Do firms manage earnings through real activities manipulation? Evidence from Australia.

Mengjie Li

A dissertation submitted to Auckland University of Technology in partial fulfilment of the requirements for the degree of Master of Business.

28/08/2017

Business and Law Faculty
Auckland University of Technology

Table of Content

List of Tables

Abstract

Discretions are given to managers to reflect the financial performance and value of companies in the best and most efficient approach. However, discretions do not always disclose firms' performance and value accurately, but to create opportunities for managers to distort shareholders' view of financial performance through managing earnings. Although there are several researches about real activity manipulation, they mainly focus on the U.S. and European firms, in contrast, studies focusing on Australian are inadequate. To fulfil this gap, this dissertation examines whether the real earnings management will be undertaken by Australian firms to beat the earnings benchmarks via testing three major activities: sales manipulation; discretionary expenditures (R&D expenses manipulation particularly); and overproduction.

The study sample comprises 3,893 firm-years in Australia for the period from 2010 to 2016. To select suspect firm-years, two benchmarks are used, BENCH 1 is net income divided by total assets and BENCH 2 is changes in net income divided by total assets. The result shows that when selecting suspect firm-years by using BENCH 2, the ABCFO and ABDISEXP of suspect firm-years are lower than those of non-suspect firm-years, and ABPROD of suspect firm-years is higher than that of non-suspect firm-years, which means that Australian firms use real activities manipulation to manage earnings. However, based on the model developed by Roychowdhury (2006), the regression result shows that it is no relationship between real activity manipulation and meeting earnings benchmarks. Although this finding is not consist with prior research, in additional test, the result shows that under BENCH 2, the suspect firm-years have higher earnings quality, which could be a reason to failing find the relationship between real activity manipulation and meeting earnings benchmarks.

Key words: Real activity manipulation; Australia; sales manipulation; discretionary expenditures; overproduction.

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 award of any other degree or diploma of a university or other institution of higher learning.

Signed ___李梦洁_____ Date_____28/08/2017_____

Acknowledgement

I would like to thank my supervisor Dr. Humayun Kabir for spending much time to read and revise my paper, and his patience, guidance and responsibility. He gave me lots of help not only valuable suggestions but also the introduction of using some professional data software and data analysis software. Under his mentorship, I learnt many new researching skills, and make me be more critical when reading articles. He is patient, when I met so many problems during the research, reading and dealing with data, he gave me lots of suggestions and guidance. Without his help, I could not complete my dissertation.

I also would like to thank AUT library facility that provide us adequate reading and research material, good equipment and comfort lab.

Last but not least, I would like to thank my roommate Stella who teach me how to use End Note to edit in-text reference and reference list.

Chapter One: Introduction

1.1 Background and research question

This dissertation examines whether managers manage earnings through real earnings management to beat earnings benchmarks. In order to reflect the financial performance and value of companies in the best and most efficient way, directions on the way their financial performance should be reported are given to managers within the requirements of accounting standards. Unfortunately, discretions are not always used correctly to reflect firms' performance and value, but provide opportunities for managers to distort stakeholders' views about the financial performance of companies by managing earnings (Dechow & Skinner, 2000). A number of studies have already documented evidence that managers use earnings management to smooth their earnings in order to meet/beat earnings benchmarks, or to avoid reporting losses. However, this field is not adequately studied in Australia. Therefore, this dissertation aims to fill this gap by studying real activity manipulations in Australia firms, and by investigating whether one managerial incentive for conducting real earnings management is meeting a benchmark.

Earnings management consists of two methods: accrual-based earnings management and real earnings management (or real activity manipulation). Accrual-based earnings management does not affect the cash flow in a particular accounting period immediately, because managers have a high level of discretion in making accrual decisions and recognitions and this leads some managers to manipulate earnings, including the estimations of useful life and salvage value of long-term assets, losses as a result of bad debts, and so on (Wang, 2014). By contrast, real earnings management employs intentional manipulation of operational activities designed to mislead, at least some, stakeholders in order to make them believe that firms performed well during a specific accounting period (Roychowdhury, 2006). In the other words, managers make decisions that have an influence on the timing or structuring of important transactions during daily operation (Ewert & Wagenhofer, 2005). For decades, accrual-based earnings management was drawing the attention of researchers. However, in recent years, real activity manipulation has attracted increasing attention from researchers, because

financial executives are more willing to manage earnings through real activity rather than through accrual methods (Graham, 2005). This transition may be a result of changes in the accounting environment: in particular, changes in regulation and scrutiny levels (Roychowdhury, 2006), and the implication that real earnings management is difficult to detect (Cohen, Dey & Lys, 2008).

In particular, according to prior research, real activity manipulation includes: manipulation of discretionary expenses, such as research and development (R&D) expenses and selling, general and administrative (SG&A) expenses; sales manipulation, i.e. providing price discounts to increase sales volume; overproduction designed to decrease the Cost of Goods Sold (COGS); and manipulation of the timing of long-term asset sales (Xu, Taylor & Dugan, 2007; Wang, 2014; Cohen & Zarowin, 2010; Roychowdhury, 2006; Gunny, 2010; Zang, 2012).

This dissertation will concentrate on real earnings management, and will examine real activity manipulation by testing three management activities: sales manipulation; discretionary expenditures (R&D expenses manipulation particularly); and overproduction.

The aim of this research is to examine real activity manipulation in Australian firms, in particular, with the research question: "Do Australian firms use real activity manipulation to manage earnings (specifically, by controlling discretionary expenditure, sales and inventory)?" Furthermore, it is difficult to identify earnings management behavior while managers' intentions are unknown (Gunny, 2010). Therefore, this dissertation also investigates the research question: "Do Australian firms use real activity manipulation to meet an earnings benchmark (zero earnings and last year's earnings)?"

1.2 Motivation for the research

Insufficient knowledge and research of real earnings management in Australia form strong motivations for examining the research question in this dissertation. Most research

about real earnings management collected data in the U.S.(Roychowdhury, 2006; Gunny, 2010, Zang, 2012; Ho, Liao & Taylor, 2015), with just a few studies focusing on firms in other countries, for instance, Hermann, Inoue and Thomas (2003) stated that Japanese firms control earnings from sales of long-term assets to meet the earnings forecasts of analysts. Black, Sellers and Manly (1998) did not find that New Zealand, Australia or U.K. firms use long-term asset sales to manage earnings. Moreover, although Australia and U.S. are both common law countries, they have different accounting environments, such as different standards and different scaled capital markets, which may impact their use of earnings management. Therefore, the results of previous research based on U.S. firms may not be generalizable to Australian firms, and there is a gap in real activity manipulation study in Australia.

Furthermore, although there are already some studies of earnings management in Australia, they are all on accrual-based earnings management: e.g., Koh (2003) examined the association between accrual earnings management and institutional ownership in Australia. As a result of the transition from accrual-based earnings management to real earnings management that is found in prior studies, the use of real earnings management in Australia may also be found to have changed.

Meanwhile, because of the inherent difficulty in identifying earnings management when managers' true intentions are unknown, an examination of managers' incentives in managing earnings is necessary. This dissertation is therefore motivated to investigate real activity manipulation in Australia, and managers' purposes in using those activities to manage earnings.

The sample of this dissertation includes 3724 firm-years, after deleting the samples that have missing data, and based on the Roychowdhury (2006) and Gunny (2010) model designed to examine real earnings management and the incentives of managers in conducting earnings management. The results indicate that the suspect firm-years have lower operating cash flow (CFO) than non-suspect firm-years, and the suspect firm-years

have higher production costs than non-suspect firm-years, which means that the firms whose aims are meeting earnings benchmarks do conduct real activity manipulation to manage earnings. Moreover, it is also found that there is no relationship between meeting earnings benchmarks and real earnings management, which is inconsistent with Gunny (2010)'s findings. Therefore, an additional test is done to examine the earnings quality of those suspect firm-years. Then, it is found that the suspect firm-years have a high level of earnings quality, from which it could be concluded that, because of the high level earnings quality, the scale of earnings management is not large enough to be tested. Therefore, the results show that there is no relationship between real earnings management and meeting earnings benchmarks.

Chapter two will discuss previous findings on real earnings management, and chapter three develops the hypothesis. Chapter four shows the sample selection process, the estimation model used to calculate the variables, and the regression model used to examine the main project of this dissertation. In chapter five, this dissertation discusses whether Australian firms use real activity manipulation, and the relationship between meeting benchmarks and real earnings management. Chapter six provides an additional test to test the earnings quality of suspect firm-years as well as possible explanations for the lack of any demonstrated correlation between the meeting of earnings benchmarks and real earnings management. Finally, chapter seven provides a conclusion, and discussion about the findings.

Chapter Two: Literature review

This chapter will provide previous research about earnings management, including its definition and classification and, especially, the evidence for real activity manipulation found by prior studies. According to Xu et al. (2007), real activity manipulation is conducted in three ways: discretionary expenses; production, sales and inventory; and selling of long-term assets, all of which are discussed in detail later in this chapter. This dissertation also aims to examine the incentives of managers for managing earnings and, therefore, later in this chapter, prior relevant findings are also discussed.

2.1 Earnings management

Earnings management is defined by Schipper (1989, p.92) 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)."

Similarly, Healy and Wahlen (1999) define earnings management as management used to mislead stakeholders about the true performance of companies, or to affect contractual outcomes based on reported accounting information. It occurs when managers use judgment in reporting financial performance and in structuring performance to change the financial reports of companies.

Those two definitions of earnings management are accepted widely. Both emphasize that the purpose of earnings management is to mislead stakeholders and influence contractual outcomes in order to acquire private gain. Most research has been based on those two definitions, and has provided empirical evidence of the existence of earnings management in companies, and its possible managerial incentives. For example, Burgstahler and Dichev (1997) found that earnings management is used to avoid reporting loss or earnings decrease by manipulating the cash flow from operations, and changes in working capital. Also, Graham, Harvey and Rajgopal (2005) concluded that 78% of managers prefer to smooth their earnings to achieve short-term earnings targets by sacrificing their firm's long-term value. The reason for this managerial decision is that, from the executives'

perspective, achieving an earnings target would increase the credibility of firms in the market, and the stock price. Therefore, under pressure from the CEO, meeting earnings targets pushes managers to manage earnings. Gunny (2010) discovered that managers' use of earnings management to achieve their earnings goal is not occasional, but intentional, and designed to maintain their good performance.

Moreover, from prior papers, it could be concluded that managers did not just use one single method to manipulate earnings. According to the above definitions and the approach mangers used to manage earnings, researchers classified earnings management into two categories: one is real activities manipulation and the other is accrual-based earnings management.

Accrual-based earnings management is a method of earnings management that does not have immediate influence on the cash flow in a specific period (Wang, 2014). Under accrual-based earnings management, managers manage cash flows and earnings on the financial statement by manipulating the accrual process of accounting: for instance, by selecting the method of valuing inventory and depreciating assets (Wang, 2014). Therefore, using accrual-based earnings management will make earnings jump up or drop down temporarily. Most prior papers focused on earnings management based on researching this accrual-based method.

In contrast, real earnings management as the other main method to manage earnings drew an increasing amount of attention. Differently from accrual-based earnings management, real earnings management focuses on operational activity, like manipulating the decision to invest.

This dissertation will concentrate on real activity manipulation, and the incentives of managers to manage earnings by using this method.

2.2 Real activities manipulation

Real activity manipulation is also called real earnings management. Different from accrual-based earnings management, real earnings management concentrates on the operational level, which means the earnings management is about the operational activity of the company. Roychowdhury (2006) defined real activities manipulation as real operational practices made by managers that breach normal operating activities to distort the disclosed accounting information, and make stakeholders believe the firm's financial goal has been met under normal operations. This is the definition most accepted by subsequent research. Based on this definition, much research has been done to explore the existence of real activity manipulation. According to the literature review of Xu et al. (2007), real earnings management activities could be classified into firms' operation and investment activities, and their financial activities.

2.2.1 Operating and investing activities

More specifically, Xu et al. (2007), Wang (2014) and Cohen and Zarowin (2010) stated that operating activities include: discretionary expenditure (R&D and selling, general and administrative expenses); production, sales and inventory; and selling of long-term assets.

2.2.2 Discretionary expenditure

As mentioned, discretionary expenditure consists of R&D, selling, general and administrative expenses. Most prior research has concentrated on R&D expenses, as the benefits of R&D investments are both uncertain, and routinely recorded as cash out-flow. Therefore, managers are able to manage earnings through decreasing R&D investment in order to increase earnings of the current accounting period.

Baber and Fairfield (1991) tested earnings figures of 438 U.S. firms from the period between 1977 and 1987, and found that participants improved earnings in current accounting periods by reducing R&D expenses. Similarly, Dechow and Sloan (1991) also employed the R&D data of 405 samples from the years 1974 to 1988, and concluded that executives of those firms decreased investment in R&D to increase the short-term value

of firms. In addition, Perry and Grinaker (1994) also gathered data from 99 firms with large R&D expenses from 1972 to 1990. They found that when actual earnings did not reach expectations, managers tend to decrease R&D expenditure. , Using 100 firms with high levels of R&D spending, Bange and De Bondt (1998) indicated similar results, in that companies would decrease R&D expenses to narrow the gap between real and estimated earnings in a current accounting period. Moreover, by surveying 401 financial executives of U.S. firms, Graham et al. (2005) found that the CEOs of companies consider meeting earnings benchmarks, or smoothing earnings, as important factors affecting the reputation of companies, and the credibility, stability and predictability of future performance. In addition, 80% of participating managers would decrease discretionary expenses on R&D and advertising to reach an earnings benchmark, with the sacrifice of their firm's long-term value.

Those papers established a solid foundation for the later related real earnings management research from the perspective of R&D expenses manipulation. However, essential limitations still existed. Small sample size is a common problem in this research and, as a consequence, their generalizability will be influenced. Moreover, most were conducted in U.S., and their samples consist of firms with high levels of R&D spending. Therefore, the generalizability and credibility of the findings are affected. Nonetheless, their findings provide evidence of the existence of real activity manipulation, and the methods used to compute related variables and conduct similar studies provided valuable experience.

Following all those prior studies, Roychowdhury (2006) studied 36 industries and 4252 companies in total from the years 1987 to 2001, to test the discretionary expenses-related hypothesis. Based on the conclusion of Dechow, Kothari and Watts (1998), Roychowdhury (2006) established a credible regression model to demonstrate dependent variables (discretionary expenses, sales manipulation, and overproduction) by calculating cash flows from operations in the present accounting period. As a result, he found abnormal operating cash flows from discretionary expenditures. Moreover, the discretionary expenses were 5.91% lower than the average level, i.e., economically

significant, following the adjustments made in order to meet the earnings benchmarks and analysts' predictions. Also, Gunny (2010) achieved conclusions consistent with Roychowdhury's (2006) by collecting adequate data from 4028 firms (excluding financial and utility industries) in the period 1988 to 2002. This research demonstrates that companies engaged in earnings management, to meet zero earnings or last years' earnings, by manipulating discretionary expenditures, including R&D and SG&A, as well as production costs. Zang (2012) also achieved similar result by testing the role of both real earnings management and accrual-based earnings management.

Roychowdhury's (2006) paper is essential for the subsequent real earnings management research, for he established reliable and credible models to present real earnings management from three aspects, consisting of discretionary expenses; production, sales and inventory; and selling of long-term assets, respectively. At the stage of selecting a sample, Roychowdhury (2006) decided to choose suspect firms with earnings greater than the standard earnings interval, in order to exclude the companies that reduce their earnings, as that portion of data would decrease the power of the test. Moreover, the sample size in the study is adequate. With reference to the considerations above, Roychowdhury's study has generalizability and credibility as a foundation for other research.

2.2.3 Sales, Production and Inventory

Besides discretionary expenditure, previous researchers also documented evidence for manipulation of production, sales and inventory to realize earnings management.

To be specific, sales manipulation means that managers will accelerate sales by providing price discount; extending lenient credit; or not allow credit sales to boost sales volumes in the last quarter of a current financial year, in order to increase earnings temporarily (Jackson & Wilcox, 2000; Roychowdhury, 2006; Xu et al., 2007; Wang, 2014). Production manipulation commonly means overproduction. Managers will increase production, even exceeding the necessary requirements, so that the overall cost of goods

sold (COGS) could decrease: in other words, managers are likely to engage in overproduction to effectively spread the fixed overheads cost over amounts of units, and transfer a part of this cost onto the value of the inventory (Roychowdhury, 2006; Xu et al., 2007; Zang, 2012; Wang, 2014). Manipulation on inventory usually concentrates on the method of recording inventory. By implicating a different method of recording inventory, the earnings of a current accounting period would be influenced significantly. Specifically, other than other methods, the "last in first out" (LIFO) method assumes that the last items companies bought will be consumed first, so that managers could record the higher value inventory in their cost of sales, as a result of which the costs increase, profits decrease and tax expenses will also decrease (Dhaliwal, Frankel & Trezevant, 1994; Xu et al., 2007; Wang, 2014). Also, the shipping of inventory could have an influence on earnings, because of the timing of revenue recognition.

Jackson and Wilcox (2000) studied all firms for which required data was available on COMPUSTAT from the years 1989 to 1997 in Canada, and they divided their sample into two groups: test and companion. The results indicated that, in the last quarter of each accounting period, managers permitted sale prices to decrease in order to boost sales volume, so that their earnings would not show a reduction. Roychowdhury (2006) tested abnormal operating cash flow (CFO) relating to sales and production, and found that companies manipulate production and provide price discounts to manage earnings in order to reach the predictions of analysts or meet an earnings target. Zang (2012) also concluded that managers meet earnings targets or zero earnings benchmarks through reducing COGS. Dhaliwal et al. (1994) collected data from all firms using LIFO as their inventory recording method, employing a total sample that included 2140 frim years during the years 1979 and 1988. The findings indicated that managers use LIFO liquidations to maintain earnings increases.

2.2.4 Sales of long-term assets

Companies have also been found to smooth their income by manipulating the income from the selling of long-term assets, by control the timing of asset disposal. Bartov (1993)

tested the relation between the incomes from selling long-term assets and changes in current income before tax before selling long-term assets, based on data collected from 653 U.S. firms during the year 1987 and 1989. He found that companies controlled the timing of long-term asset disposal and investigation, in order to smooth earnings and to relieve the negative influence of possible debt covenants. By contrast, Black, Sellers and Manly (1998) suggested in their study that there is no evidence showing that firms smooth income by manipulating long-term asset disposal in Australia, New Zealand and U.K., by testing the relation between the gain/loss from long-term assets sale and changes in the current income before tax before disposing of long-term assets. Herrmann, Inoue and Thomas (2003) investigated the relation between income from sales of fixed assets and managers' earnings prediction errors, and suggested that in order to decrease differences between managers' earnings forecasts and real earnings on the financial reports, Japanese firms manipulate long-term asset disposal and investigation.

2.3 Financial activities

Besides the operating and investing activities mentioned above, there are also some activities which could not be categorized under ether operating or investing activities, but that will affect earnings by using financing activities, including share repurchases, issued stock options, and financing instruments (Xu et al., 2007). Specifically, managers may manipulate the time and scale of stock repurchases to reduce outstanding shares and increase earnings per share (Bens, Nagar & Wong, 2003; Hribar, Jenkins & Johnson, 2006). Also, mangers could increase earnings by coordinating the issuing of stock options (Carter, Lynch & Tuna, 2007). Additionally, prior studies documented evidence that firms use financial derivatives to reduce earnings volatility, e.g. they might hedge away rate fluctuations in interest and foreign exchange, or undertake debt-equity swaps (Barton, 2001).

2.4 Incentives of real activity manipulation

As Gunny (2010) mentioned, it is difficult to identify earnings management if the managers' real purposes are unknown. To examine the real intention of managers,

Graham et al. (2005) sent internet questionnaires containing 10 questions to target executives in the U.S.A. with a response rate of 10.4 which is quite low compared with previous research. The final number of participants from private companies was 46, and 36 companies did not identify as private or public. By using the survey method, they concluded that there are three aspects of earnings benchmarks that provide the main incentives for managers to manage earnings, including consensus analysts' forecasts; meeting/beating last year's earnings benchmark; and zero earnings. Also, the results showed that 86.3% percent of managers regarded beating/meeting an earnings benchmark to be the basis for establishing the credibility of firms in the capital market, and helpful in increasing or stabilizing the stock price of firms. More importantly, meeting earnings benchmarks would ensure a gain in reputation for the management team. Perry and Grinaker (1994), Bange and De Bondt (1998) and Hermann et al. (2003) concluded that firms conducted real earnings management to meet analysts' forecasts. Roychowdhury (2006) presented evidence that managerial avoidance of a reported loss is also an important incentive for real activity manipulation, because of the heavy pressure from institutional shareholders on mangers. Similarly, Jackson and Wilcox (2006) and Leggett et al. (2016) found firms undertaking real activity manipulation to avoid loss, and to meet analysts' earnings forecasts. Jacob and Jorgensen (2007) indicated that there are discontinuities in zero earnings and last-year earnings, which provide evidence of earnings management that has been used by companies to just meet/beat earnings benchmarks. Furthermore, Gunny (2010) found a positive correlation between real earnings management and just meeting/beating earnings benchmarks. Specifically, managers manipulate earnings to meet zero earnings and last year's earnings.

2.5 The trend to conduct real activity manipulation

In the decades of earnings management development, there is an increasing trend towards conducting real activity manipulation, rather than accrual-based earnings management, since real manipulation has become less costly. Graham et al. (2005) indicated that managers stated they are more likely to manipulate earnings using real earnings management rather than accrual-based activities. According to relevant studies, there are

three main reasons to transfer from accrual-based earnings management to real activity manipulation.

Firstly, compared with accrual-based earnings management, managers consider real manipulation activities as being more ethical (Bruns & Merchant (1990). Moreover, as stated by Roychowdhury (2006) and Wang (2014), real activity manipulation is less likely to draw auditor and regulatory scrutiny and public attention than accrual-based manipulation. Therefore, conducting real earnings management may have a lower detection risk.

Furthermore, the changes in regulatory environment also play an important role in the transition from accrual-based earnings management to real activity manipulation. Cohen et al. (2008) indicated that, after the implementation of the Sarbanes-Oxley Act (SOX) in America in 2002, the level of real activity manipulation had a remarkable increase while the level of accrual-based manipulation decreased significantly. Similarly, Ho and Taylor (2015) observed 4050 firm years from 2002 to 2011 and, based on the data collected from Chinese firms, concluded that after adopting IFRS, the accrual discretion of managers declined significantly. As a result, firms focused more on real earnings management. Ipino and Parbonetti (2017) demonstrated a similar result by examining the influence of IFRS mandatory adoption on the earnings management transition by collecting data from both EU countries and non-EU countries. Further, they also predicted that the adoption of new standards would lead to an increase in real activity manipulation unintentionally, even in strong legal enforcement countries. Based on evidence from 616 experienced financial officers in U.S. firms and non-U.S. firms as their sample, Evans, Houston, Peters and Pratt (2015) concluded that firms use more real activities than accrual-based methods to manage earnings, and U.S. firms using the U.S. GAAP rely more on real activity manipulation than U.S. firms using the IFRS.

2.6 Difference in the accounting environment between Australia and U.S.

Although Australia is a common law country like the U.S.A., there are essential

differences in their accounting environments that will influence the implications of earnings management. International financial reporting standards (IFRS), which are used in Australia, do differ from U.S. accounting standards. Further, the financial reporting frequencies are also different in the two countries, in that Australian companies report twice annually while U.S. companies report four times per year (Ipino & Parbonetti, 2017). Moreover, the scale of the U.S. capital market is much larger than that of Australia, and more regulatory scrutiny occurs in U.S. than in Australia (Hodne, Murphy, Ottenbacher & Ruggles, 2013). Holland and Ramsay (2003) stated that, because of the low level of scrutiny in Australia, Australian firms may not have incentives to meet earnings management benchmarks that are consistent with those of U.S. firms.

Additionally, the firm size in the two countries has significant differences. U.S. companies are relatively large compared with those in Australia. Also, some studies suggested that firm size will influence earnings information, specifically, the earnings threshold (Ipino & Parbonetti, 2017). Therefore, both incentives and earnings management activities may be different from those underlying studies conducted in the U.S., because of those accounting environment differences.

Table 1 about here

Chapter three: Hypothesis Development

This dissertation focuses on abnormal levels of three variables, including sales manipulation, reduction of discretionary expenditures and overproduction. Sales manipulation is defined as the activities conducted by managers to boost sales temporarily. The main method of boosting sales in the short-term is offering price discount. As a result, the cash inflow per sale from those sales will be lower as margins decrease, and the production expenses relating to sales will be abnormally high (Jackson & Wilcox, 2000). In addition, managers tend to provide more credit terms to increase sales, and this results in lower cash inflows. Therefore, sales manipulation is expected to cause lower CFO and higher production costs in the current year than would be expected under normal sales levels (Roychowdhury, 2006).

As to the discretionary expenses that are defined as the sum of R&D and SG&A expenses, managers could reduce this category of expenses to reduce the reported expenses, so that the earnings reported increase. According to Roychowdhury (2006), Baber and Fairfield (1991), Perry and Grinaker (1994) and Zang (2012) reducing discretionary expenditure leads to lower cash outflows and influences current abnormal CFO.

Meanwhile, overproduction means managers decide to produce more goods than the normal demand requires, to increase earnings. In particular, higher production leads to lower fixed cost per unit, and total cost per unit will decline. As a result, the COGS is lower, and CFO in the current period will be lower than the normal level (Jackson & Wilcox, 2000).

Also, this dissertation examines the relationship between real earnings management and the intentions of managers to manage earnings in order to meet earnings benchmarks. Specifically, a number of prior researchers focused on zero earnings, and last year's earnings, as earnings benchmarks (Burgstahler & Dichev, 1997; Gunny, 2010; Jacob & Jorgensen, 2007). Gunny (2010) found that the measures of real earnings management correlate positively with meeting earnings benchmarks (zero earnings and last year's

earnings). Burgstahler and Dichev (1997) found that firms managed earnings to avoid earning decreases and losses in order to reduce costs to stakeholders and avoid losses; in the other word, firms' aim is for earnings at around zero and last year earnings. Jacob and Jorgensen (2007) confirmed their conclusion, and found a discontinuity at zero earnings caused by earnings management.

However, it is also possible that no relationship might be found between meeting earnings benchmarks and real earnings management, because the influence of real earnings management may be too small to be detected (Cohen et al., 2008). Moreover, there are several reasons for managers to conduct real earnings management, and meeting earnings benchmarks is not the most optimal choice. For example, Roychowdhury (2006) and Gu and Hu (2015) found that managers manage earnings to avoid reporting losses. Also, enhancing firms' credibility and reputation incentivize managers to manage earnings (Burgstahler and Dichev, 1997). Meanwhile, reaching stock market objectives like the standard of return on assets is an incentive for managers, as well, in Chinese companies (Gu & Hu, 2015). Considering those findings, the different reasons for managing earnings may lead to a failure to find a relationship between meeting earnings benchmarks and real earnings management. In addition, Dechow, Richardson and Tuna (2003) did not find evidence that firms manage earnings to meeting zero earnings benchmarks.

Therefore, the following hypotheses are developed:

H1. *There is no relationship between meeting earnings benchmarks and real activity manipulation*.

Chapter Four: Methodology

This chapter shows the method used to select an initial sample, and the process used to select the final sample. Also, based on the model used by Roychowdhury (2006), the estimation models used to measure abnormal cash flow, abnormal discretionary expenses and abnormal production costs are established. In addition, the regression model used to examine the relationship between meeting earnings benchmarks and real earnings management based on Roychowdhury (2006) and Gunny (2010) is described, along with the control variables.

4.1 Data

This research sample employs all Australian firms with available annual data in DataStream that meet the requirement, i.e., firms with non-missing data of annual cash flow from operation, sales, total assets, inventory, cost of goods sold, R&D expenses, SG&A expenses, and market and book values of equity. These are the data necessary for applying Roychowdhury's (2006) real earnings management measurement model and Gunny (2010)'s regression model to test managers' purpose. Companies in the regulated industries and financial institutions are eliminated from sample, because they are more highly regulated from the perspective of accounting rules and, thus, different from firms in other industries. The models used to measure normal operating cash flow, discretionary expenses, and COGS are based on annual data, and the period examined is from 2010 to 2016. This is because Australia adopted International Financial Reporting Standards (IFRS) in 2005, and a number of studies proved that changing regulations and adoption of new accounting standards would have influenced the adoption of real earnings management (Cohen et al., 2008; Ho & Taylor, 2003; Evans et al., 2015; Ipino & Parbonetti, 2017). Before 2007, the adoption of IFRS was not mandatory so, after considering the adoption situation, this dissertation chose to sample from 2010. During the preceding 3 years, the IFRS was fully adopted in Australia, so that the sample used in this research should eliminate the effects of introducing the regulations on the result.

Table 2 about here.

Panel A in the table 2 presents the sample selection procedure. The whole sample before deleting the firm-years with missing data of variables includes 22,022 firm-years and 32 industries during the period from 2010 to 2016. To finish the estimation model (1)-(3), the value of total assets, lagged assets, sales, SG&A cost, COGS, total liabilities, net income before extraordinary items, operating cash flow of current year and market to book value could not be missing, so the firm-years which have missing data of those variables have been deleted. Industries without at least 8 observations in one year have also been deleted. Therefore, the final sample includes 3,893 firm-years in total, and the number of industries remaining is 19.

Panel B presents the number of firm-years in every year in the final sample. Among six sample years, year 2013 has the least observations (490), while year 2016 has the most (652).

Panel C presents the remaining industries with at least 8 observations in one year. The Mining industry has the most number of observations (1,587), while observations in the Electricity, Personal goods and Technology hardware & Equipment industries are less than 20.

4.2 Real earnings management measurement

Previous studies established models to present real earnings management through measuring abnormal operating cash flow, discretionary expenditures and production costs. In this dissertation, the estimations of annual normal CFO, discretionary expenditure, COGS and production costs are based on Roychowdhury's (2006) model.

According to Roychowdhury, normal CFO is estimated as a linear function of sales and changes in sales in current year. Therefore, the regression model that is used to estimate normal CFO is expressed as:

$$\frac{CFO_t}{A_{t-1}} = \alpha_0 + \alpha_1(1 / A_{t-1}) + \beta_1(S_t / A_{t-1}) + \beta_2(\Delta S_t / A_{t-1}) + \varepsilon_t \quad (1)$$

CFO_t = normal cash flows from operation at the end of year t.

A_t = total assets of firms at the end of year t, so A_{t-1} is the total assets.

S_t = sales in year t, and ΔS_t is change in sales, i.e., the difference between sales in year t and sales in year t-1.

By using equation (1), normal CFO at the end of year t could be estimated and computed with known S and A in the current period. Moreover, Abnormal CFO (ABCFO) in the current firm-year could be computed as actual CFO in the current period minus expected CFO (normal CFO) in the current period.

The normal discretionary expense is also estimated with sales and total assets according to Roychowdhury (2006) as a linear function below:

$$\frac{DISEXP_t}{A_{t-1}} = \alpha_1(1 / A_{t-1}) + \alpha_2(s_{t-1} / A_{t-1}) + \varepsilon_t \quad (2)$$

$DISEXP_t$ = normal level of discretionary expenditure during the firm year t.

A_t = total assets of firms at the end of year t, so A_{t-1} is the total assets.

S_t = sales in year t, and ΔS_t is change in sales, i.e., the difference between sales in year t and sales in year t-1.

This equation is estimated every year based on the sales and total assets in the current year. Actual discretionary expenses consist of R&D costs and SG&A costs. The R&D cost could be zero when it is missing, although SG&A costs are not missing. The abnormal discretionary expenditure (ABDICEXP) is calculated as actual discretionary expenditure minus expected discretionary expenditure.

Roychowdhury (2006), defined production costs as the sum of COGD and changes in inventory in current the period. Therefore, the normal production costs in year t are estimated as below:

$$\frac{PROD_t}{A_{t-1}} = \alpha_0 + \alpha_1(1 / A_{t-1}) + \beta_1(S_t / A_{t-1}) + \beta_2(\Delta S_t / A_{t-1}) + \beta_3(\Delta S_{t-1} / A_{t}$$

(3)

PROD = the normal level of production costs in year t.

A_t = total assets of firms at the end of year t, so A_{t-1} is the total assets.

S_t = sales in year t, and ΔS_t is changes of sales, i.e., the difference between sales in year t and sales in year t-1. ΔS_{t-1} is the difference between sales in year t-1 and sales in year t-2.

The abnormal production cost (ABPROD) is calculated as the actual production cost (COGS + actual changes in inventory in current year) minus normal production costs.
In addition, in order to estimate the regression model used to examine the incentives for conducting real earnings management, the aggregated measurements of real earnings management are necessary.

4.3 Regression model for incentives to employ real activity manipulation

First of all, this dissertation identified firms that just meet zero earnings and firms that meet last year earnings, and selected them from all the samples. Specifically, firms are grouped within an interval that is calculated as net income divided by total assets at the beginning of the year. The size of each interval is 0.01. According to Gunny (2010), the firms that just meet zero earnings are categorized in the interval to the immediate right of zero, in the other words, the firms whose income divided by total assets is less than 0.01 and greater, or equal to zero, are 'just meeting zero earnings' firms (MEET_ZERO). In addition, this dissertation grouped firms as 'just meeting last year's earnings according to changes in net income divided by total assets at the beginning of the year having 0.01 as the interval size. Therefore, the firms whose change in net income divided by total assets

is between zero and 0.01 are 'meeting last year earnings' firms (MEET_LAST). Furthermore, firms that meet either requirement above are defined as firms that meet the earnings benchmark (BENCH).

Meanwhile, other firms that are not classified as BENCH firms and have net income (or changes in income) divided by total assets located to the left of zero are non-suspect firms, and they are not likely to manage earnings.

To examine the association between real earnings management and manager's incentives to just meet a benchmark, the following regression function is estimated based on Gunny (2010):

$$Abnormal\ REM_t = \gamma_0 + \gamma_1 BENCH + \gamma_2 SIZE_t + \gamma_3 MTB + \gamma_4 ROA + \gamma_5 LEV + \gamma_6 Year + \gamma_7 Industy + \varepsilon_t \quad (4)$$

Abnormal REM	=	ABCFO, ABDISEXP and ABPROD
BENCH	=	Indicator variable. There are two methods used to define BENCH. BENCH1: if $0 \leqq$ (net income / total assets) <0.01, it will be set as one, otherwise zero. BENCH 2: if $0 \leqq$ (changes in net income/ total assets) <0.01, it will be set as one, otherwise 0.
SIZE	=	The natural logarithm of total assets.
MTB	=	The market to book ratio.
LEV	=	Total liabilities divided by total assets.
ROA	=	Income before extraordinary items divided by lagged total assets.
Year	=	Indicator variable to control effect of year.
Industry	=	Indicator variable to control effect of industry.

Function (5) is estimated by using ABCFO, ABDISEXP and ABPROD respectively as dependent variables. Firms manage earnings to show an increase will present low ABCFO, low ABDISEXP and high ABPROD (Cohen & Zarowin, 2010), therefore, the ABCFO and ABDISEXP are multiplied by (-1), in order that higher values of those two variables indicate higher earnings increases. Meanwhile, following to Cohen and Zarowin (2010), this dissertation will combine those three variables by different methods to measure REM: REM1 is ABPROD + ABDISEXP; REM2 is ABCFO + ABDISEXP. Therefore, higher values of REM1 demonstrate higher production costs and declining discretionary expenditures; and higher values of REM2 indicate control of sales and decreasing discretionary expenditures. REM3 is an overall measure of REM, calculated as ABCFO + ABDISEXP + ABPROD.

The regression model includes six control variables: SIZE, MTB, ROA, LEV, Year and Industry. As Roychowdhury (2006) stated, the size and growth opportunities of different firms will lead to systematic variations during the examination of real manipulation activities, so SIZE is used to control firms' size and MTB is used to control growth opportunities. ROA is included in the regression model to control the measurement error relating to firm performance (Gunny, 2010; Zang, 2012). In addition, Leverage (LEV) is found to have a relation to earnings management (Dechow, Sloan & Sweeney, 1996), so LEV is also included as a control variable. Also, Year and Industry as indicator variables are included to control the effects of year and industry.

Chapter Five: Results

In this chapter, firstly, the descriptive statistics of estimation models are shown. Then, a comparison between the estimated results of suspect firm-years and non-suspect firm-years is conducted to illustrate the background to earnings management in Australian firms. Finally, the results of running regression models are shown. The results show that there is no relationship between meeting earnings benchmarks and real earnings management.

5.1 Descriptive statistics

Table 3 about here

Table 3 reports the descriptive statistics comparing the suspect firm-years for which BENCH 1 is 1, to non-suspect firm-years for which BENCH 1 is 0. The results show that both the mean and median of the SIZE, LEV and ROA of suspect firms-years under BENCH 1 are significantly different (at the 1 percent level) from those of the non-suspect firm-years under BENCH 1, but that the means of the market to book ratio between those two groups are not significantly different, and the medians of the MTB is significantly different at the 5 percent level. The results indicate that under BENCH 1, the means of abnormal CFO, abnormal discretionary expenditure and abnormal production costs of the suspect firm-years are not significantly different from those of the non-suspect firm-years. Interestingly, the medians of abnormal CFO and abnormal discretionary expenditure are significantly different at the 10 percent level. Also, after using different methods to combine ABCFO, ABDISEXP and ABPROD as measures of REM, the differences in REM (REM1, REM2, REM3) between suspect firm-years and non-suspect-firm years are not significant.

Table 4 about here

Table 4 reports the descriptive statistics comparing the suspect firms-years for which

BENCH 2 is 1 to the non-suspect firm-years for which BENCH 2 is 0. The results show that under BENCH 2, both the mean and median of SIZE and ROA of suspect firm-years are significantly different from those of the non-suspect firm-years at the 1 percent level. Meanwhile, the median of MTB and LEV between those two groups are significantly different. As is consistent with results found by Roychowdhury (2006), the difference in the means of ABCFO between the two groups is significant at the 1 percent level ($t= 4.675$, $p<0.01$). As ABCFO is multiplied by (-1), this result shows that the suspect firm-years have a lower CFO than the non-suspect firm-years. Also, the medians of ABPORD are significantly different ($z=5.218$, $p<0.05$) at the 5 percent level, which means that the suspect firm-years have higher production costs than do the non-suspect firm-years. Still, the results do not show significant differences between the means and medians of REM (REM1, REM2, and REM3) between two groups under BENCH 2.

5.2 Description results of estimation models

Table 5 about here

Table 5 shows the estimation results for running model (1). For every industry with at least 8 observations, the equation is estimated cross-sectionally over the period from 2010 to 2016, and total number of industry-years included to estimate this model is 3893. The table reports the minimum, maximum, median and mean value of the coefficients across industry-years. The sign of the coefficients of (1/Lagged Assets) and (Sales/ Lagged Assets) are consistent with Roychowdhury (2006)'s research, and significant at the 1 percent level. The sign of the coefficient of CFO on sales change (-0.919) is negative, which is inconsistent with Roychowdhury's (2006) result. However, according to Dechow et al.'s (1998) prediction, this coefficient should be negative, which means that higher changes in sales lead to lower CFO, based on contemporaneous sales. The average adjusted R square of this model is 55%, and indicates a good explanatory power for this model.

Table 6 about here

Table 6 shows the estimation result for running model (2). For every industry with at least 8 observations, the equation is estimated cross-sectionally over the period from 2010 to 2016, and the total number of industry-years included to estimate this model is 3893. The sign of coefficients on both independent variables is positive (25.102 and 2.04 respectively), which is consistent with Roychowdhury's (2006) result. The coefficient of (1/ Lagged Assets) is significant at the 5 percent level, and the median coefficient for discretionary expenditures on sales is significant at the 10 percent level. The average adjusted R square of this model is quite high, i.e., 46.9%, which means the explanatory power of this equation is high.

Table 7 about here

Table 7 indicates the estimation result for running model (3). For every industry with at least 8 observations, the equation is estimated cross-sectionally over the period from 2010 to 2016, and total number of industry-years included to estimate this model is 3893. The total industries are 19. The coefficients of variables are consistent with the results of Zang (2012) and Roychowdhury (2006). For this model, the average adjusted R square is 78% which means the explanatory power of this model is quite high.

5.3 Comparison of suspect firm-years with non-suspect firm-years

Table 8 about here

Table 9 about here

Tables 8 and 9 report the regression results of regression model (4) with ABCFO, ABDISEXP and ABPROD as dependent variables respectively. Tables 8 and 9 show the means of coefficients from regression model (4) over the period of 2010 to 2016, with 3893 observations in total, along with the corresponding t-statistics. When the ABCFO, ABDISEXP and ABPROD are dependent variables, the coefficients on SIZE, LEV and ROA are all significant at the 1 percent level, which is consistent with Roychowdhury's (2006) statements, that differing firm sizes will influence the variation of real earnings management activities and, consistent with Dechow et al. (1996), leverage is also

correlated with earnings management. However, Roychowdhury (2006) also found correlations between MTB and ABCFO, ABDISEXP and ABPROD, while Tables 8 and 9 do not report this relation. More importantly, in this regression model, neither the coefficient on BENCH 1 nor that on BENCH 2 is significant, which means that there is no significant difference in abnormal CFO, abnormal discretionary and abnormal production cost between suspect firm-years and the remaining sample. Meanwhile, for this model, when ABCFO and ABPROD are used as dependent variables, the adjusted R squares are good (18.1 and 14.7, respectively), and the explanatory power is acceptable. By contrast, the adjusted R square of regression when ABDISEXP is a dependent variable is less than 1 percent, i.e., quite low, indicating poor explanatory power for this regression.

Table 10 about here

Table 11 about here

Tables 10 and 11 report the results of the regression model using REM 1, REM 2 and REM 3 as dependent variables, i.e., the different combinations of ABCFO, ABDISEXP and ABPROD. Tables 10 and 11 show that the relationships between LEV and REM 1/ REM 2 are significant. And the associations between ROA and REM 3 using BENCH 1 and BENCH 2 as variables. However, inconsistently with H1, those results do not show a relationship between BENCH (BENCH 1 and BENCH 2) and REM (REM 1, REM2 and REM 3). However, this result is consistent with H2, in that there is no relationship between real activity manipulation and meeting earnings benchmarks.

Tables 8-11 indicate that there is no relationship between real earnings management and meeting earnings benchmarks whatever combination of real earnings management activities is measured.

Chapter Six: Additional Tests

In the main part of this dissertation, the results show that there is no relationship between real earnings management and meeting earnings benchmarks. Therefore, an additional test about earnings quality is conducted. As stated by Lo (2008), there is a close relationship between earnings management and earnings quality: specifically; a high level of earnings management leads to low earnings quality. Also, according to Kabir, Laswad and Islam (2010), discretionary accruals, which are a proxy for earnings quality in their paper, were significantly higher under IFRS than under pre-IFRS NZ GAAP. Therefore, based on Kabir et al. (2010)'s regression model, the discretionary accruals are calculated, and used as a dependent variable in model (4) to examine the relationship between earnings quality and suspect firm-years. Because of the insignificant relationship between real activity manipulation and suspect firm-years, the following hypothesis is made:

H2. Suspect firm-years have higher earnings quality than other samples.

The sample for additional testing is still the sample selected from all samples after deleting all firm-years with missing data, and the industries without at least 8 observations in one year, and the final sample size is 3893. To calculate the discretionary accruals as a proxy for earning quality, the estimation model used by Kabir et al. (2010) is applied in this dissertation.

$$\frac{TACC}{TA} = \alpha\left(\frac{1}{TA}\right) + \beta_1\left(\frac{\Delta REV}{TA}\right) + \beta_2\left(\frac{PPE}{TA}\right) + \varepsilon \qquad (5)$$

Where:

TACC = Net profit – CFO (total accruals)

TA = Total assets

ΔREV = Changes in revenue

PPE = Property, Plant and equipment.

The residual of model (5) is discretionary accruals.

To examine the relationship between suspect firm-years and earnings quality, model (4) is used with the residual of model (5) as dependent variable. Therefore, the regression model is estimated as:

$$Discretionary\ accruals = \gamma_0 + \gamma_1 BENCH + \gamma_2 SIZE_t + \gamma_3 MTB + \gamma_4 ROA + \gamma_5 LEV + \gamma_6 Year + \gamma_7 Industy + \varepsilon_t \quad (4)$$

Where:

Discretionary accruals = The residual of model (5)

BENCH = Indicator variable. There are two methods to define BENCH.

BENCH1: if 0≦ (net income / total assets) <0.01, it will be set as one, otherwise zero.

BENCH 2: if 0≦ (changes in net income/ total assets) <0.01, it will be set as one, otherwise 0.

SIZE = The natural logarithm of total assets.

MTB = The market to book ratio.

LEV = Total liabilities divided by total assets.

ROA = Income before extraordinary items divided by lagged total assets.

Year = Indicator variable to control effect of year.

Industry = Indicator variable to control effect of industry.

Table 12 about here

Table 12 indicates that whatever the definition of benchmark, the Adj. R square is more than 80% percent, which is quite high, and the explanatory power of this regression, with discretionary accruals as the dependent variable is good. Under both benchmarks, the ROA, LEV and SIZE are significantly associated with discretionary accruals. Importantly, when BENCH 2 is used to select suspect firm-years, there is a positive association between BENCH 2 and discretionary accruals significant at the 10 percent level (t=1.113, p<0.1), which means that when using BENCH 2 to select suspect firm-years, the suspect firm-years have higher earnings quality than have other firm-years in the sample.

Chapter Seven: Conclusion

This dissertation contributes to the literature on earnings management. Firstly, the study fills the gap in findings and research about real earnings management in Australia. Also, the dissertation provides evidence that Australian firms use real activities manipulation to manage earnings, e.g., it is found that when selecting suspect firm-years by using BENCH 2, the ABCFO and ABDISEXP of suspect firm-years are lower than those of non-suspect firm-years, and ABPROD of suspect firm-years is higher than that of non-suspect firm-years. Thirdly, this dissertation explores the models commonly used in prior research to detect real activities manipulation in America, and applies them in Australia. It is found that the estimation regression for the ABCFO, ABDISEXP and ABPROD (residuals of models 1-3) all have good explanatory power, and the sign of the coefficients on the variables is consistent with prior research. However, the regression model based on the research of Roychowdhury (2006) and Gunny (2010), used to test the relationship between real earnings manipulation and the intention of managers, is not as good as the estimation model.

Finally, the dissertation documents that there is no relationship between meeting earnings benchmarks and real activities manipulation under two approaches to the definition of suspect firm-years, and three combination methods of real earnings management. This finding is inconsistent with that of Gunny (2010). As mentioned in the hypothesis chapter, the possible reasons for this finding are that the intentions of managers in managing earnings are various, so the intentions of managers of sample firms may not concentrate primarily on meeting benchmarks. Another reason may be that the scale of real activities manipulation is too small to be detected. Moreover, it is possible that Australian firms still favour accrual based earnings management over real earnings management.

As an additional test, it is found that under BENCH 2, the suspect firm-years have higher earnings quality, which explains the results of the main investigation of this dissertation: that there is no relationship between real earnings management and meeting earnings benchmarks. The suspect firm-years in the sample have higher earnings quality than the

non-suspect firm-years and, as a result, earnings management in those suspect firm-years is lower. Therefore, there is no association between real earnings management and meeting earnings benchmarks, as found in the previous chapter.

This dissertation also has some limitations. One is that the sample period only includes six years, so the total sample size is not big enough. Compared with other samples in previous research (more than 10,000 usually), 3893 is a small sample, and the number of suspect firm-years is quite small as well. This factor may have an influence on examining the relationship between real activities manipulation and meeting benchmarks, as well as on other tests employed in this dissertation. The second limitation is that this dissertation does not consider the trade-off between real activities manipulation and accrual based earnings management, because managers may use both to manage earnings, or they may prefer different methods, which will affect the final results as well (Zang, 2012).

For future research, this dissertation also raises some questions. If the model developed by Roychowdhury (2006) and Gunny (2010) to detect the association between real earnings management and other factors is not suitable in Australia, then future research could concentrate on the development of new models, with higher explanatory power, to detect a possible association. Another problem, is determining the true intention of managers in Australian firms in managing earnings, regardless of the earnings management method. Further, as mentioned in the literature review, besides operational activities, real activities manipulation also includes financial activities. Therefore, the investigation of whether financial activities are used to manage earnings by managers in Australian firms more could be a new research direction.

References

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

Bange, M. M. & De Bondt, W. F. (1998). R&D budgets and corporate earnings targets. Journal of Corporate Finance, 4 (2), 153-184. Doi: 10.1016/S0929-1199(98)00006-6

Bange, M. M., & De Bondt, W. F. M. (1997). R&D budgets and corporate earnings targets. Journal of Corporate Finance, 4, 153-184.

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. Retrieved from http://www.jstor.org/stable/248507

Bens, D. A., Nagar, V., Skinner, D. J., & Wong, M. H. F. (2003). Employee stock options, EPS dilution, and stock repurchases. Journal of Accounting and Economics, 36(1-3), 51-90. doi:10.1016/j.jacceco.2003.10.006

Black, E. L., Sellers, K. F., & Manly, T. S. (1998). Earnings management using asset sales: An international study of countries allowing noncurrent asset revaluation. Journal of Business Finance & Accounting, 25(9), 1287-1317.

Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. Journal of Accounting and Economics, 24, 99-126.

Carter, M. E., Lynch, L. J., & Tuna, I. r. (2007). The role of accounting in the design of CEO equity Compensation. THE ACCOUNTING REVIEW, 82(2), 327-357.

Chen, S.-S., & Huang, C.-W. (2014). The Sarbanes-Oxley Act, Earnings Management, and Post-Buyback Performance of Open-Market Repurchasing Firms. Journal of Financial and Quantitative Analysis, 48(06), 1847-1876. doi:10.1017/s0022109014000040

Cohen, D. A., & Zarowin, P. (2010). Accrual-based and real earnings management activities around seasoned equity offerings. Journal of Accounting and Economics, 50(1), 2-19. Doi: 10.1016/j.jacceco.2010.01.002

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. Retrieved from http://www.jstor.org/stable/30244500

Dechow, P. M., & Skinner, D. J. (2000). Earnings management: reconciling the views of accoutning academics, practitioners, and regulators. Accounting Horizons, 14(2), 235-250.

Dechow, P. M., & Sloan, R. G. (1991). Executive incentives and the horizon problem. An empirical investigation. Journal of Accounting and Economics, 14(1), 51-89. doi:10.1016/0167-7187(91)90058-S

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. Doi: 10.1016/S0165-4101(98)00020-2

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

Dechow, P. M., 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., Richardson, S.A. & Tuna, I. (2003). Why are earnings kinky? *Review of Accounting Studies,* 8, 355–384.

Dhaliwal, D. S., Frankel, M., & Trezevant, R. (1994). The Taxable and Book Income Motivations for a LIFO Layer Liquidation. Journal of Accounting Research, 32(2), 278-289.

Enomoto, M., Kimura, F., & Yamaguchi, T. (2015). Accrual-based and real earnings management: An international comparison for investor protection. Journal of Contemporary Accounting and Economics, 11(3), 183-198. doi: 10.1016/j.jcae.2015.07.001

Evans, M. E., Houston, R. W., Peters, M. F., & Pratt, J. H. (2015). Reporting Regulatory Environments and Earnings Management: U.S. and Non-U.S. Firms Using U.S. GAAP or IFRS. Accounting Review, 90(5), 1969-1994. doi: 10.2308/accr-51008

Ewert, R., & Wagenhofer, A. (2005). Economic effects of tightening accounting standards to restrict earnings management THE ACCOUNTING REVIEW, 80(4), 1101-1124.

Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. Journal of Accounting and Economics, 40(1), 3-73. doi:10.1016/j.jacceco.2005.01.002

Graham, J.R., Harvey, C.R. & Rajgopal, S. (2005). The economic implications of corporate financial reporting. Journal of Accounting and Economics, 40(1), 3-73. Doi: 10.1016/j.jacceco.2005.01.002

Gu, J. & Hu, D. (2015). The incentive of earnings management in China from profit benchmarks perspective. Academy of Accounting and Financial Studies Journal.19 (1), 171-185.

Gunny, K. A. (2010). The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. Contemporary Accounting Research, 27(3), 855–888. doi:10.1111/j.1911-3846.2010.01029.x

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.

Herrmann, D., Inoue, T., & Thomas, W. B. (2003). The Sale of Assets to Manage Earnings in Japan. Journal of Accounting Research, 41(1), 89-108.

Ho, L. J., Liao, Q., & Taylor, M. (2015). Real and Accrual-Based Earnings Management in the Pre- and Post-IFRS Periods: Evidence from China. Journal of International Financial Management & Accounting, 26(3), 294-335. doi:10.1111/jifm.12030

Hodne, N., Murphy, S., Ottenbacher, M. & Ruggles, T. (2013). Australia and the United States: A comparison and contrast of corporate governance Practices. Drake Management Review. 3 (1), 58-80.

Holland, D., & Ramsay, A. (2003). Do Australian companies manage earnings to meet simple earnings benchmarks? Accounting and Finance, 43, 41-62.

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. doi:10.1016/j.jacceco.2005.10.002

Ipino, E. & Parbonetti, A. (2017) Mandatory IFRS adoption: the trade-off between accrual-based and real earnings management. *Accounting and Business Research*. 47(1), 91-121. doi:10.1080/00014788.2016.1238293

Ipino, E., & Parbonetti, A. (2017). Mandatory IFRS adoption: the trade-off between accrual-based and real earnings management. Accounting & Business Research (Taylor & Francis), 47(1), 91-121. doi:10.1080/00014788.2016.1238293

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. Retrieved from http://www.jstor.org/stable/40473306

Jackson, S. B., & Wilcox, W. E. (2007). 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.

Jacob, J., & Jorgensen, B. N. (2007). Earnings management and accounting income aggregation. Journal of Accounting and Economics, 43(2-3), 369-390. doi:10.1016/j.jacceco.2007.01.007

Kabir, M. H., Laswad, F., & Islam, M. A. (2010). Impact of IFRS in New Zealand on Accounts and Earnings Quality. Australian Accounting Review, 20(4), 343-357. doi:10.1111/j.1835-2561.2010.00106.x

Koh, P.-S. (2003). On the association between institutional ownership and aggressive corporate earnings management in Australia. The British Accounting Review, 35, 105-128. doi:10.1016/S0890-8389(03)00014-3

Leggett, D. M., Parsons, L. M., & Reitenga, A. L. (2016). Real Earnings Management and Subsequent Operating Performance. IUP Journal Of Operations Management, 15(4), 7-32. Retrieved from http://eds.b.ebscohost.com.ezproxy.aut.ac.nz/eds/pdfviewer/pdfviewer?sid=fcfca897-5fba-4153-bb44-0d49571bebb4%40sessionmgr120&vid=1&hid=103

Lo, K. (2008). Earnings management and earnings quality. Journal of Accounting and Economics, 45(2-3), 350-357. doi:10.1016/j.jacceco.2007.08.002

Perry, S., & Grinaker, R. (1994). Earnings expectations and discretionary research and development spending. Accounting Horizons, 8(4), 43–51. Retrieved from http://eds.a.ebscohost.com.ezproxy.aut.ac.nz/eds/pdfviewer/pdfviewer?sid=1fbde388-5fc1-4bf9-b3a2-c50a78288910%40sessionmgr4008&vid=55&hid=4202

Roychowdhury, S. (2006). Earnings management through real activities manipulation. Journal of Accounting and Economics, 42(3), 335–370. Retrieved from http://dx.doi.org.ezproxy.aut.ac.nz/10.1016/j.jacceco.2006.01.002

Schipper, K. (1989). Commentary on earnings management. Accounting Horizons, 3(4), 91–102. Retrived from http://eds.a.ebscohost.com.ezproxy.aut.ac.nz/eds/pdfviewer/pdfviewer?sid=1fbde388-5fc1-4bf9-b3a2-c50a78288910%40sessionmgr4008&vid=63&hid=4202

Suffian, M. T. M., Sanusi, Z. M., & Mastuki, N. (2015). REAL EARNINGS MANAGEMENT AND FIRM VALUE: EMPIRICAL EVIDENCE FROM MALAYSIA. Malaysian Accounting Review, 14(1), 25-47. Retrieved from http://eds.b.ebscohost.com.ezproxy.aut.ac.nz/eds/pdfviewer/pdfviewer?sid=9aba464c-93e1-4219-9847-6f0164cc5294%40sessionmgr120&vid=2&hid=103

Wang, X. (2014). New evidence on real earnings management: An international

investigation (Doctoral thesis, Auckland University of Technology, Auckland, New Zealand). Retrieved from http://hdl.handle.net/10292/8863

Xu, R. Z., Taylor, G. K., & Dugan, M. T. (2007). Review of real earnings management literature. Journal of Accounting Literature, 26, 195–228. Retrieved from http://search.proquest.com/docview/216307021?accountid=8440

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. Doi: 10.2308/accr-10196

Appendix.

Table 1 Summary of real earnings management studies.

Author and Time	Sample	Findings
Baber and Fairfield (1991)	438 firms in United States during the period of 1977-1987	In order to report positive earnings and increasing earnings, the R&D expenses are significantly less.
Dechow and Sloan (1991)	405 firms during the year 1974-1988 with large R&D data.	Executives of those firms made less investment in R&D to increase short-term value of firms
Bange and De Bondt (1998)	100 firms with large R&D spending from 1977 to 1986.	Companies would decide R&D expenses to narrow the gap between real earnings in current accounting period and the estimations.
Perry and Grinaker (1994)	99 firms with large R&D costs from 1972 to 1990.	When the actual earnings did not reach the expectations, managers tend to decrease R&D expenditure.
Graham et al. (2005)	401 financial executives of U.S. firms	Managers would decrease discretionary expenses on R&D and advertising to reach earnings benchmarks with the sacrifice of long-term value
Dhaliwal et al. (1994)	2140 firm years during the year 1979 and 1988.	Managers use LIFO liquidations to maintain earnings increases.
Bartov (1993)	653 U.S. firms during the year 1987 and 1989	Companies controlled the timing of long-term assets disposal and investigation to smooth earnings and to relieve the negative influence of possible debt covenants.
Black, Sellers and Manly (1998)	4,620 firm years from Australia and New Zeland, 15,290 firm-year from United Kingdom during the period 1985-1995.	No evidence showing firms smoothing income by manipulating long-term assets disposal in Australia, New Zealand and U.K.
Herrmann, Inoue and Thomas (2003)	6,588 firm-years from Japan over the period from 1993 to 1997.	In order to decrease differences between managers' earnings forecasts and real earnings on the financial reports, Japanese firms manipulate long-term asset disposal and investigation.
Roychowdhury (2006)	36 industries and 4252 companies in total from the years 1987 to 2001	To avoid reporting loss or meeting earnings forecasts, managers tend to price discount, overproduce and reduce discretionary expenses.
Jackson and Wilcox (2000)	All firms that required data is available on COMPUSTAT from the year 1989 to 1997 in Canada	In the last quarter of accounting period, managers permitted sales prices to decrease to boost sales volume so that their earnings would not be reduced.
Gunny (2010)	4028 firms (excludes financial industry and utility industry) in the period of 1988 to 2002.	Companies engaged in earnings management to meet zero earnings or last years' earnings by manipulating discretionary expenditures including R&D and SG&A; and production costs.
Zang (2012)	All companies from Compustat Merged Database 1987-2008 excluded financial institutions and regulated industries.	Managers meet earnings target or zero earnings benchmarks through reducing COGS. Also, managers will tradeoff real earnings management and accrual-based earnings management, based on

		relative cost and regulatory scrutiny.
Xu et al. (2007)		In a review of earnings management studies until 2007, they concluded that earnings management is conducted through manipulation of operating and investing activities. Also, they discussed the cost and consequences of these manipulations.
Bens, Nagar and Wong, (2003)	359 S&P 500 industrial firms with employee stock options disclosed in the foot notes of annual report from 1996 to 1999.	Firms increase stock repurchases to achieve the forecasted rate of EPS growth.
Hribar, Jenkins and Johnson (2006)	26,480 firms with over $10,000 stock repurchases from 1988 to 2001	Firms repurchased stock to meet or beat the forecasted earnings benchmarks.
Carter, Lynch & Tuna, 2007	6,242 CEO-year observations from ExecuComp from 1995 to 2001.	To meet earnings benchmarks, firms use more stock options and less restricted stocks.
Barton (2001)	Nonfinancial, nonregulated Fortune 500 firms during 1994-1996.	Firms use financial derivatives to reduce earnings volatility, like hedging away rate fluctuations of interest and foreign exchange; or debt-equity swap.
Cohen et al. (2008)	Companies from Compustat annual industrial and research files from 1987-2005.	The level of real activity manipulation had a remarkable increase while the level of accrual-based manipulation decreased significantly
Ho and Taylor (2015)	4050 firm years of Chinese companies from 2002 to 2011.	After adopting IFRS, the accrual discretion of managers declined significantly and, as a result, firms focus more on real earnings management.
Jacob and Jorgensen (2007)	22,015 firms from 1981 to 2001.	There are discontinuities in zero earnings and last-year earnings, which is evidence of earnings management used by companies to just meet/beat earnings benchmarks.
Leggett et al. (2016)	U.S. firms in COMPUSTAT during 1988-2007.	Firms undertaking real activity manipulation to avoid loss, and meeting analysts' earnings forecasts.
Ipino and Parbonetti (2017)	Mandatory IFRS adopters from COMPUSTAT during the period 2000- 2010.	After mandatory IFRS adoption, accrual-based earnings management decreased, and real earnings management increased in the countries with strict institutional environments.
Houston, Peters and Pratt (2015)	616 experienced financial officers in U.S. firms and non-U.S. firms	firms use more real activities to manage earnings than use accrual-based methods, and U.S. firms using U.S. GAAP rely more on real activity manipulation than U.S. firms using IFRS
Wang (2014)	20,968 firms from 31 countries during the period 1996-2011.	Firms engage in more real earnings management in countries with weak legal regimes, and REM's negative influence on future performance will be reduced under strong institutional environments. This paper also found that REM has a negative

		influence on the firms' future ROA and CFO.

Table 2

Sample

Panel A Sample Selection Procedure	
Australia firm-years with all variable data for 2010-2016	22,022
Less firm-years with no data on other model variables	18,129
Final Sample	3,893
Suspect firm-years (BENCH1=1)	92
Non-suspect firm-years (BENCH1=0)	3,801
Suspect firm-years (BENCH2=1)	169
Non-suspect firm-years(BENCH2=0)	3,724
Panel B Sample by Years	
2010	568
2011	557
2012	510
2013	490
2014	535
2015	581
2016	652
Total	3,893
Panel C Sample by Industry	
Chemicals	82
Construction & Materials	159
Electricity	16
Electronic equipment	67
Food producers	111
General Retailers	171
Health care equipment & service	204
Household Goods & Construction	28
Industrial Engineering	67
Industrial Metals & Mining	336
Media	70
Mining	1587
Oil & Gas producers	400
Personal Goods	19
Pharmaceuticals & Biotechnology	108
Software & Computer Services	161
Supporting services	189
Technology hardware & Equipment	17
Travel & Leisure	102
Total	3,893

Table 3

Descriptive statistics for BENCH 1

	BENCH1=1 (N=92)		BENCH1=0 (N=3801)			
variables	Mean	Median	Mean	Median	t-statistics	Wilcoxon statistics
SIZE	11.535	11.350	10.337	10.066	5.196***	23.581***
MTB	1.501	0.935	3.185	1.390	-0.388	6.150**
LEV	0.378	0.379	0.630	0.278	-3.518***	17.833***
ROA	0.006	0.006	-0.639	-0.111	7.201***	-0.104***
ABPROD	0.019	0.029	-0.014	0.022	0.202	0.180
ABCFO	0.032	0.157	-0.017	0.129	0.228	2.858*
ABDISEXP	0.167	0.137	0.186	0.215	-0.053	2.842*
REM1	0.186	0.218	0.187	0.227	-0.003	0.176
REM2	0.198	0.271	0.185	0.258	0.021	0.046
REM3	0.217	0.323	0.171	0.272	0.070	1.609

Notes:

*/**/*** represent statistical significance at the 10 percent/ 5 percent/ 1 percent levels, two-tailed. The sample period is from 2010 to 2016. The whole sample with 3,893 firm-years with no missing data and grouped according to the value of BENCH 1. The table reports t-statistics from t-test for the difference in means of those variables and z-statistics from Wilcoxon tests for the difference in medians of variables. The variables are defined as bellows:

SIZE = The natural logarithm of total assets.

MTB = The market to book ratio.

LEV = Total liabilities divided by total assets.

ROA = Income before extraordinary items divided by lagged total assets.

ABPROD = Abnormal production costs which is the residual of model (3).

ABCFO = Abnormal operating cash flow which is the residual of model (1), and multiplied by (-1).

ABDISEXP = Abnormal discretionary expenditures which is the residual of model (2), and multiplied by (-1).

REM1 = ABPROD + ABDISEXP

REM2 = ABCFO + ABDISEXP

REM3 = ABCFO + ABDISEXP + ABPROD

Table 4

Descriptive statistics for BENCH2

	BENCH2=1 (n=169)		BENCH2=0 (n=3724)			
variables	Mean	Median	Mean	Median	t-statistics	Wilcoxon statistics
SIZE	12.118	11.749	10.286	10.039	10.784***	58.253***
MTB	0.601	1.180	3.261	1.390	-0.821	6.369**
LEV	0.341	0.352	0.637	0.246	-0.913	20.128***
ROA	-0.008	0.030	-0.651	-0.115	6.956***	103.055***
ABPROD	0.019	0.042	-0.014	0.021	0.597	5.218**
ABCFO	0.032	0.140	-0.017	0.128	4.675***	3.285*
ABDISEXP	0.167	0.157	0.186	0.216	-0.492	3.260*
REM1	0.186	0.200	0.187	0.228	-0.346	1.038
REM2	0.198	0.278	0.185	0.257	-0.161	0.506
REM3	0.217	0.319	0.171	0.271	-0.004	1.052

Notes:

*/**/*** represent statistical significance at the 10 percent/ 5 percent/ 1 percent levels, two-tailed. The sample period is from 2010 to 2016. The whole sample with 3,893 firm-years with no missing data and grouped according to the value of BENCH 1. The table reports t-statistics from t-test for the difference in means of those variables and z-statistics from Wilcoxon tests for the difference in medians of variables. The variables are defined as bellows:

SIZE = The natural logarithm of total assets.

MTB = The market to book ratio.

LEV = Total liabilities divided by total assets.

ROA = Income before extraordinary items divided by lagged total assets.

ABPROD = Abnormal production costs which is the residual of model (3).

ABCFO = Abnormal operating cash flow which is the residual of model (1), and multiplied by (-1).

ABDISEXP = Abnormal discretionary expenditures which is the residual of model (2), and multiplied by (-1).

REM1 = ABPROD + ABDISEXP

REM2 = ABCFO + ABDISEXP

REM3 = ABCFO + ABDISEXP + ABPROD

Table 5 Estimation result for model (1)

	N	Minimum	Maximum	Median	Mean
1_Lagged Assets	19	-514.426***	-.563	-6.143***	-35.067**
Sales_ Lagged Assets	19	-5.381***	7.036	2.742***	2.435***
Changes of sales_Lagged Assets	19	-5.631***	3.105	-.171	-.919
Adjusted R Square	19	-.001	.998	.536	.550
F	19	.945***	2777653.184	50.078***	14711.050**

Notes: */**/*** represent statistical significance at the10 percent/ 5 percent/ 1 percent levels, two-tailed. Sample consists of firm-years of 19 industries with at least 8 observations from 2010 to 2016. Industries with fewer than 8 observations in one year are eliminated from the sample. The table also reports the adjusted R Square for the estimation models.

Table 6 Estimation result for model (2)

	N	Minimum	Maximum	Median	Mean
1_Lagged Assets	19	.457***	333.766	6.501***	25.102**
Lagged sales_Lagged Assets	19	-2.678***	8.942	1.047*	2.040
Adjusted R Square	19	.129	.987	.446	.469
F	19	2.757***	58127.458*	33.425***	3176.311***

Notes: */**/*** represent statistical significance at the 10 percent/ 5 percent/ 1 percent levels, two-tailed. Sample consists of firm-years of 19 industries with at least 8 observations from 2010 to 2016. Industries with fewer than 8 observations in one year are eliminated from the sample. The table also reports the adjusted R Square for the estimation models.

Table 7 Estimation result for model (3)

	N	Minimum	Maximum	Median	Mean
1_Lagged Assets	19	-5.459***	390.630	.963	22.536
Sales_ Lagged Assets	19	3.613***	46.442***	11.903***	14.792***
Changes of sales_Lagged Assets	19	-8.663***	4.859	-.261	-.279
Changes of Lagged sales_Lagged Assets	19	-3.885***	7.089	-.423	-.123
Adjusted R Square	19	.342	.998	.835	.780
F	19	9.719***	169182.377***	.000***	9368.860***

Notes: */**/*** represent statistical significance at the 10 percent/ 5 percent/ 1 percent levels, two-tailed. The sample consists of firm-years of 19 industries with at least 8 observations from 2010 to 2016. Industries with fewer than 8 observations in one year are eliminated from the sample. The table also reports the adjusted R Square for the estimation models.

Table 8

Regression result of model (4) while benchmark is BENCH1, and dependent variable is ABCFO, ABDISEXP and ABPROD respectively.

	ABCFO	ABDISEXP	ABPROD
SIZE	0.170***	-0.075***	0.147***
	(10.712)	(-4.290)	(9.063)
MTB	-0.005	-0.001	0.002
	(-0.342)	(-0.032)	(0.117)
LEV	-0.446***	0.074***	-0.405***
	(-25.551)	(3.708)	(-21.779)
ROA	-0.268***	0.055***	-0.247***
	(-14.691)	(2.730)	(-13.300)
BENCH1	-0.010	0.008	-0.008
	(-0.662)	(0.464)	(-0.507)
YEARS	Included	Included	Included
INDUSTRIES	Included	Included	Included
Adj. R Square	0.181	0.007	0.147
F	30.567***	1.950***	24.070***

Notes:

*/**/*** represent statistical significance at the 10 percent/ 5 percent/ 1 percent levels, two-tailed. This table reports the results of regression model (4) with ABCFO, ABDISEXP and ABPROD as dependent variables respectively, over a period of six years from 2010 to 2016. The table reports both coefficients of variables and t-statistics. The total sample consists of 3,893 firm-years. The regression model is estimated as:

$$Abnormal\ REM_t = \gamma_0 + \gamma_1 BENCH + \gamma_2 SIZE_t + \gamma_3 MTB + \gamma_4 ROA + \gamma_5 LEV + \gamma_6 Year + \gamma_7 Industy +$$

Where:

SIZE	=	The natural logarithm of total assets.
MTB	=	The market to book ratio.
LEV	=	Total liabilities divided by total assets.
ROA	=	Income before extraordinary items divided by lagged total assets.
BENCH1	=	Indicator variable. If 0≦ (net income / total assets) <0.01, it will be set as one, otherwise zero.
ABPROD	=	Abnormal production costs which is the residual of model (3).
ABCFO	=	Abnormal operating cash flow which is the residual of model (1), and multiplied by (-1).
ABDISEXP	=	Abnormal discretionary expenditures which is the residual of model (2), and multiplied by (-1).

Years and Industries are dummy variables which indicate the effect of years and different industries.

Table 9

Regression result of model (4) while benchmark is BENCH2, and dependent variable is ABCFO, ABDISEXP and ABPROD respectively.

	ABCFO	ABDISEXP	ABPROD
SIZE	0.171***	-0.075***	0.148***
	(10.720)	(-4.266)	(9.091)
MTB	-0.005	-0.001	0.002
	(-0.347)	(-0.033)	(0.111)
LEV	-0.465***	0.074***	-0.405***
	(-25.543)	(3.706)	(-21.771)
ROA	-0.268***	0.055***	-0.247***
	(-14.695)	(2.732)	(-13.303)
BENCH2	-0.014	0.005	-0.014
	(-0.954)	(0.298)	(-0.922)
YEARS	Included	Included	Included
INDUSTRIES	Included	Included	Included
Adj. R Square	0.181	0.007	0.147
F	30.587***	1.946***	24.094***

Notes:

*/**/*** represent statistical significance at the 10 percent/ 5 percent/ 1 percent levels, two-tailed. This table reports the result of regression model (4) with ABCFO, ABDISEXP and ABPROD as dependent variables respectively, over a period of six years from 2010 to 2016. The table reports both coefficients of variables and t-statistics. The total sample consists of 3,893 firm-years. The regression model is estimated as:

$$Abnormal\ REM_t = \gamma_0 + \gamma_1 BENCH + \gamma_2 SIZE_t + \gamma_3 MTB + \gamma_4 ROA + \gamma_5 LEV + \gamma_6 Year + \gamma_7 Industy +$$

Where:

SIZE	=	The natural logarithm of total assets.
MTB	=	The market to book ratio.
LEV	=	Total liabilities divided by total assets.
ROA	=	Income before extraordinary items divided by lagged total assets.
BENCH 2	=	Indicator variable. If 0≦ (changes in net income/ total assets) <0.01, it will be set as one, otherwise 0.
ABPROD	=	Abnormal production costs which is the residual of model (3).
ABCFO	=	Abnormal operating cash flow which is the residual of model (1), and multiplied by (-1).
ABDISEXP	=	Abnormal discretionary expenditures which is the residual of model (2), and multiplied by (-1).

Years and Industries are dummy variables which indicate the effect of years and different industries.

Table 10

Regression result of model (4) while benchmark is BENCH1, and dependent variable is REM1, REM2 and REM3 respectively.

	REM 1	REM 2	REM 3
SIZE	-0.039**	-0.022	0.016
	(-2.213)	(-1.239)	(0.913)
MTB	0.000	0.002	-0.002
	(-0.005)	(-0.138)	(-0.105)
LEV	-0.026	-0.079***	-0.174***
	(-1.307)	(-3.918)	(-8.767)
ROA	-0.007	0.005	-0.092***
	(-0.331)	(-1.622)	(-4.620)
BENCH1	0.006	0.005	0.002
	(0.348)	(0.286)	(0.155)
YEARS	Included	Included	Included
INDUSTRIES	Included	Included	Included
Adj. R Square	0.002	0.003	0.023
F	1.243	1.446*	4.099***

Notes:

*/**/*** represent statistical significance at the 10 percent/ 5 percent/ 1 percent levels, two-tailed. This table reports the results of regression model (4) with REM1, REM2 and REM 3 as dependent variables respectively, over a period of six years from 2010 to 2016. The table reports both coefficients of variables and t-statistics. The total sample consists of 3,893 firm-years. The regression model is estimated as:

$$Abnormal\ REM_t = \gamma_0 + \gamma_1 BENCH + \gamma_2 SIZE_t + \gamma_3 MTB + \gamma_4 ROA + \gamma_5 LEV + \gamma_6 Year + \gamma_7 Industy +$$

Where:

SIZE	=	The natural logarithm of total assets.
MTB	=	The market to book ratio.
LEV	=	Total liabilities divided by total assets.
ROA	=	Income before extraordinary items divided by lagged total assets.
BENCH1	=	Indicator variable. If 0≦ (net income / total assets) <0.01, it will be set as one, otherwise zero.
REM1	=	ABPROD + ABDISEXP
REM2	=	ABCFO + ABDISEXP
REM3	=	ABCFO + ABDISEXP + ABPROD

Years and Industries are dummy variables which indicate the effect of years and different industries.

Table 11

Regression result of model (4) while benchmark is BENCH1, and dependent variable is REM1, REM2 and REM3 respectively.

	REM 1	REM 2	REM 3
SIZE	-0.038**	-0.021	0.017
	(-2.182)	(-1.210)	(0.946)
MTB	0.000	-0.002	-0.002
	(-0.007)	(-0.140)	(-0.108)
LEV	-0.026	-0.079***	-0.174***
	(-1.307)	(-3.917)	(-8.764)
ROA	-0.007	-0.033	-0.092***
	(-0.087)	(-1.622)	(-4.620)
BENCH2	0.001	0.000	-0.003
	(0.348)	(0.022)	(-0.192)
YEARS	Included	Included	Included
INDUSTRIES	Included	Included	Included
Adj. R Square	0.002	0.003	0.023
F	1.239	1.443*	4.100***

Notes:

*/**/*** represent statistical significance at the 10 percent/ 5 percent/ 1 percent levels, two-tailed. This table reports the result of regression model (4) with REM 1, REM 2 and REM 3 as dependent variables respectively, over a period of six years from 2010 to 2016. The table reports both coefficients of variables and t-statistics. The total sample is consist of 3,893 firm-years. The regression model is estimated as:

$$Abnormal\ REM_t = \gamma_0 + \gamma_1 BENCH + \gamma_2 SIZE_t + \gamma_3 MTB + \gamma_4 ROA + \gamma_5 LEV + \gamma_6 Year + \gamma_7 Industy +$$

Where:

SIZE	=	The natural logarithm of total assets.
MTB	=	The market to book ratio.
LEV	=	Total liabilities divided by total assets.
ROA	=	Income before extraordinary items divided by lagged total assets.
BENCH 2	=	Indicator variable. If 0≦ (changes in net income/ total assets) <0.01, it will be set as one, otherwise 0.
REM1	=	ABPROD + ABDISEXP
REM2	=	ABCFO + ABDISEXP
REM3	=	ABCFO + ABDISEXP + ABPROD

Years and Industries are dummy variables which indicate the effect of years and different industries.

Table 12

Regression result of model (4) while dependent variable is discretionary accruals.

	Discretionary accruals	Discretionary accruals
SIZE	-0.144***	-0.145***
	(-18.825)	(-18.825)
MTB	0.004	0.004
	(0.558)	0.567
ROA	1.043***	1.043***
	(118.570)	(118.590)
LEV	0.264***	0.264***
	29.942	29.934
BENCH1	0.002	
	(0.315)	
BENCH2		0.008*
		(1.113)
YEAR	Included	Included
INDUSTRY	Included	Included
Adj. R square	0.809	0.810
F	568.261***	568.468***

Notes:

*/**/*** represent statistical significance at the 10 percent/ 5 percent/ 1 percent levels, two-tailed. This table reports the result of regression model (4) with discretionary accruals as dependent variables, over a period of six years from 2010 to 2016. The total sample is consist of 3,893 firm-years. The regression model is estimated as:

$$Discretionary\ accruals = \gamma_0 + \gamma_1 BENCH + \gamma_2 SIZE_t + \gamma_3 MTB + \gamma_4 ROA + \gamma_5 LEV + \gamma_6 Year + \gamma_7 Industy +$$

Where:

Discretionary accruals	=	The residual of model (5)
SIZE	=	The natural logarithm of total assets.
MTB	=	The market to book ratio.
LEV	=	Total liabilities divided by total assets.
ROA	=	Income before extraordinary items divided by lagged total assets.
BENCH 2	=	Indicator variable. If 0≦ (changes in net income/ total assets) <0.01, it will be set as one, otherwise 0.
BENCH1	=	Indicator variable. If 0≦ (net income / total assets) <0.01, it will be set as one, otherwise zero.

Years and Industries are dummy variables which indicate the effect of years and different industries.