regarding how well the earnings management measures capture firms' earnings management behaviours. This is the reason it is important to study the consequences of real earnings management. If the finding documents negative impacts of real earnings management on firms' future performance, there is evidence supporting the opportunistic earnings management perspective. If the results show positive impacts of real earnings management on firms' future performance, managers' normal course of actions in organisational management and control may have played a stronger role. The design of incorporating an industry average and a normal level of activities, such as normal CFO

and normal discretionary expenses, can also contribute to the control of this limitation.

Secondly, the sample selected to test the models described above may face limitations, such as fewer data points in the earlier years, uneven distribution of industries, and significant differences in number of observations for large and small countries. And many countries have to be excluded from the study as there are not sufficient data points for the country or that the country does not have the institutional variables developed by studies such as La Porta et al. (1998). More issues and solutions with data selection will be discussed in more detail in Chapter 5 and additional tests will be performed in response to some of these limitations.

4.6 Chapter summary

The methods and regression formulas developed to test the hypotheses are summarised in Table 4.2.

Table 4.2: Summary of regression models testing the hypotheses

Hypotheses	Key variable	Equation	Estimated sign
H1A	TRADITION	$REM_t = \alpha + \beta_1 TRADITION + \beta_2 DA_t + \beta_3 SIZE_t + \beta_4 ROA_t + \beta_5 GROWTH_t + \beta_6 LEV_t + \beta_7 TIME_t + \beta_8 \Delta GDP_t + \varepsilon_t$	—
	FRENCH	$REM_t = \alpha + \beta_1 FRENCH + \beta_2 DA_t + \beta_3 SIZE_t + \beta_4 ROA_t + \beta_5 GROWTH_t + \beta_6 LEV_t + \beta_7 TIME_t + \beta_8 \Delta GDP_t + \varepsilon_t$	+
H1B	PROTECTION	$REM_t = \alpha + \beta_1 PROTECTION + \beta_2 DA_t + \beta_3 SIZE_t + \beta_4 ROA_t + \beta_5 GROWTH_t + \beta_6 LEV_t + \beta_7 TIME_t + \beta_8 \Delta GDP_t + \varepsilon_t$	—
	ENFORCEMENT	$REM_t = \alpha + \beta_1 ENFORCEMENT + \beta_2 DA_t + \beta_3 SIZE_t + \beta_4 ROA_t + \beta_5 GROWTH_t + \beta_6 LEV_t + \beta_7 TIME_t + \beta_8 \Delta GDP_t + \varepsilon_t$	—
H1C	OWNERSHIP	$REM_t = \alpha + \beta_1 OWNERSHIP + \beta_2 DA_t + \beta_3 SIZE_t + \beta_4 ROA_t + \beta_5 GROWTH_t + \beta_6 LEV_t + \beta_7 TIME_t + \beta_8 \Delta GDP_t + \varepsilon_t$	+
H2	REM REM*INSTITUTION	$AdjROA_{t+1} \text{ or } AdjCFO_{t+1} = \alpha + \beta_1 REM_t + \beta_2 INSTITUTION + \beta_3 REM*INSTITUTION + \beta_4 SIZE_t + \beta_5 AdjROA_t + \beta_6 GROWTH_t + \beta_7 LEV_t + \beta_8 TIME_t + \beta_9 \Delta GDP_t + \varepsilon_t$	
H3A	CRISIS	$REM_t = \alpha + \beta_1 CRISIS + \beta_2 DA_t + \beta_3 SIZE_t + \beta_4 ROA_t + \beta_5 GROWTH_t + \beta_6 LEV_t + \beta_7 TIME_t + \beta_8 \Delta GDP_t + \varepsilon_t$	
H3B	REM CRISIS *REM	$AdjROA_{t+1} \text{ or } AdjCFO_{t+1} = \alpha + \beta_1 REM_t + \beta_2 CRISIS + \beta_3 CRISIS*REM + \beta_4 SIZE_t + \beta_5 AdjROA_t + \beta_6 GROWTH_t + \beta_7 LEV_t + \beta_8 TIME_t + \beta_9 \Delta GDP_t + \varepsilon_t$	

CHAPTER 5**RESULTS****5.1 Introduction**

The hypotheses developed in Chapter 3 are tested using methods reported in Chapter 4. The results of the tests of the hypotheses are reported in this Chapter. I will discuss the general characteristics of the sample and some results of univariate analysis in section 5.2. Then the multivariate analysis results for testing hypotheses 1 to 3 are discussed in sections 5.3. In addition, I will discuss the results of robustness tests and additional tests in section 5.4. Section 5.5 provides a summary of the findings reported in this chapter.

5.2 Descriptive statistics*5.2.1 General characteristics of the sample*

As discussed in section 4.2, the final sample consists of 135,722 firm-year observations from 31 countries between 1996 and 2011. The sample includes 20,968 unique firms. As can be seen from Table 5.1, data of the U.S. has a 25.95% share of the whole sample with 35,217 firms-year observations. Japan has the second largest share (15.75%) of the sample followed by China (9.31%). United Kingdom, India, and Taiwan also have significant share of the sample with a 7.89%, 7.32% and 5.49% share respectively. And from a legal origin perspective, common-law countries share 56.76% of the sample while code-law countries share 43.24% of the entire sample.

Table 5.1: Summary of country specific and economic statistics for each country

Country	N	# of unique firms	% of sample	% of Mfg firms	GDP	Crisis period
Australia	4,120	887	3.04%	0.346	3.46%	—
Brazil	1,597	13	1.18%	0.613	3.28%	2009
Canada	4,014	793	2.96%	0.310	2.76%	2009
Chile	189	21	0.14%	1.000	4.55%	1999,2009
China	12,640	2027	9.31%	0.697	10.07%	—
Denmark	155	45	0.11%	0.821	1.69%	2008,2009
Finland	359	49	0.26%	0.563	2.91%	2009
France	2,486	442	1.83%	0.542	1.73%	2008,2009
Germany	3,129	564	2.31%	0.614	1.48%	2003,2009
Greece	151	58	0.11%	0.448	1.96%	2008,2009,2010,2011
Hong Kong	461	149	0.34%	0.669	3.79%	1998,2009
India	9,929	1729	7.32%	0.790	7.04%	—
Indonesia	797	94	0.59%	0.960	4.43%	1998
Israel	169	46	0.12%	0.687	4.21%	2001,2002
Italy	535	128	0.39%	0.597	1.05%	2003,2008,2009
Japan	21,372	3130	15.75	0.548	0.80%	1998,1999,2008,2009,2011
Korea	3,703	613	2.73%	0.793	4.77%	1998
Malaysia	4,331	816	3.19%	0.643	5.31%	1998,2009

Mexico	164	17	0.12%	1.000	2.59%	2001,2009
Norway	202	98	0.15%	0.332	2.43%	2009
Pakistan	222	72	0.16%	1.000	3.89%	—
Peru	159	28	0.12%	0.372	5.45%	1998
Philippines	155	48	0.11%	0.510	4.36%	1998
Singapore	2,987	592	2.20%	0.533	6.10%	1998,2001,2009
South Africa	1,437	251	1.06%	0.352	3.29%	2009
Sweden	2,533	428	1.87%	0.531	2.81%	2008,2009
Switzerland	1,076	140	0.79%	0.843	1.73%	2009
Taiwan	7,449	1282	5.49%	0.857	4.64%	2001,2009
Thailand	3,281	428	2.42%	0.620	3.62%	1997,1998,2009
United Kingdom	10,703	1792	7.89%	0.406	2.50%	2008,2009
U.S.	35,217	4188	25.95%	0.536	2.60%	2008,2009

Total number of observations 135,722

The data shown in this table is collected from Wharton Compustat Global database for the period between 1996 and 2012 for 31 countries. Crisis period is identified by the negative annual GDP growth for a particular year using GDP data from World Bank and International Monetary Fund (IMF). Manufacturing firms are identified as firms with SIC of 2000 to 3999 inclusively.

Table 5.2: Summary of institutional variables for each country

Country	Country Code	Legal origin	TRADITION	PROTECTION	ENFORCEMENT	OWNERSHIP	Median REM
Australia	AUS	English	CM	4.000	9.500	0.280	-0.202
Brazil	BRA	French	CD	3.000	6.130	0.630	-0.259
Canada	CAN	English	CM	5.000	9.800	0.240	-0.074
Chile	CHL	French	CD	5.000	6.520	0.380	-0.192
China	CHN	German	CD	3.000	3.500	0.290	-0.211
Denmark	DNK	Scandinavian	CD	2.000	10.000	0.400	-0.166
Finland	FIN	Scandinavian	CD	3.000	10.000	0.340	-0.134
France	FRA	French	CD	3.000	8.700	0.240	-0.246
Germany	DEU	German	CD	1.000	9.100	0.500	-0.308
Greece	GRC	French	CD	2.000	6.800	0.680	-0.117
Hong Kong	HKG	English	CM	5.000	8.900	0.540	-0.213
India	IND	English	CM	5.000	5.600	0.430	-0.281
Indonesia	IDN	French	CD	2.000	2.900	0.620	-0.172
Israel	ISR	English	CM	3.000	7.720	0.550	-0.335
Italy	ITA	French	CD	1.000	7.100	0.600	-0.146
Japan	JPN	German	CD	4.000	9.200	0.130	0.490
Korea	KOR	German	CD	2.000	5.600	0.200	-0.247
Malaysia	MYS	English	CM	4.000	7.700	0.520	-0.184
Mexico	MEX	French	CD	1.000	5.370	0.670	-0.160

Norway	NOR	Scandinavian	CD	4.000	10.000	0.310	-0.160
Pakistan	PAK	English	CM	5.000	3.700	0.410	-0.133
Peru	PER	English	CM	3.000	4.650	0.570	-0.032
Philippines	PHL	French	CD	3.000	3.500	0.510	-0.126
Singapore	SGP	English	CM	4.000	8.900	0.530	-0.240
South Africa	ZAF	English	CM	5.000	6.400	0.520	-0.505
Sweden	SWE	Scandinavian	CD	3.000	10.000	0.280	-0.270
Switzerland	CHE	German	CD	2.000	10.000	0.480	-0.278
Taiwan	TWN	German	CD	3.000	7.400	0.140	-0.316
Thailand	THA	English	CM	2.000	4.900	0.480	-0.268
United Kingdom	GBR	English	CM	5.000	9.200	0.150	-0.342
U.S.	USA	English	CM	5.000	9.500	0.120	-0.445

Total number of observations 135,722

The country code for each country is collected from Wharton Compustat Global database based on the country of incorporation variable. The institutional variables for all countries except China shown in this table are developed based on La Porta et al. (1998). TRADITION is a dummy variable that equals 0 for countries that belong to the code-law tradition and 1 for countries that belong to the common-law tradition. The PROTECTION variable is the “anti-director rights” index developed by La Porta et al. (1998). It is an aggregate measure of minority shareholder rights and ranges from 0 to 5. ENFORCEMENT represents legal enforcement, which is measured as the mean score across three legal variables from La Porta et al. (1998), including the efficiency of the judicial system, the rule of law, and the corruption index. All of these three variables range from 0 to 10. OWNERSHIP is the measure of ownership concentration, which is measured as the medium percentage of common shares owned by the largest three shareholders in the ten largest privately owned non-financial firms (La Porta et al., 1998). The institutional variables for China are taken from Allen, Qian and Qian (2005).

In addition, as Table 5.1 illustrates, among the 31 countries, the observations of Chile, Mexico and Pakistan are 100 percent from manufacturing industries, which include firms with SIC from 2000 to 3999 inclusively. A number of countries, such as Denmark, Indonesia, Switzerland, and Taiwan also had a considerably high proportion of manufacturing firms. Manufacturing firms contribute to 63.010% of the whole sample¹².

Table 5.1 also presents data in relation to the average GDP growth for each country during the sample period and the period during which the countries experienced crisis. From 1996 to 2011, China had an average GDP growth of 10.07%, which is substantially higher than the average GDP growth of other countries in the sample. India has the second highest average GDP growth rate of 7.04% and Singapore's average GDP growth of 6.10% is the third highest amongst 31 countries. Japan had the lowest average GDP growth rate of 0.80% in the sample period. On average, common-law countries had a GDP growth rate of 4.16% in the sample period, which is higher than the GDP growth rate of 3.18% for code-law countries. In terms of the crisis period, which is identified if the country had a negative GDP growth for a particular year comparing to the previous year, Australia, China, India, and Pakistan did not have a year with negative GDP growth in the sample period. Japan, on the other hand, had the most number of years that are identified as a crisis period, including 1998, 1999, 2008, 2009 and 2011.

Table 5.2 displays institutional variables, including legal origin, TRADITION, PROTECTION, ENFORCEMENT, and OWNERSHIP, which are based on prior studies, such as La Porta et al. (1998). The definition of such variables can be found from Glossary. Institutional variables for China are not provided by the prior studies, such as

¹² To alleviate the concern that the differences in industry composition may drive the regression analysis results in this thesis, an additional test is conducted with a sample that comprises only manufacturing firms (SIC 2000-3999 inclusively). The results for such test are discussed in section 5.4.

La Porta et al. (1998). The institutional variables for China are taken from Allen, Qian and Qian (2005). Allen et al. (2005) develop the anti-director right variable based on La Porta et al. (1998). The law enforcement variable for China is taken as the mean score across two legal variables, including the rule of law and the corruption index, provided in Allen et al. (2005) based on the method of La Porta et al. (1998). The measure of law enforcement for China is slightly different to that for other countries because the efficiency of judicial system measure is not available for China. Ownership concentration index for China is taken from the concentration score for domestic China as reported by Allen et al. (2005). The institutional variables of China, therefore, are developed consistently with the measurements of institutional environment of other countries as reported in La Porta et al. (1998) according to Allen et al. (2005). The measurements of institutional variables, therefore, should not influence the results of this thesis. And the institutional variables developed by Allen et al. (2005) allow this research to include China, which is a large economy with an increasing importance, into the final sample for testing¹³. Table 5.2 also displays median REM for each country. Japan has the highest median REM of 0.490 while South Africa has the lowest median REM of -0.505. In fact, Japan is the only country with a positive median REM. The majority of the countries have a median REM of approximately between -0.150 and -0.270.

Table 5.3 presents the mean, median, standard deviation, first quartile and third quartile of key variables. In general, there is a negative mean REM of -0.229 and a positive mean DA of 0.017 for the whole sample. The mean size of firm for the whole sample is 6.761. The mean values of the performance variables, including ROA, AdjROA, and AdjCFO, are all positive for the whole sample period. It is interesting to

¹³. In order alleviate the concern that the differences in the measurements for institutional environment in China used in the research process may affect the results, an additional test is conducted without the data points from China. The results are presented and discussed in section 5.4

note that SIZE has a high standard deviation of 2.806. The large variation in firm sizes in different countries is also noted in other international studies, such as Leuz et al. (2003). In terms of individual countries, South Africa has the lowest average REM of -0.553 and Japan has the highest average REM of 0.522 among all countries over the sample period. Norway has the lowest mean DA of -0.086 and Brazil has the highest mean DA of 0.140 over the whole sample period. Taiwan has the largest SIZE of 8.338 while Pakistan has the lowest SIZE of 1.315. There is a large variation in firm sizes in countries, such as Australia, Canada, Chile, Philippines, Sweden, United Kingdom, and U.S. even after the data is winsorised at 5 percent and 95 percent levels. In terms of the performance of firms, Canada has the lowest ROA of -0.147 and Peru has the highest ROA of 0.125. Denmark has the highest mean GROWTH of 0.346, and Brazil has the highest mean LEV of 0.823.

In addition, based on data on individual years, REM and DA often change in the opposite direction, such as in years 1997, 1998, 1999, 2002, 2005, 2010 and 2011. The trend of DA is more stable than the changes in REM in early years. The changes in DA are more significant in recent years, after 2005. There is a general trend of increasing REM from 1996 to 2012 for the whole sample.

Table 5.3: Summary of key variables for the whole sample over the period of 1996 to 2011

Variables	Mean	Median	Standard Deviation	First Quartile (25%)	Third Quartile (75%)
REM_t	-0.229	-0.206	0.594	-0.517	0.049
DA_t	0.017	-0.017	0.374	-0.088	0.049
$ABCFO_t$	0.002	0.035	0.253	-0.054	0.106
$ABDISEXP_t$	0.246	0.145	0.367	0.056	0.315
$ABPROD_t$	0.015	-0.067	0.469	-0.221	0.113
$SIZE_t$	6.761	6.791	2.806	4.818	8.676
ROA_t	0.002	0.030	0.279	-0.011	0.076
$GROWTH_t$	0.107	0.061	0.322	-0.047	0.212
LEV_t	0.515	0.507	0.261	0.333	0.664
ΔGDP_t	0.035	0.029	0.039	-0.028	0.051
$AdjROA_{t+1}$	0.007	0.016	0.178	-0.029	0.084
$AdjCFO_{t+1}$	0.015	0.018	0.161	-0.043	0.092

Total number of observations 135,722

Definitions of the key variables can be found from Glossary

Table 5.4: Correlation matrix for key variables

	REM	DA	TRADITION	PROTECTION	ENFORCEMENT	OWERSHIP	SIZE	ROA	GROWTH	LEV
DA	-0.044***	1								
TRADITION	-0.382***	0.058***	1							
PROTECTION	-0.130***	0.064***	0.716***	1						
ENFORCEMENT	0.030***	0.034***	0.296***	0.451***	1					
OWENRSHIP	-0.059***	-0.054***	0.021***	-0.416***	-0.499***	1				
SIZE	0.411***	-0.033***	-0.492***	-0.185***	-0.144***	-0.095***	1			
ROA	-0.020***	0.060***	-0.084***	-0.081***	-0.131***	0.092***	0.212***	1		
GROWTH	-0.112***	-0.002	0.072***	0.031***	-0.090***	0.069***	-0.024***	0.066***	1	
LEV	0.068***	-0.020***	-0.032***	0.001	-0.006**	0.015***	0.046***	-0.160***	-0.034***	1
ΔGDP	-0.100***	-0.011***	-0.078***	-0.173***	-0.662***	0.349***	0.014***	0.094***	0.167***	-0.029***

Total number of observations is 135,722. Definitions of the variables can be found from Glossary

Correlations between key variables are shown in Table 5.4. There is a positive correlation of 0.411 between REM and SIZE. Firms with large size, which is measured as the natural log of total assets, are probably involved in more production rather than services provisions, which provide conditions for real earnings manipulations. The high correlation between REM and SIZE may also be related to the high proportion of manufacturing firms in the sample. The significant and negative correlation between SIZE and TRADITION indicates that firms from countries with a code-law tradition have a larger size on average. In addition, some institutional variables, such as PROTECTION, ONWERSHIP and ENFORCEMENT have high correlation with one another. This is the reason, as according to prior international studies, such as Leuz et al. (2003), that institutional variables are regressed one at a time in the regression tests.

5.2.2 Univariate analysis

Univariate analysis is performed for key variables for the whole sample. Table 5.5 presents t-test results for key variables comparing countries from the common-law and code-law traditions. As compared to code-law countries, common-law countries are found to have lower REM, higher DA, higher ABCFO, lower ABDISEXP, and lower ABPROD. All results are statistically significant at the 1 percent level. The lower REM for firms from common-law countries than those from code-law countries provides some support for Hypothesis 1A. Compared to code-law countries, common-law countries have significantly higher ROA, higher growth, and lower leverage. Consistent with the high correlation between SIZE and TRADITION, there is a significant difference of -2.785 in terms of firm size between common-law and code-law countries, showing that firms are larger in code-law countries.

Also as Table 5.5 illustrates, the Wilcoxon rank-sum test results show that firms from common-law countries exhibit higher real earnings management than firms from

code-law countries based on a negative and significant (-0.226) difference between common-law country REM median and code-law country REM median. Firms in common-law countries also show a higher abnormal CFO, a lower abnormal discretionary expense, and a lower abnormal production costs to manage earnings. And comparing the mean and median for key variables for the common-law tradition, there is a high skewness for DA, ABCOF, and ROA. And for code-law countries, there is a high skewness for REM, indicating that there are firms that engage in a high level of real earnings management, which drags up the average REM measures for firms from code-law countries.

Table 5.5: T-test (mean difference) and Wilcoxon rank-sum test (median difference) results for key variables comparing common-law and code-law traditions

Variables	CM		CD		Difference (CM – CD)	
	Mean	Median	Mean	Median	Mean	Median
REM	-0.427	-0.317	0.031	-0.091	-0.459*** (-152.49)	-0.226*** (-126.22)
DA	0.035	-0.025	-0.008	-0.012	0.044*** (21.47)	-0.013*** (-18.88)
ABCFO	0.026	-0.016	-0.040	-0.047	0.066*** (48.10)	0.031*** (44.15)
ABDISEXP	-0.308	-0.181	-0.164	-0.122	-0.144*** (-72.84)	-0.059*** (-49.55)
ABPROD	-0.152	-0.111	0.234	0.004	-0.386*** (-164.82)	-0.115*** (-121.31)
SIZE	5.557	6.652	8.342	8.425	-2.785*** (-208.05)	-1.773*** (-179.51)
ROA	-0.018	0.036	0.029	0.026	-0.047*** (-31.02)	0.010*** (10.73)
GROWTH	0.127	0.072	0.080	0.050	0.047*** (26.45)	0.022*** (18.24)
LEV	0.508	0.491	0.525	0.525	-0.017*** (11.80)	-0.034*** (-23.51)
Total number of observations 135,722						
Definitions of the variables can be found from Glossary. CM stands for common-law traditions and CD stands for code-law traditions.						

5.3 Multivariate analysis

5.3.1 Results for Hypothesis 1

Table 5.6 reports the results of the regression analysis for Hypothesis 1, which tests the relationship between country-level institutional factors and firms' real earnings management activities.

The regression results are tested using formula 4.7. The negative and significant coefficient for TRADITION of -0.292 indicates that firms domiciled in code-law countries engage in more real earnings management activities than those domiciled in common-law countries. Since TRADITION is a dummy variable that is 1 for common-law countries and 0 for code-law countries, the result shows that real earnings management in code-law countries is 0.292 higher than real earnings management in common-law countries, holding other variables constant. The results provide support for Hypothesis 1A. The coefficient for FRENCH is reported to be significantly positive at the 1 percent significance level (0.069), indicating that firms engage in more real earnings management activities in French-civil-law countries than countries with other legal traditions. This result provides additional support for Hypothesis 1A. The results support that difference in legal traditions is associated with firms' choices in engaging in real earnings management activities.

Table 5.6 also reports regression results testing Hypothesis 1B, which investigates the relationship between real earnings management and outside investor protection. There is a negative and significant coefficient result for PROTECTION (-0.042), showing that there is more earnings management activities in countries with lower investor protection. The significantly negative coefficient for ENFORCEMENT (-0.008) indicates that firms engage in more real earnings management in countries with weaker law enforcement. The results support Hypothesis 1B that firms engage in more real

earnings management activities in countries with weaker investor protection and law enforcement.

Consistent with the prediction and supporting Hypothesis 1C, the coefficient for OWNERSHIP is 0.122 and is positive and significant at the 1 percent level. This result shows that firms engage in more real earnings management in countries with more concentrated ownership.

The adjusted R^2 for the regression tests are about 0.2. This is slightly lower than the R^2 of about 0.3 in Leuz et al. (2003), which provides international comparisons of accrual-based earnings management. But the adjusted R^2 reported in the results for this hypothesis is significantly higher than R^2 of around 0.01 in Cohen et al. (2008), which tested both real and accrual-based earnings management.

In summary, the results for testing Hypothesis 1 are consistent with the hypotheses and provide additional evidence on the association between institutional environment and firms' accounting integrity and earnings management choices as reported in La Porta et al. (1998) and Leuz et al. (2003). My results support a significant impact of legal tradition, shareholder protection, enforcement, and ownership on firms' real earnings management behaviours. In particular, the findings of Hypothesis 1A, 1B, and 1C show that there is higher real earnings management in countries with a code-law tradition, a French-civil-law tradition, lower investor protection, lower law enforcement, and countries with more concentrated ownership.

In regard to control variables, the coefficients of DA are negative in all of the regressions reported in Table 5.6, indicating that as real earnings management activities increase discretionary accruals decrease. This result is consistent with the prior literature that argues for a substituting effect between DA and REM (Zang, 2012). The results also show that there is higher real earnings management for larger firms, firms with

lower ROA, firms with lower growth, and firms with higher leverage. The negative and significant coefficients for TIME indicate that real earnings management activities have decreased over the time period from 1996 to 2011. This is consistent with the regression results of Cohen et al. (2008), which report a negative and significant coefficient for the Time variable wherein RM_PROXY is the dependent variable over the period between 1987 and 2005. The significantly negative coefficients for Δ GDP indicate that there is higher real earning management in poorer economic conditions.

Table 5.6: Real earnings management and institutional environment

	REM	REM	REM	REM	REM
<i>TRADITION</i>	-0.292*** (-88.69)	NA	NA	NA	NA
<i>FRENCH</i>	NA	0.069*** (9.64)	NA	NA	NA
<i>PROTECTION</i>	NA	NA	-0.042*** (-30.57)	NA	NA
<i>ENFORCEMENT</i>	NA	NA	NA	-0.008*** (-8.76)	NA
<i>OWNERSHIP</i>	NA	NA	NA	NA	0.122*** (11.63)
<i>DA</i>	-0.016*** (-4.09)	-0.034*** (-8.63)	-0.025*** (-6.52)	-0.036*** (-9.13)	-0.030*** (-7.74)
<i>SIZE</i>	0.066*** (112.33)	0.092*** (170.93)	0.089*** (164.46)	0.092*** (170.52)	0.092*** (170.90)
<i>ROA</i>	-0.187*** (-35.40)	-0.202*** (-37.02)	-0.203*** (-37.45)	-0.193*** (-35.54)	-0.203*** (-37.24)
<i>GROWTH</i>	-0.117*** (-26.38)	-0.149*** (-32.68)	-0.141*** (-31.04)	-0.150*** (-33.02)	-0.150*** (-32.88)
<i>LEV</i>	0.057*** (10.32)	0.055*** (9.61)	0.061*** (10.82)	0.064*** (11.32)	0.058*** (10.30)
<i>TIME</i>	-0.009*** (-19.07)	-0.006*** (-11.85)	-0.007*** (-14.57)	-0.005*** (-10.07)	-0.006*** (-13.17)
<i>ΔGDP</i>	-1.621*** (-43.88)	-1.253*** (-33.36)	-1.501*** (-39.16)	-0.987*** (-19.39)	-1.451*** (-35.92)
<i>Intercept</i>	-0.377*** (-47.42)	-0.760*** (-110.30)	-0.547*** (-56.31)	-0.847*** (-68.30)	-0.777*** (-109.59)
<i>Adjusted R²</i>	0.242	0.199	0.204	0.199	0.199
<i>Total number of observations 135,722</i>					

The coefficient results are generated by running the following regression (4.7):

$$REM_t = \alpha + \beta_1 INSTITUTE_t + \beta_2 DA_t + \beta_3 SIZE_t + \beta_4 ROA_t + \beta_5 GROWTH_t + \beta_6 LEV_t + \beta_7 TIME_t + \beta_8 \Delta GDP_t + \varepsilon_t$$

Where REM is the aggregated real earning management measure by adding up abnormal production, abnormal CFO and abnormal discretionary expenses. INSTITUTE refers to institutional environment measures, including TRADITION, FRENCH, PROTECTION, ENFORCEMENT, and OWNERSHIP. TRADITION is a dummy variable that equals 0 for countries that belong to the code-law tradition and 1 for countries that belong to the common-law tradition. FRENCH is a dummy variable that equals 1 for countries that belong to the French-civil-law tradition and 0 otherwise. The PROTECTION variable is the “anti-director rights” index developed by La Porta et al. (1998). It is an aggregate measure of minority shareholder rights and ranges from 0 to 5. ENFORCEMENT is the legal enforcement score, which is measured as the mean score across three legal variables from La Porta et al. (1998), including the efficiency of the judicial system, the rule of law, and the corruption index. OWNERSHIP is the measure of ownership concentration, which is measured as the medium percentage of common shares owned by the largest three shareholders in the ten largest privately owned non-financial firms (La Porta et al., 1998). DA is the discretionary accruals measure calculated using the modified Jones model. SIZE is the natural log of total assets. ROA is calculated as income before extraordinary items divided by lagged total assets. GROWTH is the percentage increase in sales. LEV is the total liabilities divided by total assets. TIME is a trend variable that is equal to the difference between the current year and 1995. ΔGDP is the annual growth rate of GDP for all countries collected from World Bank and International Monetary Fund (IMF).

Hypothesis 2 tests if there is a significant association between firms' real earnings management activities and firms' future performance. The regression results to test this hypothesis using equations 4.8 and 4.9 are reported in Tables 5.7 and 5.8. The negative impact of real earnings management on firms' future performance is shown by the negative and significant coefficients for REMQ in all four institutional regressions when adjCFO_{t+1} is the dependent variable. In particular, when adjCFO_{t+1} is the dependent variable, the coefficients on REMQ for the four regressions are -0.016, -0.009, -0.023, and -0.010 at the 1 percent significance level for the TRADITION, PROTECTION, ENFORCEMENT and OWNERSHIP regressions. The coefficient for REMQ is negative and significant for 2 out of 4 of the equations when adjROA_{t+1} is the dependent variable. These results support the first half of Hypothesis 2 and demonstrate the negative impact of real earnings management on firms' future performance and cash generating abilities. The results are stronger for firms' future cash flow than for firm's future ROA.

Hypothesis 2 also tests if the significant association between REM and firms' future performance is moderated by the institutional environment in which the firms operate. As Table 5.7 and Table 5.8 show, the coefficients for INSTITUTION*REMQ are insignificant when adjROA_{t+1} is the dependent variable. This means that there is no evidence supporting that institutional environment has an incremental effect on the negative association between firms' future ROA and firms' real earnings management activities.

As shown in Table 5.8, the positive and significant coefficient for TRADITION*REMQ (0.007) when adjCFO_{t+1} is the dependent variable indicates that the negative impacts of real earnings management on firms' future performance reduces

in common-law countries. To be specific, the overall impact of REM on firms' future CFO is the sum of β_1 and β_3 in Equation 4.8. For common-law countries and code-law countries, the REM impact is -0.009 (i.e. 0.007-0.016) and -0.016 (i.e. 0-0.016) respectively. It indicates that REM has a stronger value destroying effect in code-law countries.

Also can be seen from Table 5.8, the coefficient for ENFORCEMENT*REM is 0.001 when adjCFO_{t+1} is the dependent variables and is significant at the 1 percent level. The result shows that the negative impact of real earnings management on firms' future performance is moderated by stronger law enforcement in the country. The coefficient for OWNERSHIP*REM is -0.015 and is significant at the 1 percent level when adjCFO_{t+1} is the dependent variable, providing evidence that the negative impact of REM on firms' future performance is reduced in countries with less concentrated ownership. The coefficient for PROTECTION*REM is insignificant when adjCFO_{t+1} is the dependent variable. This means that shareholder protection has no statistically significant impact on the association between REM and firms' future cash flow.

Therefore, the regression results provide some evidence supporting Hypothesis 2. Real earnings management has a negative impact on firms' future ROA and cash flow. Stronger institutional environment, such as the common-law legal origin, stronger law enforcement, and less concentrated ownership, reduce the negative impact of REM on firms' future cash generating abilities. The adjusted R^2 for the adjCFO_{t+1} model is about 0.380, which is relatively high in empirical accounting studies.

Table 5.7: Future ROA and real earnings management

	adjROA _{t+1}	adjROA _{t+1}	adjROA _{t+1}	adjROA _{t+1}
<i>REMQ</i>	-0.004*** (-3.89)	-0.001 (-0.25)	-0.007** (-2.03)	-0.002 (-1.45)
<i>TRADITION</i>	-0.021*** (-23.58)	NA	NA	NA
<i>PROTECTION</i>	NA	0.004*** (11.96)	NA	NA
<i>ENFORCEMENT</i>	NA	NA	0.003*** (14.42)	NA
<i>OWNERSHIP</i>	NA	NA	NA	-0.005* (-1.86)
<i>TRADITION*REMQ</i>	0.003 (1.55)	NA	NA	NA
<i>PROTECTION*REMQ</i>	NA	-0.001 (-0.77)	NA	NA
<i>ENFORCEMENT*REMQ</i>	NA	NA	0.001 (1.15)	NA
<i>OWNERSHIP*REMQ</i>	NA	NA	NA	-0.004 (-0.69)
<i>SIZE</i>	0.005*** (35.47)	0.004*** (28.35)	0.004*** (28.78)	0.003*** (25.92)
<i>ROA</i>	0.279*** (129.29)	0.229*** (143.05)	0.286*** (134.87)	0.288*** (135.75)
<i>GROWTH</i>	0.002* (1.84)	0.003*** (2.86)	0.004*** (3.32)	0.004*** (3.56)
<i>LEV</i>	-0.019*** (-13.94)	-0.018*** (-8.38)	-0.018*** (-12.96)	-0.018*** (-13.05)
<i>TIME</i>	-0.001*** (-7.81)	-0.001*** (-8.38)	-0.001*** (-7.12)	-0.001*** (-9.21)
<i>ΔGDP</i>	-0.064*** (-7.19)	-0.063*** (-7.01)	0.042*** (3.49)	-0.077*** (-8.07)
<i>Intercept</i>	-0.002 (-1.02)	-0.018*** (-7.38)	-0.034*** (-11.26)	0.005*** (2.69)
<i>Adjusted R²</i>	0.509	0.507	0.507	0.506
<i>Total number of observations 135,722</i>				

The coefficient results are generated by running the following regression (4.8):

$$\text{AdjROA}_{t+1} = \alpha + \beta_1 \text{REMQ}_t + \beta_2 \text{INSTITUTION} + \beta_3 \text{REMQ} * \text{INSTITUTION} + \beta_4 \text{SIZE}_t + \beta_5 \text{AdjROA}_t + \beta_6 \text{GROWTH}_t + \beta_7 \text{LEV}_t + \beta_8 \text{TIME}_t + \beta_9 \Delta \text{GDP}_t + \varepsilon_t$$

Where AdjROA measures the difference between firm-specific ROA and the mean ROA for the same year and industry in the firm's home country. ROA is calculated as income before extraordinary items divided by lagged total assets. REMQ is an indicator variable equal to one if the sum of the residuals from the CFO model, the production cost model, and the discretionary model, where CFO and discretionary expenses models are multiplied by (-1), is in the highest quintile, zero otherwise. This indicator variable is constructed for each country. TRADITION is a dummy variable that equals 0 for countries that belong to the code-law tradition and 1 for countries that belong to the common-law tradition. The PROTECTION variable is the "anti-director rights" index developed by La Porta et al. (1998). It is an aggregate measure of minority shareholder rights and ranges from 0 to 5. ENFORCEMENT is the legal enforcement score, which is measured as the mean score across three legal variables from La Porta et al. (1998), including the efficiency of the judicial system, the rule of law, and the corruption index. OWNERSHIP is the measure of ownership concentration, which is measured as the medium percentage of common shares owned by the largest three shareholders in the ten largest privately owned non-financial firms (La Porta et al., 1998). SIZE is the natural log of total assets. GROWTH is the percentage increase in sales. LEV is the total liabilities divided by total assets. TIME is a trend variable equal to the difference between the current year and 1995. ΔGDP is the annual growth rate of GDP for all countries collected from World Bank and International Monetary Fund (IMF).

Table 5.8: Future CFO and real earnings management

	adjCFO _{t+1}	adjCFO _{t+1}	adjCFO _{t+1}	adjCFO _{t+1}
<i>REM_Q</i>	-0.016*** (-14.63)	-0.009*** (-2.83)	-0.023*** (-6.91)	-0.010*** (-6.22)
<i>TRADITION</i>	-0.036*** (-39.47)	NA	NA	NA
<i>PROTECTION</i>	NA	0.008*** (21.84)	NA	NA
<i>ENFORCEMENT</i>	NA	NA	0.006*** (24.12)	NA
<i>OWNERSHIP</i>	NA	NA	NA	-0.043*** (-16.03)
<i>TRADITION*REM_Q</i>	0.007*** (3.99)	NA	NA	NA
<i>PROTECTION*REM_Q</i>	NA	-0.001 (-1.34)	NA	NA
<i>ENFORCEMENT*REM_Q</i>	NA	NA	0.001*** (3.08)	NA
<i>OWNERSHIP*REM_Q</i>	NA	NA	NA	-0.015*** (-2.57)
<i>SIZE</i>	0.006*** (38.92)	0.003*** (24.91)	0.003*** (25.27)	0.002*** (18.40)
<i>ROA</i>	0.151*** (118.55)	0.177*** (120.15)	0.224*** (154.87)	0.228*** (156.81)
<i>GROWTH</i>	0.008*** (7.66)	0.009*** (9.22)	0.011*** (10.10)	0.011*** (10.61)
<i>LEV</i>	-0.008*** (-6.17)	-0.007*** (-5.26)	-0.007*** (-4.50)	-0.005*** (-3.99)
<i>TIME</i>	-0.002*** (-16.49)	-0.002*** (-17.20)	-0.002*** (-15.19)	-0.002*** (-16.80)
<i>ΔGDP</i>	-0.090*** (-10.11)	-0.085*** (-9.39)	0.091*** (7.60)	-0.060*** (-6.29)
<i>Intercept</i>	0.017*** (10.44)	-0.013*** (-5.53)	-0.037*** (-12.39)	0.033*** (19.37)
<i>Adjusted R²</i>	0.384	0.380	0.380	0.378
<i>Total number of observations 135,722</i>				

The coefficient results are generated by running the following regression (4.9):

$$\text{adjCFO}_{t+1} = \alpha + \beta_1 \text{REM}_t + \beta_2 \text{INSTITUTION} + \beta_3 \text{REM}_t * \text{INSTITUTION} + \beta_4 \text{SIZE}_t + \beta_5 \text{AdjROA}_t + \beta_6 \text{GROWTH}_t + \beta_7 \text{LEV}_t + \beta_8 \text{TIME} + \beta_9 \Delta \text{GDP}_t + \varepsilon_t$$

Where AdjCFO measures the difference between firm-specific CFO and the mean CFO for the same year and industry for that country. CFO is cash flow from operations divided by lagged total assets. REM_Q is an indicator variable equal to one if the sum of the residuals from the CFO model, the production cost model, and the discretionary model, where CFO and discretionary expenses models are multiplied by (-1), is in the highest quintile, zero otherwise. TRADITION is a dummy variable that equals 0 for countries that belong to the code-law tradition and 1 for countries that belong to the common-law tradition. The PROTECTION variable is the “anti-director rights” index developed by La Porta et al. (1998). It is an aggregate measure of minority shareholder rights and ranges from 0 to 5. ENFORCEMENT is the legal enforcement score, which is measured as the mean score across three legal variables from La Porta et al. (1998). OWNERSHIP is the measure of ownership concentration, which is measured as the medium percentage of common shares owned by the largest three shareholders in the ten largest privately owned non-financial firms (La Porta et al., 1998). SIZE is the natural log of total assets. ROA is calculated as income before extraordinary items divided by lagged total assets. GROWTH is the percentage increase in sales. LEV is the total liabilities divided by total assets. TIME is a trend variable equal to the difference between the current year and 1995. ΔGDP is the annual growth rate of GDP for all countries.

Table 5.9 reports regression results for testing firms' real earnings management behaviour in the period of financial crisis, which is examined in Hypothesis 3A using equation 4.10. The negative and significant coefficients for CRISIS (-0.063) when REM is the dependent variable indicate that firms engage in less real earnings management activities during crisis to boost reported earnings controlling for differences in DA, SIZE, ROA, GROWTH, LEV, and TIME. This result supports the Big Bath hypothesis that firms may take advantage of favourable changes in crises and save the earnings for future periods. In terms of the control variables, the coefficient results for DA, SIZE, ROA, GROWTH, LEV, TIME and Δ GDP, are significant and consistent with the results from Hypothesis 1.

The regression results when ABCFO, ABDISEXP, and ABPROD are used as the dependent variables (equations 4.11, 4.12, and 4.13) are reported in Table 5.10. There is a significant association between CRISIS and ABCFO (0.038), ABDISEXP (0.071) and ABPROD (-0.165), all of which are significant at the 1 percent level. Namely, there is evidence that in crises, firms engage in sales manipulation and reduction of discretionary expenses to increase reported earnings. However, firms' production is at an abnormally lower level in crisis, which reduces reported earnings. This is either consistent with the Big Bath hypothesis or with the efficiency proposition such that firms may face liquidity issues as well as stronger incentives to accumulate cash to safeguard against future investment needs (Almeida et al., 2004; Arslan et al., 2006).

Hypothesis 3B states that there is a significant association between REM and firms' future performance and this association is moderated by crisis. The results testing Hypothesis 3B using equation 4.14 are shown in Table 5.11. The findings of Hypothesis 3B can provide more information to further investigate if the findings of Hypothesis

3Areflect firms' earnings management incentives or normal managerial decision making.

As Table 5.11 shows, there is a significantly negative relationship between CRISIS and the two future performance measures as shown by the coefficient of -0.025 and -0.022, both of which are significant at the 1 percent level. Firms perform relatively less well in crisis periods than in non-crisis periods as firms experience reduced future return as well as cash flows. Consistent with the results from Table 5.7 and Table 5.8, the negative impacts of REM on firms' future ROA and CFO are shown in Table 5.11. The coefficient for REM is -0.039 when adjROA_{t+1} is the dependent variable and -0.050 when adjCFO_{t+1} is the dependent variable, both significant at the 1 percent level. The adjusted R^2 for models testing Hypothesis 3 are slightly lower than the R^2 of the models in Hypothesis 1 and 2.

To test the incremental effect of a crisis on the negative impacts of REM on firms' future performance, the coefficients for $\text{CRISIS} \times \text{REM}$ are 0.006 when adjROA_{t+1} is the dependent variable and 0.011 when adjCFO_{t+1} is the dependent variable. Both coefficients are significant at the 1 percent level. This result shows that the negative impact of REM on future performance reduces in the period of a crisis. This provides some supports for the efficiency hypothesis that the abnormal cash flow, abnormal discretionary expenses, and abnormal production costs in the period of crises may reflect the normal course of managerial decision making of managers to cope with specific challenges in crisis periods. Although overall real earnings management has a negative impact on firms' future performance, this negative impact reduces in crises periods.

Table 5.9: Real earnings management and crisis

	REM
<i>CRISIS</i>	-0.063*** (-11.20)
<i>DA</i>	-0.037*** (-9.37)
<i>SIZE</i>	0.091*** (171.02)
<i>ROA</i>	-0.195*** (-35.99)
<i>GROWTH</i>	-0.149*** (-32.77)
<i>LEV</i>	0.062*** (10.98)
<i>TIME</i>	-0.003*** (-6.28)
<i>ΔGDP</i>	-1.634*** (-33.36)
<i>Intercept</i>	-0.759*** (-110.27)
<i>Adjusted R²</i>	0.199
<i>Total number of observations 135,722</i>	

The coefficient results are generated by running the following regression (4.10):

$$REM_t = \alpha + \beta_1 CRISIS_t + \beta_2 DA_t + \beta_3 SIZE_t + \beta_4 ROA_t + \beta_5 GROWTH_t + \beta_6 LEV_t + \beta_7 TIME_t + \beta_8 \Delta GDP_t + \varepsilon_t$$

Where REM is the aggregated real earning management measure by adding up abnormal production, abnormal CFO and abnormal discretionary expenses. CRISIS is a dummy variable that is equal to 1 for crisis period and 0 otherwise. Crisis period is identified by the negative annual GDP growth for a particular year using GDP data from World Bank and IMF. DA is the discretionary accruals measure calculated using the modified Jones model. SIZE is the natural log of total assets. ROA is calculated as income before extraordinary items divided by lagged total assets. GROWTH is the percentage increase in sales. LEV is the total liabilities divided by total assets. TIME is a trend variable equal to the difference between the current year and 1995. ΔGDP is the annual growth rate of GDP for all countries collected from World Bank and International Monetary Fund (IMF).

Table 5.10: Subcategories of real earnings management, crisis and institutional environment

	ABCFO	ABDISEXP	ABPROD
<i>CRISIS</i>	0.038*** (16.94)	0.071*** (20.38)	-0.165*** (-39.76)
<i>DA</i>	-0.011*** (-7.23)	0.015*** (6.25)	-0.031*** (-10.88)
<i>SIZE</i>	-0.016*** (-65.53)	0.025*** (77.03)	0.083*** (212.64)
<i>ROA</i>	-0.176*** (-71.92)	0.126*** (37.69)	-0.177*** (-44.33)
<i>GROWTH</i>	-0.014*** (-7.74)	-0.080*** (-28.33)	-0.071*** (-21.15)
<i>LEV</i>	0.075*** (29.59)	-0.066*** (-18.88)	0.060*** (14.38)
<i>TIME</i>	-0.001*** (-6.02)	-0.004*** (-13.55)	0.001*** (3.44)
<i>ΔGDP</i>	-0.195*** (-10.13)	2.094*** (69.23)	-3.459*** (-95.94)
<i>Intercept</i>	0.080*** (29.50)	-0.4132*** (-96.87)	-0.440*** (-86.78)
<i>Adjusted R²</i>	0.118	0.109	0.303
<i>Total number of observations 135,722</i>			

The coefficient results are generated by running the following regressions (4.11, 4.12, and 4.13):

$$ABCFO_t = \alpha + \beta_1 CRISIS + \beta_2 DA_t + \beta_3 SIZE_t + \beta_4 ROA_t + \beta_5 GROWTH_t + \beta_6 LEV_t + \beta_7 TIME_t + \beta_8 \Delta GDP_t + \varepsilon_t$$

$$ABDISEXP_t = \alpha + \beta_1 CRISIS + \beta_2 DA_t + \beta_3 SIZE_t + \beta_4 ROA_t + \beta_5 GROWTH_t + \beta_6 LEV_t + \beta_7 TIME_t + \beta_8 \Delta GDP_t + \varepsilon_t$$

$$ABPROD_t = \alpha + \beta_1 CRISIS + \beta_2 DA_t + \beta_3 SIZE_t + \beta_4 ROA_t + \beta_5 GROWTH_t + \beta_6 LEV_t + \beta_7 TIME_t + \beta_8 \Delta GDP_t + \varepsilon_t$$

Where ABCFO is abnormal CFO times -1, ABDISEXP is abnormal discretionary expenses times -1 and ABPROD is abnormal production. These variables are developed based on methods from prior literature, such as Roychowdhury (2006). CRISIS is a dummy variable that is equal to 1 for crisis period and 0 otherwise. Crisis period is identified by the negative annual GDP growth for a particular year using GDP data from World Bank and IMF. DA is the discretionary accruals measure calculated using the modified Jones model. SIZE is the natural log of total assets. ROA is calculated as income before extraordinary items divided by lagged total assets. GROWTH is the percentage increase in sales. LEV is the total liabilities divided by total assets. TIME is a trend variable equal to the difference between the current year and 1995. ΔGDP is the annual growth rate of GDP for all countries collected from World Bank and International Monetary Fund (IMF).

Table 5.11: The impacts of real earnings management on future performance in crises periods

	adjROAt+1	adjCFOt+1
<i>REM</i>	-0.039*** (-44.35)	-0.050*** (-61.93)
<i>CRISIS</i>	-0.025*** (-14.74)	-0.022*** (-14.06)
<i>CRISIS*REM</i>	0.006*** (3.63)	0.011*** (6.73)
<i>SIZE</i>	0.012*** (67.01)	0.011*** (67.37)
<i>ROA</i>	0.221*** (138.31)	0.168*** (114.26)
<i>GROWTH</i>	0.028*** (20.63)	0.027*** (21.83)
<i>LEV</i>	-0.107*** (-64.47)	-0.075*** (-49.28)
<i>TIME</i>	-0.002*** (-11.05)	-0.003*** (-18.63)
<i>ΔGDP</i>	-0.569*** (-39.36)	-0.540*** (-40.76)
<i>Intercept</i>	0.013*** (6.11)	0.017*** (8.52)
<i>Adjusted R²</i>	0.225	0.184
<i>Total number of observations 135,722</i>		

The above coefficient results are generated by running the following regression (4.14):

$$\text{AdjROA}_{t+1} \text{ or } \text{AdjCFO}_{t+1} = \alpha + \beta_1 \text{REMt} + \beta_2 \text{CRISIS} + \beta_3 \text{CRISIS*REM} + \beta_4 \text{SIZE}_t + \beta_5 \text{AdjROA}_t + \beta_6 \text{GROWTH} + \beta_7 \text{LEV} + \beta_8 \text{TIME} + \beta_9 \Delta \text{GDP}_t + \varepsilon_t$$

AdjROA measures the difference between firm-specific ROA and the mean ROA for the same year and industry in the firm's home country. ROA is calculated as income before extraordinary items divided by lagged total assets. AdjCFO measures the difference between firm-specific CFO and the mean CFO for the same year and industry for that country. CFO is cash flow from operations divided by lagged total assets. REM is the aggregated real earning management measure by adding up abnormal production, abnormal CFO and abnormal discretionary expenses. CRISIS is a dummy variable that is equal to 1 for crisis period and 0 otherwise. SIZE is the natural log of total asset. GROWTH is the percentage increase in sales. LEV is the total liabilities divided by total assets. TIME is a trend variable equal to the difference between the current year and 1995. ΔGDP is the annual growth rate of GDP for all countries collected from World Bank and International Monetary Fund (IMF).

5.4 Additional tests

This section presents the results on additional tests that use a sample using only manufacturing firms, a sample that does not include data from China, and a REM2 measure to capture real earnings management activities. These additional tests are conducted in response to several concerns addressed in Chapter 4 Research Method as well as in descriptive statistic discussions.

5.4.1 *Testing a sample without data points from China*

The La Porta et al. studies do not provide measures for institutional environment for China. This thesis employs the institutional variables for China developed by Allen et al. (2005). In order to alleviate the concern that the differences in the measurements for institutional environment in China used in the research process may affect the results, additional tests are conducted using a sample without the data from China. The sample for this additional test contains 123,082 firm-year observations. All estimation models for Hypothesis 1, 2 and 3 are regressed using this sample. The results are discussed below but are not tabulated.

The results utilising a sample without China are consistent with the main test results using data points from all 31 countries. The coefficient results are -0.329 for TRADITION, 0.072 for FRENCH, -0.041 for PROTECTION, 0.018 for ENFORCEMENT, and 0.140 for OWNERSHIP, significant at the 1 percent level for equation 4.7. These results show that firms engage in more real earnings management to boost earning in countries with a code-law tradition, a French legal tradition, weaker shareholder protection, stronger enforcement, and more concentrated ownership. The results are consistent from the main results testing Hypothesis 1 except the association between enforcement and real earnings management activities.

The results of the additional test investigating the impact of real earnings

management on firms' future performance show a significantly negative relationship between REM and future ROA and between REM and future CFO at the 1 percent level for all institutional variable regressions. This is consistent with Hypothesis 2. The results of the interaction term REM*INSTITUTION are also consistent with the main test results reported in Table 5.7 and Table 5.8.

In addition, the negative and significant coefficient for CRISIS when REM is the dependent variable indicates that there are fewer real earnings management activities in crises. These results are consistent with the main test results for Hypothesis 3A. The results for regression testing Hypothesis 3B show a negative and significant association between future ROA and REM (-0.039). Nevertheless, consistent with the main test results, this negative impact of REM on firms' future ROA is moderated by crisis as shown by the positive and significant coefficient (0.006) for the interaction term between CRISIS and REM. Similar results are found for adjusted future cash flow. All results are significant at the 1 percent significance level.

These additional results are consistent with the main test result and show that the use of Allen et al.'s (2005) institutional measures for China does not influence the test results for this thesis.

5.4.2 Testing a sample using only manufacturing firms

As discussed in Section 5.2.1, the observations of Chile, Mexico and Pakistan are 100 percent from manufacturing industries, which include firms with SIC from 2000 to 3999 inclusively. A number of countries, such as Denmark, Indonesia, Switzerland, and Taiwan also had a considerably high proportion of manufacturing firms. To alleviate the concern that the differences in industry composition and the large proportion of manufacturing firms may drive the regression analysis results in this thesis, an additional test is conducted with a sample that comprises only manufacturing firms (SIC

2000-3999 inclusively). The sample for this additional test includes 81,154 firm-year observations. All estimation models for Hypothesis 1, 2 and 3 are regressed using this sample. Again the results are discussed but not tabulated.

The results for the additional tests with only the data from the manufacturing industries for the 31 countries over the sample period of 1996 to 2011 are generally consistent with the main test results using the full sample. In particular, real earnings management is higher in French code-law countries (0.077***) and countries with weaker shareholder protection (-0.041***), weaker law enforcement (-0.002*), and stronger ownership concentration (0.174***). The results on the association between legal tradition and real earnings management activities are, however, inconsistent with the main test results showing a positive and significant coefficient of 0.241 for equation 4.7. This again may be related to the criticism of the simplicity and power of legal tradition (code-law versus common-law) as the proxy for the legal regime and institutional environment in a country.

The results for the impacts of real earnings management on firms' future performance using only data from the manufacturing industries are consistent with the main test results for Hypothesis 2 using the full sample. The results show that real earnings management activities have a negative relationship with firms' future ROA and cash flow and this relationship is moderated by stronger shareholder protection and law enforcement.

In terms of real earnings management during crises, the results are generally consistent with the main test results using the full sample. The results support Hypothesis 3A that there is a significant relationship between REM and CRISIS. However, the sign for the coefficient is positive (0.041***) indicating that there are more real earnings management activities to boost earnings in crisis period for

manufacturing firms. The results for testing Hypothesis 3B are consistent with the main test results with a negative and positive coefficient of -0.042 for REM when adjROA is the dependent variable and -0.052 for REM when adjCFO is the dependent variable. And the coefficient for CRISIS*REM are positive and significant at the 1 percent level for both regressions indicating that the negative impact of REM on firms' future performance and cash flow is moderated in the period of crises, consistent with main test results for Hypothesis 3B.

Therefore, the results of this additional test demonstrate that the differences in industry composition and the large proportion of manufacturing firms in the sample do not change the results reported in this thesis.

5.4.3 Testing a sample using REM2

Roychowdhury (2006) claims that the impact of real earnings manipulation on the directions of abnormal cash flows is ambiguous. While reducing discretionary expenses increase cash flows price discount, channel stuffing and overproduction decreases cash flows (Zang, 2012). Therefore, based on Zang (2012), REM2 is developed to measure overproduction and reducing of discretionary expenses to boost earnings. This measure is the sum of ABPROD and ABDISEXP multiplied by -1. Since this measure is largely similar to REM, the results using REM2 are discussed in this additional test.

The results for the additional tests with REM2 instead of REM for the 31 countries over the sample period of 1996 to 2011 are generally consistent with the main test results using the full sample. In particular, real earnings management is higher in code-law countries (-0.313***), French code-law countries (0.117***) and countries with weaker shareholder protection (-0.061***) and stronger ownership concentration (0.290***). These results are consistent with the main test results testing Hypothesis 1 using the REM variable.

In terms of testing Hypothesis 2, using REM2 to measure earnings management, the results show a negative association between REM2 and future ROA (-0.018) and a negative association between REM2 and future cash flow, both significant at the 1 percent level. These results are consistent with the main test results and provide support for Hypothesis 2.

The models for testing Hypothesis 3 are tested again using REM2 and the results show a negative and significant association between REM2 and CRISIS (-0.096***). These results are consistent with the main test results and provide support for Hypothesis 3A. The additional tests for regression 4.14 and for Hypothesis 3B show a negative relationship between REM2 and future ROA (-0.016***) and between REM2 and future cash flows (-0.025***). Consistent with the main test results, these results support the view that real earnings management activities have negative impact on firms' future performance and cash generating ability. However, the coefficients of the interaction term of a crisis*REM are negative and significant both when adjROA_{t+1} and adjCFO_{t+1} are the dependent variable. This indicates that the negative effects of real earnings management through reducing discretionary expenses and overproduction on future performance are even more serious during crisis periods.

Overall, the additional test results using REM2 instead of REM are consistent with the main test results testing the three hypotheses, except the incremental effect of a crisis on the negative association between REM and firms' future performance.

5.5 Summary of findings

This chapter discusses the descriptive statistics, univariate analysis results, multivariate analysis results and results of additional tests.

Hypothesis 1 is supported and the results of multivariate analysis show that firms engage in more income-increasing real earnings management in countries with a

code-law tradition, a French-civil-law tradition, lower investor protection, lower law enforcement, and countries with more concentrated ownership.

Hypothesis 2 is supported and the results show a significant negative association between firms' real earnings management activities and firms' future ROA and future CFO. The results also show that this negative impact of REM on firms' future performance is moderated by stronger institutional environment.

Hypothesis 3 is supported and the test results show a negative association between REM and CRISIS. The results in terms of the sub-components of REM show that in crises, firms engage in sales manipulation and reduction of discretionary expenses to increase reported earnings. The results of hypothesis 3 also show that the negative impact of REM on firms' future ROA and future CFO reduces during crises.

To address some of the issues with research design and the samples and to enhance the robustness of the results, a number of additional tests are reported. The results of additional tests using a sample that includes only manufacturing firms, a sample that excludes China, and using the REM2 measure are generally consistent with the main test results.

CHAPTER 6

CONCLUSION

6.1 Hypotheses of the thesis

Real earnings management has attracted increasing attention in the field of accounting research in recent years, especially after a number of changes in the regulatory environment, such as the passage of SOX in the U.S.. Extant literature has tested different techniques of real earnings management (Roychowdhury, 2006), managers' choices between accrual-based and real earnings management techniques (Cohen et al., 2008; Zang, 2012), the consequences of real earnings management (Gunny, 2010), institutional environment and earnings management (La Porta et al. 1997, 1998, 1999, and 2000; Leuz et al. (2003), and evidence on accrual-based earnings management and crisis (Lim & Matolcsy, 1999; Navissi, 1999; Chia et al., 2007; Habib et al. 2013). However, many topics in relation to real earnings management are still very lightly tested and much of the existing evidence on real earnings management is inconsistent and conflicts to some extent.

Based on a review of the literature and motivated by the gaps in the literature, three hypotheses are tested in this thesis. The first hypothesis tests the association between firms' real earnings management behaviours and country-level institutional environment. The second hypothesis tests the association between real earnings management and firms' future performance. The third hypothesis considers the crisis context and tests if earnings management behaviours and the impact of earnings management change in crisis periods.

6.2 Data and results

The final sample of the thesis consists of 135,722 firm-year observations and 20,968 unique firms for 31 countries from 1996 to 2011. The thesis adopts the modified Jones (1991) model to compute discretionary accruals, which serves as a proxy for accrual-based earnings management. Real earnings management activities are measured using abnormal CFO, abnormal discretionary expenses, and abnormal production costs, which are computed following Roychowdhury (2006). The earnings management models are estimated by every year and industry for every country based on the one-digit SIC code. And the data is winsorised at the 5 percent and 95 percent level to eliminate potential outliers. The multivariate analysis models are conducted for each hypothesis controlling DA, SIZE, ROA, GROWTH, LEV, TIME, and changes in GDP.

In terms of the results, the results provide support for all three hypotheses. The first hypothesis tests if firms' real earnings management activities differ in different institutional environment. The findings of Hypothesis 1A, 1B, and 1C show that firms engage in more income-increasing real earnings management in countries with a code-law tradition, a French-civil-law tradition, lower investor protection, lower law enforcement, and countries with more concentrated ownership. These results are consistent with prior literature, such as La Porta et al. (1998), Leuz et al. (2003), Defond et al. (2007), and Cahan et al. (2008), that firms in countries with weak investor protections are more likely to engage in income manipulation for opportunistic reasons and to acquire more private control benefit, contributing to lower earnings quality in these countries. The results for Hypothesis 1 provide important additional results and contribute to the earnings management literature by finding significant results in terms of firms' real earnings manipulation behaviours.

Hypothesis 2 tests the association between firms' real earnings management activities and firms' future ROA and future CFO. The regression results provide some evidence supporting Hypothesis 2 that there is a significantly negative association between real earnings management and firms' future ROA and future CFO. The results in Hypothesis 2 also show that the stronger institutional environment, such as the common-law legal origin, stronger law enforcement, and less concentrated ownership, reduce the negative impact of REM on firms' future cash generating abilities.

Hypothesis 3 results firstly show a negative association between REM and CRISIS, providing support to the Big Bath perspective of firms' earnings management choices during crises. The results on the sub-components of REM show that in crises, firms engage in sales manipulation and reduction of discretionary expenses to increase reported earnings. However, firms' production is at an abnormally lower level in crisis, which reduces reported earnings. The second part of Hypothesis 3 report evidence that the negative impacts of REM on firms' future ROA and future CFO reduces during crises.

6.3 Implications of the results

The results documented in this thesis have important implications for regulators and investors. Firstly, the results on the association between institutional environment and firms' earnings management behaviours highlight the importance of strong legal regime, shareholder protection and law enforcement in reducing opportunistic reporting activities. Hypothesis 1 results show that firms engage in more real earnings management to boost earnings in countries with weak legal regimes. In addition, the results of Hypothesis 2 show that stronger institutional environment reduces the negative impacts of REM on firms' future performance and cash generating abilities. These findings emphasise the importance of enhancing shareholder protection laws and

regulation and enhancing enforcement by government and oversight bodies to reduce insiders' power to gain private control of benefits, to limit value destroying earnings management practices, to enhance accounting reporting practices, and to build a stronger financial market. Enhancing shareholder protection regulations and enforcement is also important to protect the country from economic and financial changes (Beck et al., 2003). The harmonisation of international accounting standards and the increasing political and regulatory influences and connections between countries may contribute to the enhancing of legal regimes in some countries. As claimed by Armour et al. (2009) civil-law systems, which are considered to have weaker shareholder protection and law enforcement than common-law countries, are catching up with their counterparts in the common-law systems over time. The results also have implications for investors that they need to be aware that there exists difference in firms' earnings management behaviours and the quality of accounting information in different institutional environment.

Secondly, the results on the negative association between REM and firms' future ROA and CFO have important implications for regulators. These results show the costs of real earnings management activities and call for regulatory attention to develop policies that specifically address or limit such behaviours. However, the recent changes in accounting regulations, such as the passage of SOX in the U.S., focus mainly on reducing opportunistic use of accruals. And as stated in Cohen et al. (2008), the passage of SOX may not have effectively reduced earnings management but may have motivated firms to engage in real earnings management instead of manipulating accruals. The negative and significant coefficients of DA when REM is the dependent variable in the regression results also provide some support for the view that firms use real earnings management and accrual-based earnings management as substitutes. Therefore, the results of this thesis call for the attention of the oversight bodies, such as

the SEC, to reconsider the ability of the current accounting and reporting regulations in limiting different forms of earnings management activities, not only accrual-based earnings management.

Thirdly, the results in terms of firms' real earnings management activities during crisis provide valuable implications for regulators. The results of Hypothesis 3 support the Big Bath perspective that firms may take advantage of favourable changes in crises and save earnings for future periods, as shown by the negative association between REM and CRISIS. In addition, the results of Hypothesis 3 serve to support the efficiency perspective, as the negative impacts of firms' real earnings management behaviours on future performance reduces in crises. These results imply that firms' incentives for earnings management may have changed during specific crisis period possibly because there is less scrutiny and external demand for good performance. Poor performance is considered as more acceptable in crisis and firms face less pressure from the external market, leading to less opportunistic earnings management and moderated negative impacts of earnings management on firms' future performance. The regulatory implications based on these can be extended to non-crisis time periods such that regulators can consider how to form regulations that create a healthier external market that whilst motivating performances of firms also serves to control firms' ability or incentive to engage in opportunistic earnings manipulations.

6.4 Limitations

The limitations of the research design are discussed in Chapter 4. It is firstly difficult to disentangle firms' real earnings management behaviour from the normal course of managerial decision making. Managers' real earnings management activities may be their rational responses to economic circumstances (Roychowdhury, 2006). The findings on the association between REM and firms' future ROA and CFO provide

some implications for coping with this limitation. The negative association between REM and firms' future performance reported in Hypothesis 2 results provide implications that real earnings management reported in this thesis is opportunistic because it has a negative impact on firms' future performance. However, this opportunistic behaviour reduces in crises period based on findings of Hypothesis 3.

Secondly, there can be the problem of endogeneity, which is again difficult to address in social science studies. The regression models include a number of important control variables, including DA, ROA, SIZE, GROWTH, LEV, TIME, and changes in GDP. However, like many other social science studies, which do not have a natural experimental setting, there may exist other extraneous variables which have significant impacts on the associations tested in the hypotheses.

6.5 Future research areas

Based on the findings and limitations discussed above, this thesis calls for future research to form a stronger theoretical explanation for firms' real earnings management in different contexts, especially in different business cycles. In addition, this thesis calls for future research to test more topics related to real earnings management, such as the switch between real and accrual-based earnings management and other techniques of real earnings management apart from sales manipulation, management of discretionary expenses, and overproduction. Future research can also work to identify extraneous variables that may affect firms' real earnings management behaviours in order to enhance the power of tests.

International studies in the future can update the institutional variables developed by La Porta et al. (1998) by using more recent data from more countries to form stronger measures to evaluate the institutional environment of different countries today. Institutional variables can be developed for countries, such as Russia, that are not

included in La Porta et al. (1998) and the subsequent studies.

Moreover, the additional test using a sample of manufacturing firms only presents result that there is a significantly positive relationship between REM and CRISIS, indicating that there are more real earnings management activities to boost earnings in crises for manufacturing firms. This result is inconsistent with the main test results using the full sample. Future research, therefore, can investigate the specific real earnings management behaviours of manufacturing firms, which have a large real operation component and may have different incentive to engage in accrual-based and real earnings management.

GLOSSARY

Variable name	Definition
REM	The sum of the abnormal CFO (ABCFO), abnormal production cost (ABPROD) and abnormal discretionary expenses (ABDISEXP), where ABCFO and ABDISEXP are multiplied by (-1) to present higher real earnings management when the REM measure increases.
REMQ	An indicator variable that equal to one if the sum of the residuals from the CFO model, the production cost model, and the discretionary model, where CFO and discretionary expenses models are multiplied by (-1), is in the highest quintile, zero otherwise. This indicator variable is constructed for each country.
DA	Discretionary accruals measure calculated using the modified Jones model
TA	Total accruals as calculated as the earnings before extraordinary items and discontinued operations minus the operating cash flows
A	Total asset
S	Sales/Turnover
PPE	The gross property, plant and equipment.
AR	Accounts receivable
NA	Normal accruals
COGS	Cost of goods sold
CFO	Cash flow from operations divided by lagged total assets.
PROD	Production costs, calculated as the sum of COGS and changes in inventory during the period
DISEXP	Discretionary expense, calculated as the sum of R&D expenses and SG&A. As long as SGA costs are available, R&D expenses are set to zero if they are missing.
ABCFO	Abnormal CFO calculated based on methods from prior literature, such as Roychowdhury (2006)
ABDISEXP	Abnormal discretionary expenses calculated based on methods from prior literature, such as Roychowdhury (2006)
ABPROD	Abnormal production costs calculated based on methods from prior literature, such as Roychowdhury (2006)

GLOSSARY

TRADITION	A dummy variable that equals 0 for countries that belong to the code-law tradition and 1 for countries that belong to the common-law tradition
PROTECTION	The “anti-director rights” index developed by La Porta et al. (1998). It is an aggregate measure of minority shareholder rights and ranges from 0 to 5
ENFORCEMENT	The legal enforcement score, which is measured as the mean score across three legal variables from La Porta et al. (1998), including the efficiency of the judicial system, the rule of law, and the corruption index
OWNERSHIP	The measure of ownership concentration, which is measured as the medium percentage of common shares owned by the largest three shareholders in the ten largest privately owned non-financial firms (La Porta et al., 1998)
SIZE	The natural log of total assets
ROA	Income before extraordinary items divided by lagged total assets
GROWTH	The percentage increase in sales
LEV	The total liabilities divided by total assets
Δ GDP	The annual growth rate of GDP for all countries collected from World Bank and International Monetary Fund (IMF)
CRISIS	A dummy variable that is equal to 1 for crisis period and 0 otherwise. Crisis period is identified by the negative annual GDP growth for a particular year using GDP data from World Bank and IMF
TIME	A trend variable equal to the difference between the current year and 1995
AdjROA	The difference between firm-specific ROA and the mean ROA for the same year and industry in the firm’s home country
AdjCFO	The difference between firm-specific CFO and the mean CFO for the same year and industry for that country
Fraction of Mfg firms	The fraction of manufacturing firms with SIC from 2000 to 3999 inclusively

REFERENCES

- Acemoglu, D., Johnson, S., Robinson, J., & Thaicharoen, Y. (2003). Institutional causes, macroeconomic symptoms: Volatility, Crises and Growth. *Journal of Monetary Economics*, 50(1), 49–123.
- Ahmad-Zaluki, N. A., Campbell, K., & Goodacre, A. (2011). Earnings management in Malaysian IPOs: The East Asian crisis, ownership control, and post-IPO performance. *The International Journal of Accounting*, 46(2), 111–137.
- Akindayomi, A. (2012). Earnings management and the banking crisis of the 1990s: Evidence from Nigeria. *Academy of Accounting and Financial Studies Journal*, 16(3), 119–135.
- Ali, A., & Hwang, L. S. (2000). Country-specific factors related to financial reporting and the value relevance of accounting data. *Journal of Accounting Research*, 38(1), 1–21.
- Allen, F., & Carletti, E. (2008). Mark-to-market accounting and liquidity pricing. *Journal of accounting and economics*, 45(203), 358–378.
- Allen, F., Qian, J., & Qian, M. (2005). Law, finance, and economic growth in China. *Journal of Financial Economics*, 77(1), 57–116.
- Almeida, H., Campello, M., & Weisbach, M.S., (2004). The cash flow sensitivity of cash. *Journal of Finance*, 59(4), 1777–1804.
- Alsharairi, M., & Salama, A. (2012). Does high leverage impact earnings management? Evidence from non-cash mergers and acquisitions. *Journal of Financial and Economic Practice*, 12(2), 17–33.
- Anand, J. (2013). Earnings management around debt-covenant violations – An empirical investigation using a large sample of quarterly data. *Journal of*

Accounting, Auditing and Finance, 28 (4), 369–396.

Armour, J., Deakin, S., Sarkar, P., Siems, M., & Singh, A. (2009). Shareholder protection and stock market development: an empirical test of the legal origins hypothesis. *Journal of Empirical Legal Studies*, 6(2), 343–380.

Arslan, O., Florackis, C., & Ozkan, A. (2006). The role of cash holdings in reducing investment – cash flow sensitivity: Evidence from a financial crisis period in an emerging market. *Emerging Markets Review*, 7(4), 320–338.

Baber, W. R., & Fairfield, P. M. (1991). The effect of concern about reported income on discretionary spending decisions: The case of research and development. *The Accounting Review*, 66(6), 818–829.

Balakrishnan, K., Li, X., & Yang, H. (2012). *Mandatory Financial Reporting and Voluntary Disclosure: Evidence from Mandatory IFRS Adoption*. Massachusetts Institute of Technology Working Paper.

Ball, R., & Brown, P. (1968). An empirical evaluation of accounting income numbers. *Journal of Accounting Research*, 6(2), 159–178.

Ball, R., Kothari, S. P., & Robin, A. (2000). The effect of international institutional factors on properties of accounting earnings. *Journal of Accounting and Economics*, 29(1), 1–51.

Bange, M., & De Bondt, W. (1998). R&D budgets and corporate earnings targets. *Journal of Corporate Finance*, 4(2), 153–184.

Barth, M. E., & Landsman, W. R. (2010). How did financial reporting contribute to the financial crisis? *European accounting review*, 19(3), 399–423.

Barth, M. E., Landsman, W. R. & Lang, M. H. (2008). International accounting standards and accounting quality. *Journal of Accounting Research*, 46(3),

- Barton, J. (2001). Does the use of financial derivatives affect earnings management decisions? *The Accounting Review*, 76(1), 1–26.
- Bartov, E. (1993). The timing of asset sales and earnings manipulation. *The Accounting Review*, 68(4), 840–855.
- Beck, T., Demirgüç-Kunt, A., & Levine, R. (2003). Law and finance: why does legal origin matter? *Journal of Comparative Economics*, 31(4), 653–675.
- Bergstresser, D., & Philippon, T. (2006). CEO incentives and earnings management. *Journal of Financial Economics*, 80(3), 511–529.
- Black, E. L., Sellers, K. R., & Manly, T. S. (1998). Earnings management using asset sales: An international study of countries allowing noncurrent asset revaluation. *Journal of Business Finance and Accounting*, 25(9-10), 1287–1317.
- Bruns, W. J., & Merchant, K. A. (1990). The dangerous morality of managing earnings. *Management Accounting*, 72(2), 22–25.
- Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics*, 24(1), 99–126.
- Bushee, B. (1998). The influence of institutional investors on myopic R&D investment behavior. *The Accounting Review*, 73(3), 305–333.
- Bushman, R. M., & Smith, A. J. (2001). Financial accounting information and corporate governance. *Journal of Accounting and Economics*, 32(1-3), 237–333.
- Cahan, S. F., Liu, G., & Sun, J. (2008). Investor protection, income smoothing, and earnings informativeness. *Journal of International Accounting Research*, 7(1), 1–24.

REFERENCES

- Canning, J. B. (1929). *The Economics of Accountancy*. New York: The Ronald Press Co.
- Chauvin, K. W., & Hirschey, M. (1993). Advertising, R&D Expenditures and the Market Value of the Firm. *Financial Management*, 22(4), 128–140.
- Chi, W., Lisic, L. L., & Pevzner, M. (2011). Is enhanced audit quality associated with greater real earnings management? *Accounting Horizons*, 25(2), 315–335
- Chia, Y. M., Lapsley, I., & Lee, H. (2007). Choice of auditors and earnings management during the Asian financial crisis. *Managerial Auditing Journal*, 22(2), 177–196.
- Chih, H. L., Shen, C. H., & Kang, F. C. (2008). Corporate social responsibility, investor protection, and earnings management: Some international evidence. *Journal of Business Ethics*, 79(1-2), 179–198.
- Choi, J. H., Kim, J. B., & Lee, J. J. (2011) Value relevance of discretionary accruals in the Asian financial crisis of 1997-1998. *Journal of Accounting and Public Policy*, 30(2), 166–187.
- Claessens, S., Djankov, S., & Lang, L. (2000). The separation of ownership and control in East Asian corporations. *Journal of Financial Economics*, 58(1), 81–112.
- Coffee Jr, J. C. (1999). The Future as history: The prospects for global convergence in corporate governance and its implications. *Northwestern University Law Review*, 93(3), 641–708.
- 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(3), 757–787.
- Comiskey, E. E., & Mulford, C. W. (1986). Investment decisions and the equity accounting standard. *Accounting Review*, 61(3), 519–525.

REFERENCES

- Corrado, C., Hulten, C., & Sichel, D. (2009). Intangible capital and US economic growth. *Review of Income and Wealth*, 55(3), 661–685.
- DeAngelo, L. E. (1988). Managerial competition, information costs, and corporate governance: The use of accounting performance measures in proxy contests. *Journal of Accounting and Economics*, 10(1), 3–36.
- Dechow, P. M., Kothari, S. P., & Watts, L. R. (1998). The relation between earnings and cash flows. *Journal of Accounting and Economics*, 25(2), 133–168.
- Dechow, P. M., & Sloan, R. G. (1991). Executive incentives and the horizon problem. *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., Sloan, R. G., & Sweeney, A. P. (1996). Causes and consequences of earnings manipulation: an analysis of firms subject to enforcement actions by the SEC. *Contemporary Accounting Research*, 13(1), 1–36.
- Dechow, P. M., & Skinner, D. J. (2000). Earnings management: Reconciling the views of accounting academics, practitioners, and regulators. *Accounting Horizons*, 14(2), 235–250.
- DeFond, M., Hung, M., & Trezevant, R. (2007). Investor protection and the information content of annual earnings announcements: International evidence. *Journal of Accounting and Economics*, 43(1), 37–67.
- DeFond, M. L., & Jiambalvo, J. (1994). Debt covenant effects and the manipulation of accruals. *Journal of Accounting and Economics*, 17(1), 145–176.
- Degeorge, F., Ding, Y., Jeanjean, T., & Stolowy, H. (2013). Analyst coverage, earnings management and financial development: An international study. *Journal of*

Accounting and Public Policy, 32(1), 1–25.

Doidge, C., Karolyi, G. A., & Stulz, R. M. (2007). Why do countries matter so much for corporate governance? *Journal of Financial Economics*, 86(1), 1–39.

Dooley, K. J., Yan, T., Mohan, S., & Gopalakrishnan, M. (2010). Inventory management and the bullwhip effect during the 2007-2009 recession: Evidence from the manufacturing sector. *Journal of Supply Chain Management*, 46(1), 12–18.

Doupnik, T. S. (2008). Influence of culture on earnings management: A note. *Abacus*, 44(3), 317–340.

DuCharme, L. L., Malatesta, P. H., & Sefcik, S. E. (2001). Earnings management: IPO valuation and subsequent performance. *Journal of Accounting, Auditing & Finance*, 16(4), 369–396.

DuCharme, L. L., Malatesta, P. H., & Sefcik, S. E. (2004). Earnings management, stock issues, and shareholder lawsuits. *Journal of Financial Economics*, 71(1), 27–49.

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

Eldenburg, L. G., Gunny, K. A., Hee, K. W., & Soderstrom, N. (2011). Earnings management using real activities: Evidence from nonprofit hospitals. *The Accounting Review*, 86(5), 1605–1630.

Erickson, M., & Wang, S. (1999). Earnings management by acquiring firms in stock for stock mergers. *Journal of Accounting and Economics*, 27(2), 149–176.

Enomoto, M., Kimura, F., & Yamaguchi, T. (2013). *Accrual-Based and Real Earnings Management: An International Comparison for Investor Protection*. Kobe University working paper.

Ewert, R., & Wagenhofer, A. (2005). Economic effects of tightening accounting

REFERENCES

- standards to restrict earnings management. *The Accounting Review*, 80(4), 1101–1124.
- Fairfax, L. M. (2009). The legal origins theory in crisis. *Brigham Young University Law Review*, 6, 1571–1617.
- Francis, J., LaFond, R., Olsson, P., & Schipper, K. (2004). Costs of equity and earnings attributes. *The Accounting Review*, 79(4), 967–1010.
- Francis, J. R., & Wang, D. (2008). The joint effect of investor protection and Big 4 audits on earnings quality around the world. *Contemporary Accounting Research*, 25(1), 157–191.
- Fudenberg, D., & Tirole, J. (1995). A theory of income and dividend smoothing based on incumbency rents. *Journal of Political Economy*, 103(1), 75–93.
- Goel, R., & Ram, R. (1994). Research and development expenditures and economic growth: A cross-country study. *Economic Development and Cultural Change*, 42(2), 403–411.
- 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.
- Guidry, F., Leone, A., & Rock, S. (1999). Earnings-based bonus plans and earnings management by business unit managers. *Journal of Accounting and Economics*, 26(1-3), 113–142.
- Gul, F. A., Srinidhi, B., & Shieh, T. (2004). *The Asian financial crisis, accounting conservatism and audit fees: Evidence from Hong Kong*. City University of Hong Kong working paper.
- Gunny, K. A. (2010). The relation between earnings management using real activities

REFERENCES

- manipulation and future performance: Evidence from meeting earnings benchmarks. *Contemporary Accounting Research*, 27(3), 855–888.
- Gunny, K. A., & Zhang, T. C. (2014). Do managers use meeting analyst forecasts to signal private information? Evidence from patent citations. *Journal of Business Finance & Accounting*, 41(7-8), 950–973.
- Gupta, M., Khurana, I. K., & Pereira, R. (2008). Legal inforcement, short maturity debt, and the incentive to manage earnings. *Journal of Law and Economics*, 51(4), 619–639.
- Habib, A. (2007). Legal environment, accounting information, auditing and information intermediaries: Survey of the empirical literature. *Journal of Accounting Literature*, 26, 1–75.
- Habib, A., Bhuiyan, M. B. U., & Islam, A. (2013). Financial distress, earnings management and market pricing of accruals during the global financial crisis. *Managerial Finance*, 39(2), 155–180.
- Hafzalla, N. M. (2009). Managerial incentives for discretionary disclosure: Evidence from management leveraged buyouts. *Review of Accounting Studies*, 14(4), 507–533.
- Hand, J. (1989). Did firms undertake debt-equity swaps for an accounting paper profit or true financial gain? *The Accounting Review*, 64(4), 587–623.
- Healy, P. (1985). The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics*, 7(1-3), 85–107.
- Healy, P. M., & Wahlen, J. M. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons*, 13(4), 365–383.

REFERENCES

- Herrmann, D., Inoue, T., & Thomas, W. B. (2003). The sales of assets to manage earnings in Japan. *Journal of Accounting Research*, 41(1), 89–108.
- Holthausen, R. (1990). Accounting method choice: Opportunistic behavior, efficient contracting, and information perspectives. *Journal of Accounting and Economics*, 12(1-3), 207–218.
- Holthausen, R., Larcker, D., & Sloan, R. (1995). Annual bonus schemes and the manipulation of earnings. *Journal of Accounting and Economics*, 19(1), 29–74.
- Holthausen, R., & Leftwich, R. (1983). The economic consequences of accounting choice implications of costly contracting and monitoring. *Journal of Accounting and Economics*, 5, 77–117.
- Hopwood, A. G.(2009). The economic crisis and accounting: Implications for the research community. *Accounting, Organizations and Society*,34(6-7). 797–802.
- Hribar, P., Jenkins, N. T., & Johnson, W. B. (2006). Stock repurchases as an earnings management device. *Journal of Accounting and Economics*, 41(1-2), 3–27.
- Iatridis, G.,& Dimitras, A. I.(2013). Financial crisis and accounting quality: Evidence from five European countries. *Advances in Accounting*,29(1), 154–160.
- Jackson, S. B., & Wilcox, W. E. (2000). Do managers grant sales price reductions to avoid losses and declines in earnings and sales?*Quarterly Journal of Business and Economics*, 39(4), 3–20.
- Jaggi, B., & Lee, P. (2002). Earnings management response to debt covenant violations and debt restructuring. *Journal of Accounting, Auditing & Finance*, 17(4), 295–324.
- Jensen, M. C.,& Meckling, W. H.(1976). Theory of the firm: Managerial behavior,agency costs and ownership structure, *Journal of Financial*

REFERENCES

Economics, 3, 305–360.

- Jermakowicz, E., & Gornik-Tomaszewski, S. (2006). Implementing IFRS from the perspective of EU publicly traded companies. *Journal of International Accounting, Auditing and Taxation*, 15(2), 170–196.
- Johnson, S., Boone, P., Breach, A., & Friedman, E. (2000). Corporate governance in the Asian financial crisis. *Journal of Financial Economics*, 58(1-2), 141–186.
- Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, 29(2), 193–228.
- Kasznik, R. (1999). On the association between voluntary disclosure and earnings management. *Journal of Accounting Research*, 37(1), 57–82.
- Kim, Y., & Park, M. S. (2005). Pricing of seasoned equity offers and earnings management. *Journal of Financial and Quantitative Analysis*, 40(2), 435–463.
- Kousenidis, D. V., Ladas, A. C., & Negakis, C. I. (2013). The effects of the European debt crisis on earnings quality. *International Review of Financial Analysis*, 30, 351–362.
- Kwon, G. J. (2013). The comparative value relevance of donation and advertising expenditure before and after the global financial crisis in Korea. *Asian Social Science*, 9(5), 34–50.
- La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2008). The economic consequences of legal origins. *Journal of Economic Literature*, 46(2), 285–332.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1997). Legal determinants of external finance. *Journal of Finance*, 52(3), 1131–1150.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1998). Law and finance. *Journal of Political Economy*, 106(6), 1113–1155.

REFERENCES

- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1999). Corporate ownership around the world. *Journal of Finance*, 54(2), 471–517.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (2000). Investor protection and corporate governance. *Journal of Financial Economics*, 58(1-2), 3–27.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (2002). Investor protection and corporate valuation. *Journal of Finance*, 57(3), 1147–1170.
- Land, J., & Lang. M. H. (2002). Empirical evidence on the evolution of international earnings. *The Accounting Review*, 77(s-1), 115–133.
- Lang, M. H., Raedy, J. S., & Yetman, M. H. (2003). How representative are firms that are cross-listed in the U.S.? An analysis of accounting quality. *Journal of Accounting Research*, 41(2), 363–386.
- Leftwich, R. (1983). Accounting information in private markets: Evidence from private lending agreements. *The Accounting Review*, 58(1), 23–42.
- Leuz, C., Nanda, D., & Wysocki, P. (2003). Earnings management and investor protection: An international comparison. *Journal of Financial Economics*, 69(3), 505–527.
- Levine, R., & Ahmed, S. (1998). The legal environment, banks, and long-run economic growth. *Journal of Money, Credit, and Banking*, 30(3), 596–620.
- Levitt, A. (1998). The numbers game. *The CPA Journal*, 68(12), 14–19.
- Lim, S., & Matolcsy, Z. (1999). Earnings management of firms subject to product price controls. *Accounting and Finance*, 39(2), 131–50.
- Louis, H. (2004). Earnings management and the market performance of acquiring firms. *Journal of Financial Economics*, 71(1), 121–148.

REFERENCES

- Matsunaga, S. R. (1995). The effect of financial reporting costs on the use of employee stock options. *The Accounting Review*, 70(1), 1–26.
- Memis, M. Ü., & Çetenak, E. H. (2012). Earnings management, audit quality and legal environment: An international comparison. *International Journal of Economics and Financial Issues*, 2(4), 460–469.
- Metters, R. (1997). Quantifying the bullwhip effect in supply chains. *Journal of Operations Management*, 15(2), 89–100.
- Mittelstaedt, F., Nichols, W., & Regier, P. (1995). SFAS No. 106 and benefit reductions in employer sponsored retiree health care plans. *The Accounting Review*, 70(4), 535–556.
- Nabar, S., & Boonlert - U - Thai., K. K. (2007). Earnings management, investor protection, and national culture. *Journal of International Accounting Research*, 6(2), 35–54.
- Navissi, F. (1999). Earnings management under price regulation. *Contemporary Accounting Research*, 16(2), 281–304.
- Perry, S., & Grinaker, R. (1994). Earnings expectations and discretionary research and development spending. *Accounting Horizons*, 8(4), 43–51.
- Perry, S., & Williams, T. (1994). Earnings management preceding management buyout offers. *Journal of Accounting and Economics*, 18(2), 157–179.
- Rajan, R. G. (2010). *Fault lines: How hidden fractures still threaten the world economy*. Princeton, NJ: Princeton University Press.
- Reinhart, C. M., & Rogoff, K. S. (2009). *This time is different: Eight centuries of financial folly*. Princeton, NJ: Princeton University Press.

REFERENCES

- Ribstein, L. E. (2003). Bubble laws. *Houston Law Review*, 40(1), 77–97.
- Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics*, 42(3), 335–370.
- Saleh, N. M., & Ahmed, K. (2005). Earnings management of distressed firms during debt renegotiation. *Accounting and Business Research*, 35(1), 69–86.
- Schipper, K. (1989). Commentary on earnings management. *Accounting Horizons*, 3(4), 91–102.
- Shivakumar, L. (2000). Do firms mislead investors by overstating earnings before seasoned equity offerings? *Journal of Accounting and Economics*, 29(3), 339–371.
- Seifert, B., & Gonenc, H. (2011). Creditor rights and R&D expenditures. *Corporate Governance: An International Review*, 20(1), 3–20.
- Shen, C., & Chih, H. (2005). Investor protection, prospect theory, and earnings management: An international comparison of the banking industry. *Journal of Banking & Finance*, 29(10), 2675–2697.
- Sougiannis, T. (1994). The accounting based valuation of corporate R&D. *The Accounting Review*, 69(1), 44–68.
- Sweeney, A. P. (1994). Debt-covenant violations and managers' accounting responses. *Journal of Accounting and Economics*, 17(3), 281–308.
- Taylor, G. K., & Xu, R. Z. (2010). Consequences of real earnings management on subsequent operating performance. *Research in Accounting Regulation*, 22(2), 128–132.
- Teoh, S. H., Welch, I., & Wong, T. J. (1998). Earnings management and the long-run market performance of initial public offerings. *Journal of Finance*, 53(6),

1935–1974.

- Trueman, B., & Titman, S. (1988). An explanation for accounting income smoothing. *Journal of Accounting Research*, 26, 127–139.
- Vichitsarawong, T., Eng, L. L., & Meek, G. K. (2010). The impact of the Asian Financial Crisis on conservatism and timeliness of earnings: Evidence from Hong Kong, Malaysia, Singapore, and Thailand. *Journal of International Financial Management and Accounting*, 21(1), 32–61.
- Watts, R. L., & Zimmerman, J. L. (1990). Positive accounting theory: a ten year perspective. *Accounting Review*, 131–156
- Waymire, G., & Basu, S. (2011). Economic crisis and accounting evolution. *Accounting and Business Research*, 41(3), 207–232.
- Wei, K. C., & Zhang, Y. (2008). Ownership structure, cash flow, and capital investment: Evidence from East Asian economies before the financial crisis. *Journal of Corporate Finance*, 14(2), 118–132.
- White, J. B., & Miles, M. P. (1996). The financial implications of advertising as an investment. *Journal of Advertising Research*, 36(4), 43–52.
- Wu, Y. W. (1997). Management buyouts and earnings management. *Journal of Accounting, Auditing & Finance*, 12(4) 373–389.
- Xiong, Y. (2006). Earnings management and its measurement: A theoretical perspective. *The Journal of American Academy of Business*, 9(2), 214–219.
- Xu, R. Z., Taylor, G. K., & Dugan, M. T. (2007). Review of real earnings management literature. *Journal of Accounting Literature*, 26, 195–228.
- Yoon, S. S., & Miller, G. (2002). Earnings management of seasoned equity offering firms in Korea. *The International Journal of Accounting*, 37(1), 57–78.

REFERENCES

- Zang, A. Y. (2012). Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *The Accounting Review*, 87(2), 675–703.
- Zhao, Y., Chen, K. H., Zhang, Y., & Davis, M. (2012). Takeover protection and managerial myopia: Evidence from real earnings management. *Journal of Accounting and Public Policy*, 31(1), 109–135.