

# **The influence of the CFO Tenure and Gender on Earnings Management**



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## Abstract

This study examines the influence of the Chief Financial Officer (CFO) tenure and gender to manage their firms' earnings during their tenure as CFO. This relation is tested on firms listed on the S&P 500 index over the years 1992-2010. This research examined earnings management by absolute values of both accruals-based and real earnings management. The findings support the expectation that CFOs make use of real earnings management in the last year of CFO tenure and in the first three years of the new CFO tenure, compared with a sample of non-changing CFOs. This result is supported by previous research on managerial tenure (Ali & Zhang, 2015), where departing executives use earnings management to increase earnings during their last year of tenure. And where new appointed CFOs try to favorably influence the market's perception by overstating their firms' earnings or through assigning poor earnings to their predecessor (Pourciau, 1993). However, findings show no evidence of the use of accrual-based earnings in the last year of CFO tenure and in the first three years of the new CFO tenure. Therefore, the results only suggest that the CFO tenure has a positive association with real earnings management. To the extent that discretionary expenses are used to help CFOs hide the good/poor performance of the company to move a part of the positive/negative current earnings in the last year of CFO tenure or in the first three years of CFO tenure. Additional, the research has shown a significant relationship between CFO gender and the use of real earnings management. Contrary to expectations, female CFOs are more likely to use real earnings management to overstate earnings compared with male CFOs. However, no significant evidence was found for gender influence in relation to accrual-based earnings management. These findings are of interest to investors, regulators, and academics with respect to the identification of earnings management and consequences of CFO tenure and gender.

## Chapter 1: Introduction

Prior to the accounting scandal of Enron, sentences for white-collar crimes were minimal. Executives who embezzled money were viewed as nonviolent and therefore tended to get off more easily than someone who robbed a convenience store (Welytok, 2006, p.132). However, after more scandals made headlines around the world, judges began handing out prison sentences up to 30 years in prison for top CEOs and CFOs who were involved in these scandals. This also changed the landscape of public company governance in the United States, by implementing new regulations and the widespread adoption of organizational safeguards. This resulted in the implementation of the Sarbanes-Oxley Act (SOX) in 2002 which increased the internal control and the transparency of the financial reports. As effect, the Chief Executive Officer (CEO) and Chief Financial Officer (CFO), are nowadays personally responsible for the accuracy and completeness of the financial reports and disclosures released by the firm. Therefore, the executives and their audit committees perform a critical role in ensuring that the company avails the annual results to the market and shareholders with a true and fair view (Beaudoin et al., 2015).

But still, these accounting scandals are difficult to unravel from the outside (Dichev et al, 2013). Researchers suggest a number of red flags that point to potential misrepresentation of financial reports (Gillett & Uddin, 2005). The two most common red flags are persistent deviations between earnings and the underlying cash flows, and deviations from industry and other peer firms (Dichev et al, 2013). These deviations are generally referred to as ‘earnings management’, by which is meant the process where financial reporting is adjusted by executives *‘to mislead the stakeholders about the underlying economic performance of the company or to influence contractual outcomes’* (Healy & Wahlen, 1999).

Executives adjust these numbers to influence their compensation plans, improve market expectations and the duration of the executives’ tenure (Healy & Wahlen, 1999; Mian, 2001). Because, to hold their tenure for a longer period of time, executives must at least meet the market’s expectations (Mian, 2001; Ali & Zhang, 2015). Also executives who are planning to leave the firm have incentives to manage their earnings and the underlying cash flows (Kalyta, 2009). For example, this may be an incentive for executives to apply earnings management to increase their final compensation. This phenomenon is commonly referred to as the ‘horizon problem’, influencing the company in numerous ways. But these activities can have far-reaching consequences, because if earning management is considered excessive, the SEC may issue fines and imprisonment as a punishment.

Therefore, the detection of earnings management is a topic of considerable interest and importance to a wide variety of interested groups, including investors, auditors and regulators (Fields et al, 2001). However, the empirical evidence of the horizon problem of managerial tenure on earning management choices is scarce and inconclusive (Kalyta, 2009). The existing empirical literature does not provide conclusive evidence that the likelihood of earnings management is more present prior to managerial turnover (Kalyta, 2009). For example, research of Pourciau (1993) showed that departing executives record accruals and write-offs that decrease earnings during their final year of tenure. However, recent findings are evident that earnings overstatement is greater in the early years than in the later years of CEOs' tenure, and this relation is less pronounced for firms with greater external and internal monitoring (Ali & Zhang, 2015). Indicating that new appointed CEOs try to favorably influence the markets perception of their ability in their early years of service, when the market is more uncertain. However, other researchers found evidence that CEOs influence their firms' reported earnings later during their tenure (Pan et al., 2013).

These results do not seem to be univocal and seem to contradict each other (Pan et al, 2013; Ali & Zhang, 2015). This could be due to other effects of influence that are not taken into account in previous research, like the effect of gender diversity in top executive positions on earnings management (Kyaw et al, 2015). Findings reveal that a gender diverse boards mitigates earnings management in countries where gender equality is higher (Kyaw et al, 2015). However, these studies usually differ in the countries that they investigate and therefore there are inconsistent conclusions about the influence of gender diversity and firm performance (Barua et al, 2010). And although a number of studies provide evidence that female board members are have been shown less likely to be associated with earnings management (Barua et al, 2010; Peni & Vahamaa, 2010, Gul et al., 2011). These studies do not address the association with tenure of the board members.

### **Research problem**

And despite various studies on earnings management and top executives, the majority of empirical research into the underlying causes of these accounting scandals has focused on the role of the CEO, rather than the CFO. While in accounting scandal cases, CFOs clearly fail in their monitoring role over financial reporting (Jiang et al., 2010). Therefore, this research focus on the role of the CFO on earnings management.

The CFO in general has a significant influence on the performance of a firm equity incentives and earnings management (Jiang et al., 2010). Also the recent research of fraudulent financial reporting in the United States has drawn attention to the fact that the CFO has a

considerable amount of control over a firm's financial reports (IFAC, 2013). Herewith the magnitude of accruals and the likelihood of beating analyst forecasts are more sensitive to CFO equity incentives than to those of the CEO (Jiang et al., 2010). However, there is a lack of research that test the influence of the CFOs tenure on their firms' reported earnings and in particular earnings management. While findings indicate that CFOs have a significant influence on the reporting of a firm (Jiang et al., 2010).

Also the effect of gender diversity in combination with CFO tenure and earnings management is barely examined in contemporary research. This while there is evidence to indicate that females in executive positions affect firms' performance positively (Farrell & Hersch, 2005). And while gender diversity among CFOs is extremely low in companies, women's are found to be more thoughtful and risk averse than their male counterparts (Bramwell, 2013). This implies that adding a woman to the board of directors may be beneficial to the prevention of earnings management (Kyaw et al, 2015). In general the researchers indicate greater caution in deal-making by female board members (Burua et al, 2010). However there is still little know about the influence of gender on the role of the CFO.

### **Research question**

To fill this knowledge gap, this research will examine the influence of the CFO tenure and CFO gender on earnings management. Gender will likely affect the relationship between CFO tenure and earnings management and therefore the moderating variable (gender) will also be examined. The research question therefore obtains the difference between men and women in fulfilling their role as CFO. The research question which is central to this paper is: *What is the influence of the CFO tenure and CFO gender on earning management?*

### **Practical and scientific relevance**

To answer the main question and to test the hypotheses a quantitative multiple regression analysis will examine the influence of CFO tenure and CFO gender on earnings management. Thus far there are only a few researchers that have investigated the relationship between earnings management and CEO tenure, and even fewer studies examined the important role of the CFO tenure (Barua et al. 2010; Peni & Vahamaa, 2010) or gender (Wilson & Wang, 2010). And despite the fact that earnings management by CEOs in the first years and the last year of their service as CEO has been the subject of several prior studies, the extant empirical evidence related to this topic is mixed (e.g., Dechow & Sloan, 1991; Pourciau, 1993; Murphy & Zimmerman, 1993; Cheng, 2005 and Kalyta, 2009).

In addition, this research will be practical relevant because auditors and regulators gain insight into the extent how CFO tenure and gender is influencing earnings management in financial reports. It could also provide a critical view for the investors to adapt a different way of judging companies based on the tenure and gender of their CFO. Likewise it provides scientific insight into when CFOs use a form of earnings management and it contributes to the knowledge and the degree to which the gender of the CFO influences this relationship. This quantitative study will provide a comprehensive answer to this matter.

The remainder of this research is as follows. Chapter two explains the several studies that have been conducted on earnings management, the role of the CFO, CEO and CFO tenure, and gender. The theoretical framework will discuss theories that support the influence of CFO tenure and gender on the degree of earnings management and will describe the hypotheses of this study. Chapter three will describe the methodology of the research. Chapter four presents the findings and results. Chapter five concludes the implications of the results.

## **Chapter 2: Theoretical framework**

While numerous studies have examined the impact of CEOs on their important role in determining the quality of financial reporting and overall firm performance, relatively little is known about the influence of CFOs on earning management and important firm outcomes, such as reported earnings. This is somewhat surprising given the critical role CFOs have in the financial reporting process of a firm (Jiang et al, 2010; Kaden & Sanchez, 2013). Following related literature on earnings management, this section will explain the different theories behind earnings management, the role of the CFO, tenure, the horizon problem, and gender in organizations with the hypotheses resulting from this theoretical framework.

### **Earnings management**

Some executives use accounting techniques, like earnings management, to manage their financial reports to mislead stakeholders about the underlying economic performance of the company (Healy & Wahlen, 1999). Which is basically not a form of fraud. Only if the stakeholders are misled in a way that is not allowed under the regulation, this is considered fraudulent. Therefore, earnings management is legal as long as the rules established by law are respected (Bratton, 2003). This opportunity to manage earnings arises due to the fact that reported income includes cash flows, as well as changes in firm value that are not reflected in current cash flows. And while cash flows are relatively easy to measure, evaluating the change in firm value that is not reflected in current cash flows often involves a great deal of discretion and estimation (Dechow et al., 1995). But after the recent accounting scandals, the regulations are changed in order to prevent the use of excessive earnings management and new accounting scandals.

### **Occurrence of earnings management**

In the literature there are several studies that examine the occurrence of earnings management. Healy's (1985) original contribution documents that managers manipulate earnings to manipulate bonus schemes. Sloan (1996), Collins and Hribar (2000) provide additional evidence that managers may be able to game the capital markets. They describe methods where earnings management does not result in cash inflow for the firm. In effect, it leads to a cash outflow, since the executives receive higher bonuses after the earnings are managed and due to the possibility to sell their stock at higher prices.

In fact, the most important information item provided in the financial statements are earnings. Earnings are an measurement to calculate to what extend a firm has conducted value added activities (Lev, 1989). The value of a firm is therefore often calculated by the present

value of its future earnings. As a results, an increase in earnings causes an increase in firm value. Therefore, many stakeholders are interested in the financial statements provided by the firm's management to base their decisions upon. Given the significant utility of earnings it is important how the managers' report them. Because, when managers engage in earnings management this leads to financial reports that do not give a true and fair view of the financial position of the company and therefore this lowers the quality of the financial report (Ball, 2006). Earnings management is therefore also known as the choice by a manager of accounting policies, or real actions, that affect earnings in a way to achieve some specific reported earnings objective (Scott, 2015, p.421).

But to understand why executives use earnings management to influence the numbers in the financial statements it is importance to know the interests and behavior of the executives (Watts & Zimmerman, 1986). Research has shown that many executives choose accounting policies (e.g. earnings management) to maximize their own expected utility instead of to maximize the shareholders utility (e.g. Eisenhardt, 1989; Murphy, 1989; Scott, 2009). This situation is called the agency problem (Jensen & Meckling, 1976; Healy & Palepu, 2001). It is caused by information asymmetry and can be divided in two distinguishable problems; adverse selection and moral hazard (Scott, 2009, p.328). In the case of adverse selection the agent (the executive) has an information advantage over the principal (the shareholder). The other problem is moral hazard, which is the situation that the principal cannot observe all actions of the agent and the principal bears the cost of those actions (Darrough & Stoughton, 1986). In this situation the principal cannot observe the agent's effort, which gives the agent an incentive to neglect the principal's interests. For example, this gives the executives the opportunity to choose accounting policies, influence compensation plans and earnings, thereby reducing contract efficiency and maximize their own utility (Sun, 2012).

As a results the executives will benefit when the accounts present a positive image of the company. If financial figures show that business is decreasing, this scares off potential investors and shareholders will worry that their share is worth less and will sell their stake in the company (Healy & Wahlen, 1999). For the executives of a company, it is therefore important to show constant earnings and profits. This 'Positive Accounting Theory' (PAT), developed by Watts and Zimmerman (1987), provides a possible explanation for the phenomenon of earnings management and why a CFO manage earnings to maximize their usefulness.

## **Accrual accounting**

An independent auditor can help to prevent earnings management from happening by requiring adjustments from the management or issuing a qualified auditor opinion. The objective is to express an opinion on the truthfulness and fairness of financial statements. However, an auditor cannot easily detect earnings management because earnings consists of two components, cash flow and accruals. The establishment of the accruals' requires assessment and judgment by the managers. Therefore, Fields et al. (2001) argue that earnings management exist, because executives have the ability to choose accounting method which are more vulnerable to manipulate and which maximizes their own utility.

One of the fundamental features of this flexibility in financial reporting is accrual accounting (Palepu et al., 2010). Accrual accounting involves management discretion in financial reporting to manipulate earnings (Healy & Wahlen, 1998). The management expectations and forecasts such as a prospect of the delivery of products and services are estimates made by the management. Also the expected cash outflows associated with the revenue are estimates. This may lead to accrual-based earnings management since managers have their own judgments over these accruals and different methods to estimate the expectation for each specific account in the financial statements. The reliability of the financial information is therefore dependent on the chosen accounting methods of the managers. But it is difficult to recognize whether the accounting techniques chosen present honest or opportunistic estimations (Roychowdhury, 2006).

## **Non-discretionary accruals and discretionary accruals**

To identify whether earnings are managed through accruals, the total accruals can be decomposed in non-discretionary accruals and discretionary accruals (Yu, 2008). According to Ronen & Yaari (2008) non-discretionary accruals arise from transactions made in the current period that are to be expected for the firm given the circumstances. These non-discretionary accruals cannot be changed or altered by the management. Contrary, discretionary accruals are accruals from operations or accounting methods chosen in order to manage earnings. Whereas the total accruals are the sum of non-discretionary and the discretionary accruals. These are frequently used in contemporary studies as the proxy for earnings management (eg. Healy, 1985; Jones, 1991; Dechow & Sloan, 1995).

## **Methods of earnings management**

Moreover, a distinction can be made between different methods of earnings management: ‘accrual-based earnings management’ and ‘real earnings management’ (Roychowdhury, 2006; Cohen & Zarowin, 2010). Accrual-based earnings management changes the accounting methods which are used for certain transactions which have direct effect on cash flows (e.g. upwardly managed reported earnings). Which is defined by Healy & Wahlen (1998) as ‘the use of managers’ discretion in financial reporting to manipulate earnings’. This is often measured by discretionary accruals, indicating the use of accrual-based earnings management by managers. However, with the advent of the scrutiny of the accounting practice and scandals, regulation increasingly constrain the use of accrual-based earnings management (Zang, 2011).

As a result, firms switch from accrual-based to real earnings management (Cohen et al., 2008). Real earnings management is herein defined as adjusting the timing or structuring of an operation, investment or transaction in such a way, to steer the reporting earnings in the desired direction (Roychowdhury, 2006). This type of earnings management takes place during the fiscal year. As a result, the use of real earnings management reduces the firm value, because the actions to change the earnings in the current period have a negative effect on the future cash flow (Roychowdhury, 2006). As example Roychowdhury (2006) described the impact of real earnings management by means of increased sales, overproduction and discretionary expenses. Hereby financial statements with temporarily increased sales are an indication for price discounts, lower cost of goods sold than usual could be because of overproduction, and improved margins could be the results of a reduction of discretionary expenditures. All these management actions deviate from normal business practices (Cohen & Zarowin, 2010).

## **Incentives of earnings management**

Executives manage their firm’s earnings often driven out of self-interest, but Healy and Wahlen (1999) distinguished more incentives why earnings management takes place. Executives will also manage earnings to meet the expectation of the investors and to attract new investors (Healy & Wahlen, 1999). Or to achieve contract agreements in conformity with the stakeholders (Jensen & Mekling, 1976). Healy & Wahlen (1999) also identify two types of contracting incentives. Lending contracts, where executives might manage earnings to meet the contractual obligations of their debt covenants. And management compensation contract, where managers’ compensation and job security is linked to the reported earnings. Also, firms that report small profits are more likely to use real earnings management as these firms are pushing a benchmark (Cohen et al., 2008).

Furthermore, additional incentives are conceivable like corporate control, insurance regulations, tax benefits, stakeholder or competitive considerations (Palepu et al., 2010). These incentives can also be accompanied by opportunistic behavior and can be incentivized to maximize the firm value, share price, or net income (Jensen and Murphy, 1990). Therefore highly incentivized executives engage in higher levels of earnings management (Bergstresser & Philippon, 2006). However, some executives also influence the company's income statement to make poor results look even worse. This phenomena is called 'big bath accounting', where the company has no change of meeting the expectations of the stakeholders in a particular year and therefore starts prematurely written off future expenses to enhance next year earnings. This is also used to blame poor performance on the predecessor and to take credit for the next year's profits (Godfrey et al., 2003).

### **Chief Financial Officer**

Whilst most of the literature on earnings management tries to explain why firms engage in earnings management, less emphasis is placed on the role of the different managers in engaging in earnings management. Especially the role of managers other than the CEO have not been subject to study to a large extent (DeJong & Ling, 2010). Therefore, a deeper understanding of the role of the CFO involvement is explained.

#### **The role of the CFO**

In the past, the main emphasis of the CFOs role was typically as the guardian of the financial health of an organization, overseeing and implementing adequate financial control infrastructure (IFAC, 2013). But, several studies (IFAC, 2013; Deloitte, 2016 and EY, 2016) have deepened the understanding of the role and responsibilities of today's CFOs. It is clear that the CFO role at today's leading companies is evolving. These CFOs have to preserve the assets of the organization by minimizing risk and getting the books right, and running a tight finance operation that is efficient and effective (Deloitte, 2016). But the main objective of the CFO is still to oversee the implementation of accounting principles and procedures and the preparation of financial reports (IFAC, 2013). CFOs are herewith responsible for establishing and maintaining internal controls and reporting any deficiencies to the audit committee and to external auditors. Therefore, the CFOs must work closely with internal auditors in order to identify any potential internal control and material weaknesses and act on it.

But in recent accounting scandals, CFOs clearly fail in their monitoring role over financial reporting (Jiang et al., 2010; Feng, 2011). Also the recent flow of fraudulent financial reporting in the United States has drawn attention to the fact that the CFO has an essential deal

of control over a firm's reported financial result and in the role they play in creating and disseminating accurate or fraudulent financial information to stakeholders (Geiger & North, 2006). Therefore, not only the CEO, but also the CFO in person is responsible for the validity and completeness of the financial reports.

### **CFO involvement in earnings management**

Moreover, given the nature of their job's responsibilities, CFOs are more likely than CEOs to facilitate accounting schemes to inflate earnings (Jiang et al., 2010). And because CFOs' primary responsibility is financial reporting, findings indicate that CFOs' equity incentives are more important than those of the CEO in earnings management (Jiang et al., 2010). For example, Scott Sullivan, former CFO of WorldCom, admitted that he knowingly made most of the illegal accounting decisions (Feng, 2011). Therefore, CFOs involvement in selecting improper accounting method or false journal entries due to opportunistic behavior, or because they succumb to pressure is essential (Jiang et al., 2010). But despite the acknowledgement regarding the involvement of CFOs in the financial reporting process, still little research has been conducted to examine the effect of CFOs on earnings management and their tenure.

### **Tenure**

The incentives and methods to manage earnings discussed above can relate with poor CFO performance and affect their tenure, or from horizon problems that occur as retirement approaches. Evidence of CEOs being fired as a results of inadequate performance demonstrates that the likelihood of CEO turnover taking place in U.S. firms increases significantly where performance is relatively poor (Jenter & Kanaan, 2006). Also previous research of Dechow and Sloan (1991) provide confirmation consistent with the fact that CEOs generally manage current period income at the end of their tenure, at the expense of future performance of the firm. Herewith CEOs are more likely to 'covering up' poor current results to increase their compensation.

More evidence on earnings management by acceding CEOs is provided by Murphy and Zimmerman (1993) who explored both accounting policy choices and real investment decisions following CEO tenure. As they do not find profound use of 'earnings baths' following CEO turnover, they do observe confirmation of significantly lower discretionary accruals following non-routine CEO changes. Pourciau (1993) reassert this result for non-routine CEO changes, by finding evidence of income increasing accruals in years following the turnover.

## Horizon problem

Therefore, the proportion of earnings management seems to vary depending on the ongoing involvement and tenure of the executives (Kaden & Sanchez, 2013). However, the mix of long-term and short-term incentives can evoke earnings management and influence the length of the manager's decision horizon (Jensen and Murphy, 1990). The 'horizon problem' (Kalyta, 2009) occurs when managers of firms with bonus plans are more likely to choose accounting methods that shift good earnings from future periods to the current period. Their current bonus will be higher related the increasing firms' net income for the current period (Scott, 2009, p.442). Especially executives planning to leave the firm may lack incentives and motivation to act in the best interest of the firm in the long-run. Herewith, executives with a short horizon prefers operations with lower net present values and with higher current earnings to operations with higher net present values but lower current earnings (Smith & Watts, 1982). All of these horizon problem may have implications for earnings management, accounting fraud, and other consequences that are harmful to stakeholders.

However the length of the decision horizon and the use of earnings management can also be influenced by concerns with the reputation of the executives. Because when executives can establish a reputation for creating high payoffs for shareholders, their market value will increase (Fama, 1980). So to avoid being labeled as having bad reputation, which may adversely affect their future compensation and autonomy and may lead to their dismissal, executives are likely to have strong incentives to report good performance in the early years of their service. Holmstrom (1982) argues that these incentives will make executives work hard in their early years of service. In order to do so new appointed executives are more likely to overstate earnings in their early years of service (Holmstrom, 1982).

However, they also can choose to perform well in the long run, because overstating earnings and risk in their early years may being labeled as opportunistic reporters. Therefore, a manager will not shirk because being labeled as opportunistic reporters is revealing information about the ability and effort of the manager. Consequently, internal and market forces may help control managers' tendencies to shirk, but they do not eliminate them. But this label may destroy their credibility and they get labeled as low ability managers, and their whole career tends to suffer as a result. Because if the market detect an earnings overstatement, especially after observing the firm's future performance, this could lead to dismissal (Desai et al., 2006).

Also, recent findings show that earnings reports at the early years have a greater effect on the market's assessment of CEOs ability (Ali & Zhang, 2015). But, in defiance of theoretical predictions, current evidence on the impact of the horizon problem and reputational concerns

on earnings management is scarce and inconclusive. According to Pourciau (1993), contrary to expectations, departing executives record descending earnings during their last year of tenure. However, Wells (2002) finds little empirical evidence of income-increasing earnings management prior to CEO departures.

### **CFO Tenure**

But as previously argued, these contemporary studies are mainly focused on CEO tenure and may differ from results of CFO tenure. For example, Fortune 500 CFOs are staying at their jobs longer, as the average tenure among top CFOs is 5.9 years, up from 4.9 years since 2008, according to new research (Bramwell, 2013). But still around 20% of the companies change their CFOs each year. And with the spotlight falling on diversity among senior executives, the research of Bramwell (2013) showed that hiring a CFO to sit on the main board, the nomination committees of public companies remain conservative and are generally reluctant to hire promising, unconventional candidates.

But in contrast to the incentives faced by established CFOs through implicit uses of accounting information, new appointed CFOs may have substantial motives to reduce reported income in the first stage of their tenure (Wilson & Wang, 2010). This is due to the fact that earnings and income are largely unrelated to managerial presence during the first financial year of tenure (Wilson & Wang, 2010). Also formal compensation contracts are not expected to come into operation until the second year of tenure (the first full financial year), which removes a major incentive to maximize the income in the first partial financial year of tenure. Furthermore, incoming CFOs are not held responsible for past performance, and may explicitly allocate past performance to prior management, without the possibility of being punished for it. As a results, earnings can be postpone to upcoming years when they have more direct effect on the impact of the compensation either through contracts or implicit rewards (Godfrey et al., 2003).

Therefore, to test the influence of CFO tenure on earnings management the expectation is that CFO turnover will result in more use of earnings management. This is also in line with previous research because new CFO's will try to favorably influence the markets perception of their ability in their early years of service. Or they will use earnings management to assign poor earnings to their predecessor. And consistent with the horizon problem of departing CFOs, earnings overstatement is greater when CFOs leave the firm. Given the influence of the CFO tenure on earnings management, the first hypothesis to be tested is as follows:

*Hypothesis 1: CFO tenure has a positive association with earnings management.*

This hypothesis assumes that there is a significant relationship between CFO tenure and earnings management. Since firms and press releases do not always provide the true turnover cause, the first hypothesis will test CFO tenure as a whole, without taking into account the different turnover reasons.

## **Gender**

Earlier research on the relationship between executives' gender diversity and firm financial performance shows a lot of conflicting and contrasting results. Several studies have found no significant links between board gender diversity and firm financial performance (Rose, 2007 & Chapple & Humphrey, 2014). Other studies have also found positive (Campbell & Minguez-Vera, 2008, Lui et al. 2014) and negative (Adams & Ferreira, 2009) links.

However, diversity in boards is supported by the fact that boards are to protect shareholder's interests. The challenge for boards is to bring together a balance of expertise and perspectives required for effective functioning and decision-making. Hereby having diverse directors on the board is helpful to protect the interests of the shareholders (Van der Walt & Ingley, 2003). And gender diversity reduces conflicts of interest between managers and shareholders (Campbell & Minguez-Vera, 2008). This diversity ensures the independence of the board and can provide the firm with new ideas and perspectives based on innovation and creativity, in order to improve the quality of the monitoring role and thus the financial performance of the firm (Campbell & Minguez-Vera, 2008).

### **Board of Directors**

Having women on the board also provides female role models and mentors. This could improve the company image with stakeholders and diversity in general could provide a better understanding of the workplace (Campbell & Minguez-Vera, 2008). It also increases diversity of opinions in the boardroom (Burgess & Tharenou, 2002), and female executives could bring strategic input to the board and influence the decision making and leadership styles of the organization.

But most important, women are thought to be more risk averse than men (Barsky et al., 1997; Byrnes et al. 1999). This could be a cause for the fact that women perform better in economically uncertain times and men in stable periods (Ryan & Stoker, 2012). However different researchers of general psychology business have examined whether these gender specific differences in caution and aversion to risk can be found and explain the differences in financial judgment and decision settings (Barua et al, 2010). Results suggests that women tend

to be less aggressive or more cautious in a variety of financial decisions. For example, women are more likely to be in compliance with rules and regulations (Baldry, 1987, Barua et al, 2010)

For example the research of Krishnan & Parsons (2008) examines the relationship between the proportion of women senior managers and earnings quality. Based on a sample of 770 U.S. firms from 1996 to 2000, the authors find that women in senior management improves the quality of reported earnings by reducing earnings smoothing and loss avoidance. And in line with this research, Gul et al. (2011) examine the effect of women directors on earnings quality in a voluntary environment of appointing women on boards. Evidence show that U.S. firms with female board members have a better quality of their earnings and are less likely to manage earnings (Gul et al., 2011). Based on agency theory predictions, women directors are considered as a corporate governance device related to board composition. Board gender diversity improves the monitoring of managers and could lead to more earnings management detection. But using a large sample of Chinese listed firms from 2001 to 2006, Ye et al. (2010) find no significant relationship between women in management functions and earnings management, suggesting there are inconsistent conclusions about the relationship between board gender diversity and firm performance.

### **Female CFOs**

Given differences between the genders, female CFOs may be inherently more likely to avoid earnings management. Based on a sample of U.S. firms in 2004 and 2005, Barua et al. (2010) show that companies with female CFOs have lower discretionary accruals than their male counterparts. But, findings argue that females represent only a small ratio of CFOs of public companies (8% in 2004). However, companies are increasingly focusing on diversity when hiring new CFOs. There have been modest gains for female CFOs, as 11.4 percent in 2013 of the Fortune 500 CFOs are women compared to a CFO index low of 6.7 percent in 2006 (Bramwell, 2013). Also the ratio of females starting in the accounting profession has increased in recent years (Barua et al., 2010). Resulting in that females participants present approximately half of accounting graduates and also passing the CPA exam (Bramwell, 2013).

Furthermore the study of Peni & Vahamaa (2010) provide considerable evidence to suggest that firms with female CFOs are associated with income-decreasing discretionary accruals, thereby implying that female CFOs are following more conservative financial reporting strategies. This finding is broadly consistent with the existing literature on gender differences in conservatism and risk aversion and in line with the fact that women are more careful and presumably more in consensus with accounting regulations (Barua et al, 2010). For

example, the acquisitions by firms with female CFOs have higher announcement returns and issue debt less frequently than firms with male CFOs (Barua et al., 2010). Therefore female CFOs are less likely to be aggressive in making judgments related to earnings management. This argument is supported by Barua et al. (2010) after controlling for factors shown to be associated with accruals. Firms with female CFOs report lower levels of absolute abnormal accruals and lower accrual estimation errors.

Findings indicate that gender-based differences in managerial opportunistic behavior may have important implications for financial reporting and corporate governance. However, contemporary research of Barua et al. (2010) and Peni & Vahamaa (2010) is limited to examine only different manners of accrual-based earnings management without taking real earnings management in consideration. Therefore this research on earnings management will include real earnings management to support the overall evidence showing differential caution and risk-taking by female CFOs in organizations which indicate that firms with female CFOs have less association with earnings management. This leads to hypothesis 2.

*Hypothesis 2: CFO gender diversity has a negative association with earnings management*

### **Moderating effect**

The relationship between the CFO and earnings management is a recent issue that mainly relies on one feature of tenure or gender diversity. But in other contemporary research gender is often used as a moderating variable, because gender-specific groups and models could offer explanations for example career success (Melamed, 1995). Herewith the female routes to career success are different from those of men. This is due to several cultural and social barriers that women have to overcome to achieve success. This distinction is relatively traditional and underestimates women's ability. Also the labor force participation rates of women in contrast to men indicated that turnover and intent to leave is a gender-specific factor. Contrasting alternative logistic models disclosed that different antecedent variables explained variations between men and women in both intent and turnover. The gender differences are crucial to understanding the development of a turnover decision (Eriksson et al., 2001). Therefore, this study includes the additional moderating expectation that the relationship between earnings management and tenure is influenced by the gender of the CFO.

However, there is still little known about tenure and the influence of gender. By comparing the intentions and turnover reasons between male and females in Research and Doctoral universities (Xu, 2008), it is found that the gender did not differ in their intentions to depart from academia, but women had a significantly higher likelihood to change positions

within academia. Nonetheless, women's stronger turnover intentions are highly correlated with dissatisfaction and that the underrepresentation of women is more convincingly explained by culture, limited support, and inequity in leadership, rather than by gender-based differences such as roles in family (Xu, 2008).

To examine these gender-based differences the moderating variable, CFO gender will be tested if it stands between the cause-effect relationship of CFO tenure and earnings management. Hypothesis 3 will test if this better explains the effect from the cause-effect relationship and the relationship strengthens. Although classically, a moderating variable implies a weakening of a causal effect, it can also reverse or completely moderate that effect. This would occur in the case in which the causal effect of CFO tenure on earnings management equals zero when gender takes on a particular value. But to control if CFO gender will moderate the overall effect of CFO tenure on earnings management the expectation in hypothesis 3 is that the effect of CFO tenure on earnings management is moderated by the difference in CFO gender.

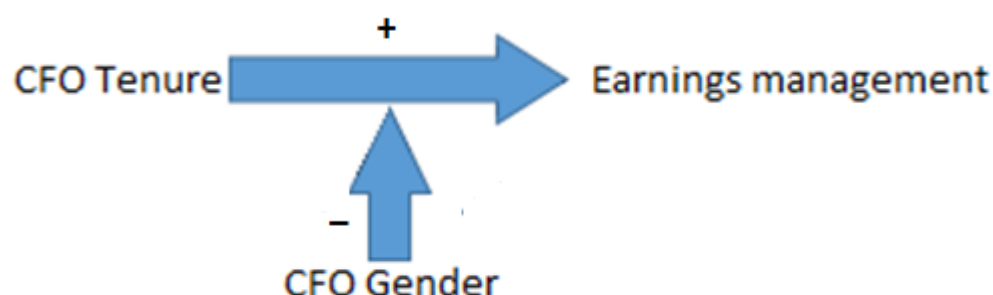
*Hypothesis 3: CFO gender will moderate a positive association between CFO tenure with earnings management.*

### Chapter 3: Methodology

This chapter contains the sample design and statistical methods used in this study and their underlying methodology. The association between earnings management, CFO tenure and CFO gender will be examined through a multiple regression analysis. The multiple regression analysis checks whether, on the basis of the correlation of multiple independent variables (CFO tenure and CFO gender) to the dependent variable (earnings management), a correlation can be found to confirm the hypotheses. This is also to examine the possible interaction effects. To test the regression it will be examined if the statistical or regression is significant. First the conceptual model is outlined to highlight the research question and an overview of the hypotheses of this study. Thereafter the measures of earnings management from prior studies are discussed, and how the theory prescribes to use these measures. This chapter concludes with the explanation of the measures of CFO tenure and CFO gender.

#### Conceptual model

Before conducting the research a mapping of the expectations is described in the following conceptual model. The graphically expectations in the model represent the relationships between the independent variables (CFO tenure and CFO gender) and the dependent variable (earnings management) and how they relate to each other. The first relationship that will be examined is how CFO tenure influence earnings management (hypothesis 1). The second relationship is that between CFO gender and earnings management (hypothesis 2). The last relationship that will be examined is the moderating effect of CFO gender variable on the relationship between CFO tenure and earnings management. All three of these relationships will be examined by means of a regression analysis and the following measurements.



**Fig. 1.** Conceptual model

## **Measurement of Earnings management**

This research will focus on earnings management as a measure of accrual-based and real-based earnings management. Accrual-based earnings management can be detected by examining the discretionary accruals of firms. Higher and lower discretionary accruals are an indication of more accrual-based earnings management. In line with previous research use will be made of the modified Jones cross-sectional model of accruals proposed by Dechow et al. (1995) to estimate discretionary accruals. The modified model includes two additional variables into the original equation of Jones (1991) in order to increase the explanatory power of the multiple regression analysis. To proxy of real-activities based earnings management abnormal discretionary expenses will be modeled using a cross-sectional model for ease of comparability with prior studies on earnings management and tenure (Roychowdhury, 2006; Ali & Zhang, 2015). There will also be made of robustness checks to examine the robustness of the findings by conducting several additional tests.

To empirically test earnings management in this research, the absolute value of earnings management will be used. In previous research (Roychowdhury, 2006; Zang, 2012) only accrual-based earnings management is measured by absolute values. But because the effect of earnings smoothing, by both accrual-based and real earnings management, and ‘big bath’ accounting can co-exist as a state in which the opposing forces can result in an equilibrium (Kirschenheiter & Melumad, 2002). And because abnormal cuts in discretionary expenses can also have reversals effect that are reflective in real earnings management (Vorst, 2016), where real investments in future years are negatively correlated in the presence of a reversal. Both accrual-based and real earnings management are tested by absolute values. Besides, this research is not examining whether earnings management of a particular direction occurs (Hribar & Nichols, 2007), but if earnings management is used and influenced by CFO tenure without reference to a particular incentive.

### **Accrual based earnings management**

Use is made of a cross-sectional model of discretionary accruals, where for each year the modified Jones model estimates the discretionary component of reported income (Cohen et al, 2008). Also use is made of partially controls for industry-wide changes in economic conditions by estimating the model for each industry classified by its two-digit SIC code, with a minimum of 10 observations for each industry per year. Which suggests the following Equation (1) to estimate for each two-digit SIC-year grouping and year as follows:

$$\frac{ACC_{it}}{Assets_{i,t-1}} = \lambda_{it} \frac{1}{Assets_{i,t-1}} + \lambda_2 \frac{\Delta REV_{it}}{Assets_{i,t-1}} + \lambda_3 \frac{PPE_{it}}{Assets_{i,t-1}} + \epsilon_{it} \quad (1)$$

Where the equation components stand for:

$ACC_{it}$  = the accruals of firm  $i$  in fiscal year  $t$ , defined as net income minus operating cash flows (CFO).

$Assets_{i,t-1}$  = the total asset of firm  $i$  at the beginning of year  $t$ .

$\Delta REV$  = the change in revenues from the preceding year.

$PPE$  = the gross value of property, plant and equipment at the beginning of year  $t$  (Cohen et al., 2008).

Using the coefficient estimates from Equation (1), the firm-specific normal accruals ( $NA_{it}$ ) for the firms' years can be calculated using equation (2):

$$NA_{it} = \lambda_{1t} \frac{1}{Assets_{i,t-1}} + \lambda_2 \frac{(\Delta REV_{it} - \Delta AR_{it})}{Assets_{i,t-1}} + \lambda_3 \frac{PPE_{it}}{Assets_{i,t-1}} \quad (2)$$

Most of the equation components correspond with Equation 1 except for  $\Delta AR$  which stand for the change in accounts receivable from the preceding year. Following the methodology used in Dechow et al. (1995) and Cohen et al. (2008), the industry-specific regressions are used to measure the change in reported revenues. But to adjust the discretionary choices with respect to revenue recognition, the reported revenues are corrected for the change in accounts receivable to capture potential accounting discretion from credit sales (Cohen et al., 2008). To calculate the discretionary accruals, the difference between total accruals and the normal accruals will be used (Cohen et al., 2008):

$$DA_{it} = \frac{ACC_{it}}{Assets_{i,t-1}} - NA_{it} \quad (3)$$

### Real earnings management

Some indications of real earnings management are temporarily increased sales, lower cost of goods sold, overproduction, improved margins, and firms reporting small losses. But given that firms manage earnings upward are likely to have one or more of these methods, three variables will be use to capture the effects of real earnings management in a comprehensive measure. And despite the fact that previous research has tried to make use of complicated models with

different components for different types of expenditures, the added explanatory power was not significantly improved (Bushee, 2013).

Therefore, consistent with previous research of Ali & Zhang (2015) to measure real earnings management, use is made of R&D, advertising (ADV), and selling, general and administrative expenses (SGE). Reducing these expenses boosts current period earnings which indicate use of real earnings management. To estimate the abnormal level of discretionary expenses these real activities are computed by deducting the calculated discretionary expenses for each variable from their actual figures. Thereafter, the sum of these discretionary expenses (RM\_proxy) will be used as a proxy to measure real earnings management (Ali & Zhang, 2015).

Furthermore, to calculate the normal level of these three discretionary expenses the model of discretionary expenses will use the function of lagged sales because a firm can manage sales upward to increase reported earnings in a certain year, resulting in significantly lower residuals form using current sales. Therefore the following equations will be used to derive each level of R&D, ADV, and SGE:

$$\frac{R\&DExp_{it}}{Assets_{i,t-1}} = k_{1t} \frac{1}{Assets_{i,t-1}} + k_2 \frac{Sales_{i,t-1}}{Assets_{i,t-1}} + \epsilon_{it} \quad (4)$$

$$\frac{ADVExp_{it}}{Assets_{i,t-1}} = k_{1t} \frac{1}{Assets_{i,t-1}} + k_2 \frac{Sales_{i,t-1}}{Assets_{i,t-1}} + \epsilon_{it} \quad (5)$$

$$\frac{SGEExp_{it}}{Assets_{i,t-1}} = k_{1t} \frac{1}{Assets_{i,t-1}} + k_2 \frac{Sales_{i,t-1}}{Assets_{i,t-1}} + \epsilon_{it} \quad (6)$$

Where the equation components stand for:

$R\&DExp_{it}$  = the discretionary research and development expenses of firm  $i$  in year  $t$

$ADVExp_{it}$  = the discretionary advertising expenses of firm  $i$  in year  $t$

$SGEExp_{it}$  = the discretionary selling, general and administrative expenses of firm  $i$  in year  $t$ .

$Assets_{i,t-1}$  = the total asset of firm  $i$  at the beginning of year  $t-1$ .

$Sales_{i,t-1}$  = the sales of firm  $i$  in year  $t-1$ .

The parameters calculate the normal change in the different expenses as the intercept, plus the coefficient  $k_1$  times prior sales growth, plus the coefficient  $k_2$  times prior sales. This will be done separately for R&D, ADV and SGE. Also use is made of partially controls for industry-

wide changes in economic conditions by estimating the model for each industry classified by its two-digit SIC code, with a minimum of 10 observations for each industry per year. Subsequently the residuals of these three independent regressions are used to compute the differences between the actual and normal levels predicted from Equations (4), (5) and (6) as measures of abnormal discretionary expenses.

But since the three individual variables can be used separately or at the same time  $RM\_proxy_{it}$  will be used to calculate real earnings management in this research (7). However if data for selling, general and administrative expense (SGE) is available, and data for research and development (R&D) and advertising expenses (ADV) are missing, these two expenses are set to zero in order to calculate  $RM\_proxy_{it}$ . This is in line with the research of Ali & Zhang (2015) where only use is made of abnormal discretionary expenses for the ease of comparability with prior studies on earnings management by CEOs tenure (e.g., Dechow and Sloan, 1991; Murphy and Zimmerman, 1993). This indicator of real earnings management will be used to examine, if CFO tenure and gender are of influence on real earnings management.

$$\frac{RM\_proxy_{it}}{Assets_{i,t-1}} = \frac{R\&DExp_{it}}{Assets_{i,t-1}} + \frac{ADVExp_{it}}{Assets_{i,t-1}} + \frac{SGEExp_{it}}{Assets_{i,t-1}} + \epsilon_{it} \quad (7)$$

$RM\_proxy_{it}$  = the discretionary expenses of firm  $i$  in year  $t$ , defined as sum of R&D, advertising, and selling, general and administrative expenses.

$Assets_{i,t-1}$  = the total asset of firm  $i$  at the beginning of year  $t-1$ .

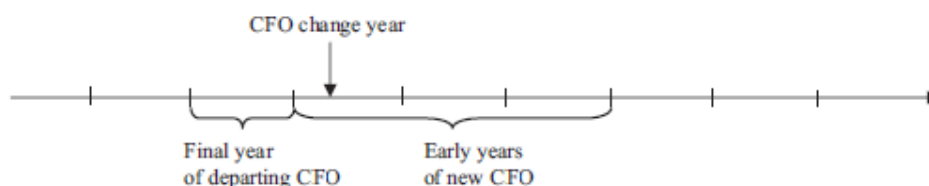
$Sales_{i,t-1}$  = the sales of firm  $i$  in year  $t-1$ .

### Measurement of CFO Tenure

Previous research on CEO and CFO tenure uses various indicators to measure tenure. The research of Ali & Zhang (2015) makes a distinction between early years and final year of tenure. Whereby EarlyYears is an indicator that correspond to the first three years of service of the firm's CEO, and the FinalYear indicator variable that equals one for the year prior to the turn over year of the firm's CEO, and is zero otherwise. This research is in line with the paper of Ali & Zhang (2015) and the measurement of CFO tenure will consider the same cut off times to measure CFO tenure.

Therefore, an indicator of EarlyYears that correspond to the first three years of service of the firm's CFO equals one in the first three years of CFO tenure. And the FinalYear indicator equals one, in the last year of CFO tenure of the firm's, and is zero otherwise. These separate indicators are tested separately and also combined in order to indicator CFO Tenure as a whole.

If a turnover happens within this time period, it is assumed that this is due to the decision horizon of the old CFO or with the decision horizon of the new CFO as explained in chapter 2. But also the separate indicators EarlyYears and FinalYear are tested to indicate the difference in influence. And because these separate ‘horizon problems’ can neutralize each other, and because the effect of earnings smoothing and ‘big bath’ accounting can co-exist (Kirschenheiter & Melumad, 2002). Use will be made of the absolute values of earnings management. In the figure below the cut off time is plotted.



**Fig. 2.** Timeline for defining variables related to CFOs' service years.

### Measurement of CFO gender

There is little to no discussion on the measurement of CFO gender because the distinction between male and female is quite straightforward. However a distinction between male and female is not the only way to look at gender diversity. Instead of focusing on male and female some studies focus on masculinity and femininity (Alvesson & Billing, 2009). These concepts are vague and defined as values, experiences and meanings that are culturally interpreted. Therefore, this study will use the variable  $CFO_{gender}$  as the indicator when a female CFO is in place. That equals 1 if firms CFO is a female in year  $t$ , and otherwise will be 0 (Buruaa et al., 2010).

### Control variables

Other explanatory variables that will be used in this research are the control variables. These variables will be elaborated in detail within the results and with their explanatory power, but for brevity their association with earnings management and CFO characteristics will be explained here.

CFO Age is the CFO's age at the beginning of year  $t$ . Consistent with previous research on tenure, age had a negative link with earnings management. The assumption is that as CFOs get closer to retirement, their incentive to invest in R&D reduces because the effect on reported earnings will likely show up only after they retire (Ali & Zhang, 2015).

Leverage is the total debt divided by total assets at the beginning of year  $t$ . Which indicate that if a firm has disproportionately debt compared to assets it is more likely that the capital structure of the firm can be an incentive to use earnings management.

Big Four is defined 1 if firm is audited by one of the Big 4 auditors and 0 otherwise. Because firms audited by Big 4 audit firms have shown lower income decreasing abnormal accruals compared with firms audited by other audit firms (Becker et al., 1998). Therefore Big Four is included to control for auditor type, where the expectation is that Big 4 auditors are associated with higher quality of earnings.

Also to control for firm performance ROA is placed as a control variable. ROA estimate earnings before extraordinary items in year  $t$  divided by total assets at the beginning of the year  $t$ . Which is a performance measurement which indicate that poor performance is associated with lower quality of accruals.

Another performance control variable is Size. Size is defined as the natural logarithm of total assets for firm  $i$  in year  $t$ . Which has been used as a measurement for a variety of variables in accounting research (Barua et al., 2010). This variable suggest that executives in larger firms face more pressure to report more predictable earnings, which may cause managers to use some form of earnings management. Also, previous research suggest that smaller firms are associated with lower quality of accruals (Dechow & Dichev, 2002). Therefore a negative coefficient for Size is predicted.

Market to book ratio is the market value of equity divided by the book value of equity at the beginning of year  $t$ . Consistent with previous findings growing firms tend to spend more on R&D and marketing (Roychowdhury, 2006; Ali & Zhang, 2015), which indicate that firms with an above average market to book will spend more on earnings management indicators.

The last control variable is Industry, which equals 1 if the firm operates in a high-litigation industry (SIC codes 2833-2836; 3570-3577; 3600-3674; 5200-5961 and 7370-7374), and 0 otherwise.

### **Regression model**

In order to test the hypotheses a multiple regression will be performed. The regression analyses will be conducted to test the hypothesis and the conceptual model as explained previously. The different components of CFO tenure will also be tested separately, but for brevity only the combined variables are named. The other explanatory variables in this equation are the control variables which do not interfere with the rationale for their association with discretionary accruals and real earnings management. In the results section the exhibit significant explanatory power of these control variables will be explained. The substitution of the two earnings management strategies will be measured as a robustness check. First all the variables that are used in these regressions are clarified.

## Variables

The sample period is from 1992 to 2010. **Discretionary accruals** (accrual-based earnings management) is discretionary accruals of firm  $i$  and year  $t$ , estimated as the residual of equation (3). **RM\_Proxy** (real-based earnings management) is the discretionary expenses of firm  $i$  in year  $t$ , defined as sum of R&D, advertising, and selling, general and administrative expenses, estimated at the residual of equation (7). **CFO<sub>Tenure</sub>** is an indicator variable that equals one for firm-years that correspond to the first three years and prior to the turnover year of the firm's CFO, and is zero otherwise. **CFO<sub>gender</sub>** is an indicator variable that equals 1 if firms CFO is a female in year  $t$ , and otherwise will be 0. **CFO<sub>Tenure</sub> \* CFO<sub>gender</sub>** is an indicator variable that equals 1 when the CFO is a female and CFO<sub>tenure</sub> is present in year  $t$ , and otherwise will be 0. **CFO Age** is the CFO's age at the beginning of year  $t$ . **Leverage** is defined as total debt divided by total assets at the beginning of year  $t$ . **Big Four** is defined 1 if firm is audited by one of the Big 4 auditors and 0 otherwise. **ROA** is earnings before extraordinary items in year  $t$  divided by total assets at the beginning of the year  $t$ . **Size** is defined as the natural logarithm of total assets for firm  $i$  in year  $t$ . **Market to book** is defined as the market value of equity divided by the book value of equity at the beginning of year. **Industry** is an indicator variable that equals one if the firm operates in a high-litigation industry (SIC codes 2833–2836; 3570–3577; 3600–3674; 5200–5961, and 7370–7374), and zero otherwise.

## Hypothesis 1

For testing hypothesis 1 use is made of the following model (8) of discretionary accruals:

$$|\text{DISCRETIONARY ACCRUALS}| = B0 + B1 \text{CFO}_{\text{Tenure}} + B2 \text{CFO Age} + B3 \text{Leverage} + B4 \text{Big Four} + B5 \text{ROA} + B6 \text{Size} + B7 \text{Market to book} + B8 \text{Industry} + e \quad (8)$$

The following model will be used to calculate the real earnings management part which consists of the components as described in the measurements of real earnings management:

$$|\text{RM\_PROXY}| = B0 + B1 \text{CFO}_{\text{Tenure}} + B2 \text{CFO Age} + B3 \text{Leverage} + B4 \text{Big Four} + B5 \text{ROA} + B6 \text{Size} + B7 \text{Market to book} + B8 \text{Industry} + e \quad (9)$$

The expectation based on previous research on earnings management and tenure is that CFO tenure will result in more earnings management. Because the new appointed CFOs will try to favorably influence the markets perception of their ability in their early years of service, or they will use earnings management to assign poor earnings to their predecessor. Also earnings management is expected to be greater when CFOs leave the firm.

## Hypothesis 2

The following models are in consensus with hypothesis 2 which focus on the influence of CFO gender on the relationship with accrual based (10) and real based earnings management (11):

$$|DISCRETIONARY ACCRUALS| = B0 + B1 CFO_{Gender} + B2 CFO_{Age} + B3 Leverage + B4 Big Four + B5 ROA + B6 Size + B7 Market to book + B8 Industry + e \quad (10)$$

$$|RM\_PROXY| = B0 + B1 CFO_{Gender} + B2 CFO_{Age} + B3 Leverage + B4 Big Four + B5 ROA + B6 Size + B7 Market to book + B8 Industry + e \quad (11)$$

The expectation is that women are thought to be less aggressive and more risk averse than men. Female CFOs therefore are inherently more likely to avoid earnings management and more likely to be compliant with accounting regulations (Barua et al, 2010). This gender-based differences is expected to support the overall evidence showing differential caution and risk-taking by female CFOs in organizations which indicate that firms with female CFOs have less association with earnings management. Therefore, these models will be expected significant lower values supporting the hypothesis that CFO gender diversity has a negative association with earnings management.

## Hypothesis 3

And finally, these regression models are conducted to estimate hypothesis 3 which focus on the moderating effect of gender in both discretionary accruals (12) as in real earnings management (13):

$$|DISCRETIONARY ACCRUALS| = B0 + B1 CFO_{Gender} + B2 CFO_{Tenure} + B3 CFO_{Tenure} * CFO_{Gender} + B4 CFO_{Age} + B5 Leverage + B6 Big Four + B7 ROA + B8 Size + B9 Market to book + B10 Industry + e \quad (12)$$

$$|RM\_PROXY| = B0 + B1 CFO_{Gender} + B2 CFO_{Tenure} + B3 CFO_{Tenure} * CFO_{Gender} + B4 CFO_{Age} + B5 Leverage + B6 Big Four + B7 ROA + B8 Size + B9 Market to book + B10 Industry + e \quad (13)$$

The expectation is that gender is a moderating variable, influencing the cause-effect relationship of CFO tenure and earnings management. This will explain the variations between men and women in tenure and turnover. This gender difference is crucial to understanding the development of a turnover decision, because turnover and the influence of gender is more convincingly explained by culture, limited support, and inequity in leadership, rather than by gender-based differences. It is expected that gender implies a weakening of the causal effect, lowering the effect of CFO tenure on earnings management when CFO gender is equal to 1.

## Chapter 4: Empirical Results

The empirical results in this chapter will answer the sub questions of this paper. First, the databases that are consulted in obtaining the data are explained, together with the statistics. Next the estimation models will be described to determine the coefficients to compute accrual-based and real earnings management. Thereafter the correlation will be presented with the results of the tested hypotheses. This chapter is closed with a summary of the empirical results.

### Sample size

To estimate the equations and regression models use will be made of all observations of S&P 500 companies for which required data are available on WRDS database between 1992-2010. This selection is made because previous research of Ali & Zhang (2015) on CEO tenure also includes this timeframe of 1992-2010 of which much information is available. The S&P 500 companies are chosen because they're widely regarded as the best single gauge of large-cap U.S. equities. They are all listed on the New York Stock Exchange (NYSE), the American Stock Exchange (AMEX) or the NASDAQ, with over USD 7.8 trillion benchmarked to the companies and assets comprising approximately USD 2.2 trillion in total. But most importantly, the S&P 500 companies includes 500 leading companies and captures approximately 80% coverage of available market capitalization which represent a very reliable picture of the developments in the U.S. stock market (Anderson & Reeb, 2003).

Mainly two databases that were provided by WRDS where used in this research: Execucomp and Compustat. All offer nearly exclusively North-American data. ExecuComp provided data on CFO tenure and CFO age. CFO gender is taken from the Compustat database which is mainly based on annual rapports. Also Ali & Zhang (2015) used this database for the years 1992–2010, to obtain their data on CEO tenure. Information that was missing and could be traced through CFO profile data on Factiva, Yahoo Finance and 10-k rapports, was manual added. Subsequently all this information was merged with information from Compustat. Compustat provided all the data on the financials of the individual firms for each year. Also from this database the different components of earnings management were calculated.

### Statistics of sample

Because information was merged the statistics will be explained and the final sample will be justified. The observations of S&P500 firms between 1991-2010 that were retrieved from the Compustat database, were used as the starting point for collecting firm year observations. Observations of 1991 were included in order to calculate the lagged financial components. As shown in Table 1, the Compustat database listed 8635 firm year observations. After calculating

the financial components necessary, the first year of each firm observation was excluded due to the lack of lagged information. Also companies with missing values were eliminated from the sample. Hereafter all the companies with extreme values due to mergers and acquisitions and companies within 2 SIC code without a least 10 firm year observations were eliminated in order to calculate the earnings management components. Subsequently all the firm years observations of Execucomp database that corresponds with the Compustat database based on financial year and company ticker was merged. This means that of the 4800 firm years observations, data of 2350 firm years observations were not traceable in the Execucomp database. This is mainly due to missing data of CFO information between 1992-1998.

**Table 1: Sample selection**

<b>Selection Criteria</b>	<b>Number of Observations</b>
Observations from S&P 500 companies in the Compustat database between the period January 01, 1991 to December 31, 2010	8635
<i>Less: The first year of each firm observation due to the lack of lagged information</i>	425
<i>Less: Missing values</i>	1043
<i>Less: Firms observations with extreme values due to mergers and acquisitions</i>	81
<i>Less: Firms observations within an 2 SIC code without a least 10 firm year observations</i>	2286
Total useful firm year observations from the Compustat database	4800
<i>Less: Firm year observations that were not traceable in the Execucomp database</i>	2350
Total observations	2450

In order to find out if the final sample is a good representation of the total useful firm year observations from the Compustat sample, the samples were compared. Most of the control variables do not differ much between both samples, only Market to Book ratio is significantly higher. Therefore, the availability of ExecuComp does not seem to have significant impact on the fundamental measures of this research. The final sample for this research contains 2450 firm-years observations, representing 566 CFOs of which 6,8% is female and distributed over 423 different firms.

Table 2 presents the descriptive statistics of the final sample firms across industry and fiscal year. The table indicates that the number of firm year observations does differ across fiscal year and industry. This was mainly due the merging of the separate databases and to missing data of CFO information between 1992-1998. Therefore, some companies have less than 10 firm year observations since data of the CFO tenure was not available in the Execucomp database. But, because data for calculating accrual-based and real earnings management components is based on the total useful firm year observations from the Compustat database, with a least 10 firm year observations within an 2 SIC code, this is not a limitation.

Furthermore, some industry groups (SICCODE) as transportation & public utilities (48 & 49) and finance, insurance and real estate firms (62 & 63) are less represented. While mining (13), manufacturing (20, 28, 35, 36, 37 and 38) and services (73) industries have more firm year observations presented. Therefore a comparison was made with the initial sample of 8635 firm observations. These percentages of the initial sample are in line with table 2, and demonstrate that the same industry groups are more frequently present in the S&P 500 index.

**Table 2: Crosstabs statistics of final sample**

		Number of firms per fiscal year and industry-group												
		Firm year observations	Standard 2 SIC Industry Classification Code											
			13	20	28	35	36	37	38	48	49	62	63	73
Data Year Fiscal	1992	7	0	0	1	0	2	0	0	2	0	0	1	1
	1993	57	6	8	13	4	6	3	10	1	0	0	2	4
	1994	66	9	5	13	5	9	2	12	1	1	0	2	7
	1995	67	9	5	16	5	9	3	11	1	1	0	2	5
	1996	75	12	5	15	5	12	4	11	2	2	0	1	6
	1997	79	9	8	13	6	14	3	15	2	3	0	1	5
	1998	77	9	8	12	7	16	3	14	1	2	0	1	4
	1999	98	11	9	15	14	15	5	16	2	2	0	1	8
	2000	114	15	8	18	16	19	3	19	2	3	0	0	11
	2001	117	15	9	14	15	19	7	16	2	4	1	1	14
	2002	136	14	12	21	16	19	8	21	3	4	3	1	14
	2003	145	15	13	23	19	19	6	20	6	5	1	1	17
	2004	149	16	15	23	19	19	7	19	6	4	1	3	17
	2005	162	19	13	25	19	19	8	18	8	4	1	3	25
	2006	205	23	18	34	23	22	10	23	12	5	1	5	29
	2007	232	24	23	38	27	25	9	25	13	5	4	6	33
	2008	230	22	22	36	27	27	11	23	13	5	3	4	37
	2009	217	23	21	34	22	24	9	24	14	5	3	4	34
	2010	217	25	22	34	21	21	9	26	14	5	3	3	34
Total		2450	276	224	398	270	316	110	323	105	60	21	42	305

## Descriptive statistics

The descriptive statistics of this research are presented in Table 3 below. The mean of accrual-based earnings management is 0.0046, while real earnings management had a mean of 0.0147. The proxies of real earnings management have a mean of respectively 0.0094, 0.0058 and 0.0026. The means of accrual-based and real earnings management, including the proxies, are quite low, which is consistent with Cohen et al. (2008) and Zang (2012).

**Table 3: Descriptive statistics of final sample**

	N	Minimum	Maximum	Mean	Std. Deviation
DISCRETIONARY	2450	-,610903056	,7461627800	,0046381292	,0865895719
DISCRETIONARYABS	2450	,0000168714	,7461627800	,0514047383	,0698265629
RM_PROXY	2450	-,953481422	,9651943465	,0147449370	,1471376462
RM_PROXYABS	2450	,0000033471	,9651943465	,0911424869	,1164330021
DISCRSGE	2450	-,802836834	,9651943465	,0094575547	,1214083270
DISCRampD	1832	-,510024811	,6838938396	,0058366904	,0647033610
DISCRADV	855	-,273540149	,4623979245	,0026447600	,0398914597
EARLYYEARSCFO	2450	0	1	,26	,441
LASTYEARCFO	2450	0	1	,12	,324
CFO tenure	2450	0	1	,37	,484
CFO female	2450	0	1	,07	,252
CFOTENUREFEMALE	2450	0	1	,03	,175
CFOAGE	1917	33	68	50,71	6,086
LEVERAGE	1829	,0000137376	1,469075951	,2329706360	,1606743486
ROA	2450	-5,77850327	,5033718368	,0657411052	,1521770946
SIZE	2450	1,913930355	5,681169754	3,831698677	,6126466854
Market to Book ratio	2450	-11,8228774	12,99410305	-,326088448	,9341517276
INDUSTRY	2450	0	1	,34	,473
BIG FOUR	2450	0	1	,93	,251
Valid N (listwise)	423				

The sample period is from 1992 to 2010. *Discretionary* is value of the discretionary accruals of firm *i* and year *t*, estimated as the residual of equation (3). *DiscretionaryABS* is the absolute value of the discretionary accruals of firm *i* and year *t*, estimated as the residual of equation (3). *RM\_Proxy* is the absolute value of the discretionary expenses of firm *i* in year *t*, defined as sum of R&D, advertising, and selling, general and administrative expenses, estimated at the residual of equation (7). *RM\_ProxyABS* is the absolute value of the discretionary expenses of firm *i* in year *t*, defined as sum of R&D, advertising, and selling, general and administrative expenses, estimated at the residual of equation (7). *DISCRSGE* is the discretionary expenses of firm *i* in year *t*, defined as the selling, general and administrative expenses, estimated at the residual of equation (6). *DISCRampD* is the discretionary expenses of firm *i* in year *t*, defined as the R&D expenses, estimated at the residual of equation (5). *DISCRADV* is the discretionary expenses of firm *i* in year *t*, defined as the advertising expenses, estimated at the residual of equation (4). *EarlyyearCFO* is an indicator variable that equals one for firm-years that correspond to the first three years of the firm's CFO, and is zero otherwise. *Lastyear* is an indicator variable that equals one for firm-years that correspond to the turnover year of the firm's CFO, and is zero otherwise. *CFO<sub>tenure</sub>* is an indicator variable that equals one for firm-years that correspond to the first three years and prior to the turnover year of the firm's CFO, and is zero otherwise. *CFO<sub>gender</sub>* is an indicator variable that equals 1 if firms CFO is a female in year *t*, and otherwise will be 0. *CFO<sub>tenure</sub> \* CFO<sub>gender</sub>* is an indicator variable that equals 1 when the CFO is a female and *CFO<sub>tenure</sub>* is present in year *t*, and otherwise will be 0. *CFO Age* is the CFO's age at the beginning of year *t*. *Leverage* is defined as total debt divided by total assets at the beginning of year *t*. *ROA* is earnings before extraordinary items in year *t* divided by total assets at the beginning of the year *t*. *Size* is defined as the natural logarithm of total assets for firm *i* in year *t*. *Market to book* is defined as the market value of equity divided by the book value of equity at the beginning of year. *Industry* is an indicator variable that equals one if the firm operates in a high-litigation industry (SIC codes 2833–2836; 3570–3577; 3600–3674; 5200–5961, and 7370–7374), and zero otherwise. *Big Four* is defined 1 if firm is audited by one of the Big 4 auditors and 0 otherwise.

However, because this research will conduct only the absolute values of accrual based and real based earnings management, only these numbers will be of meaning in this research. These means of accrual based and real earnings management are 0.0514 and 0.0911 respectively. Which indicate that approximately 5% of the firms' earnings are managed through accrual based earnings management and 9% through the use of real earnings management. CFO<sub>tenure</sub> has a mean of 0.37, indicating that approximately 37% of the firms has to deal with effects of CFO change each year. Of which approximately 26% is the result of early year's changes and 12% is caused by CFOs leaving the firm. Consistent with Barua et al. (2010) the number of female CFO is low in organizations (7%). Size is relative high (3.831) which indicates that a large amount of the sample are larger firms than the corresponding firm-year average. The Market to book ratio of -0,3260 presents that the majority of the sample has a lower market value compared with their book value on average. On the contrary, the means of RAO (0,0657) and Leverage (0,233) are slightly higher which is in consensus with Zang (2012). The mean value of Big Four (93%) indicates that the majority of the sample is audited by a Big 4 audit firm. Industry has the mean value of 34% suggesting that approximately one third of the firms in the sample are operating in a high-litigation industry. Some of the main variables such as CFO age and Market to Book ratio have a large standard deviation. A large standard deviation indicates the values in the data set are farther away from the mean on average and indicates that the data differs a lot between firm year observations.

### **Correlation of the variables**

Table 4 and 5 presents respectively the Pearson and Spearman correlations between accrual-based and real earnings management, including the related variables in the regression models. The presentation of both Pearson and Spearman correlations are consistent with Zang (2012). The Pearson and the Spearman correlations between the absolute values of accrual-based and real earnings management are respectively 0.207 and 0.102. These significant correlations indicates that the use of accrual-based and real earnings management substitute each other. Also the SGE and R&D expenses have a significant correlation with accrual based earnings management.

The Pearson and the Spearman correlation of the real earnings management proxies are also significantly correlated with real earnings management. The SGE expenses has a strong correlation in both tests (Pearson 0.883 and Spearman 0.845), while R&D (Pearson 0.572 and Spearman 0.392) and ADV expenses (Pearson 0.363 and Spearman 0.250) have an average correlation with real earnings management proxy. Both correlations present approximately the

**Table 4: Pearson correlation**

Correlations																	
	DISCRETIONARYABS	RM_PROXYABS	DISCRSGEABS	DISCRRDABS	DISCRADVABS	EARLYYEARSCFO	LASTYEARCFO	CFO tenure	CFO female	CFOTENUREFEMALE	CFOAGE	LEVERAGE	ROA	SIZE	Market to Book ratio	INDUSTRY	BIG FOUR
DISCRETIONARYABS	1	,207**	,109**	,289**	,028	-,010	,021	,005	-,034	-,035	-,047*	,054*	-,19**	-,10**	,109**	,127**	-,029
RM_PROXYABS	,207**	1	,883**	,572**	,363**	-,035	-,026	-,049*	,048*	-,004	-,026	-,048*	,010	-,15**	,067**	,127**	-,034
DISCRSGEABS	,109**	,883**	1	,211**	,160**	-,030	-,029	-,048*	,053**	,006	-,014	-,052*	,026	-,14**	,053**	,068**	-,044*
DISCRRDABS	,289**	,572**	,211**	1	,021	-,038	,006	-,026	,000	-,006	-,070**	-,002	-,042	-,09**	,069**	,124**	-,009
DISCRADVABS	,028	,363**	,160**	,021	1	,033	-,004	,030	,040	,004	,012	,026	-,009	-,07*	,024	,007	,028
EARLYYEARSCFO	-,010	-,035	-,030	-,038	,033	1	-,157**	,775**	,051*	,199**	-,245**	-,027	,016	,07**	-,013	,019	,018
LASTYEARCFO	,021	-,026	-,029	,006	-,004	-,157**	1	,474**	-,004	,071**	,130**	-,008	-,022	,020	,024	,011	-,001
CFO tenure	,005	-,049*	-,048*	-,026	,030	,775**	,474**	1	,048*	,233**	-,147**	-,027	-,001	,07**	,002	,018	,014
CFO female	-,034	,048*	,053**	,000	,040	,051*	-,004	,048*	1	,666**	-,109**	-,039	,050*	-,011	-,051*	,040*	,002
CFOTENUREFEMALE	-,035	-,004	,006	-,006	,004	,199**	,071**	,233**	,666**	1	-,087**	-,034	,041*	,015	-,028	,020	,030
CFOAGE	-,047*	-,026	-,014	-,070**	,012	-,245**	,130**	-,147**	-,109**	-,087**	1	-,052*	,092**	,13**	-,081**	-,064**	,019
LEVERAGE	,054*	-,048*	-,052*	-,002	,026	-,027	-,008	-,027	-,039	-,034	-,052*	1	-,19**	-,08**	,171**	-,156**	-,015
ROA	-,189**	,010	,026	-,042	-,009	,016	-,022	-,001	,050*	,041*	,092**	-,186**	1	-,025	-,218**	,005	-,041*
SIZE	-,101**	-,151**	-,140**	-,090**	-,069*	,071**	,020	,075**	-,011	,015	,135**	-,079**	-,025	1	-,369**	-,045*	,153**
Market to Book ratio	,109**	,067**	,053**	,069**	,024	-,013	,024	,002	-,051*	-,028	-,081**	,171**	-,22**	-,37**	1	-,041*	-,035
INDUSTRY	,127**	,127**	,068**	,124**	,007	,019	,011	,018	,040*	,020	-,064**	-,156**	,005	-,05*	-,041*	1	,031
BIG FOUR	-,029	-,034	-,044*	-,009	,028	,018	-,001	,014	,002	,030	,019	-,015	-,041*	,15**	-,035	,031	1

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

The sample period is from 1992 to 2010. *DiscretionaryABS* is the absolute value of the discretionary accruals of firm *i* and year *t*, estimated as the residual of equation (3). *RM\_ProxyABS* is the absolute value of the discretionary expenses of firm *i* in year *t*, defined as sum of R&D, advertising, and selling, general and administrative expenses, estimated at the residual of equation (7). *DISCRSGEABS* is the absolute value of the discretionary expenses of firm *i* in year *t*, defined as the selling, general and administrative expenses, estimated at the residual of equation (6). *DISCRampDABS* is the absolute value of the discretionary expenses of firm *i* in year *t*, defined as the R&D expenses, estimated at the residual of equation (5). *DISCRADVABS* is the absolute value of the discretionary expenses of firm *i* in year *t*, defined as the advertising expenses, estimated at the residual of equation (4). *EarlyyearCFO* is an indicator variable that equals one for firm-years that correspond to the first three years of the firm's CFO, and is zero otherwise. *Lastyear* is an indicator variable that equals one for firm-years that correspond to the turnover year of the firm's CFO, and is zero otherwise. *CFO<sub>tenure</sub>* is an indicator variable that equals one for firm-years that correspond to the first three years and prior to the turnover year of the firm's CFO, and is zero otherwise. *CFO<sub>gender</sub>* is an indicator variable that equals 1 if firms CFO is a female in year *t*, and otherwise will be 0. *CFO<sub>tenure</sub>\*CFO<sub>gender</sub>* is an indicator variable that equals 1 when the CFO is a female and CFO<sub>tenure</sub> is present in year *t*, and otherwise will be 0. *CFO Age* is the CFO's age at the beginning of year *t*. *Leverage* is defined as total debt divided by total assets at the beginning of year *t*. *ROA* is earnings before extraordinary items in year *t* divided by total assets at the beginning of the year *t*. *Size* is defined as the natural logarithm of total assets for firm *i* in year *t*. *Market to book* is defined as the market value of equity divided by the book value of equity at the beginning of year. *Industry* is an indicator variable that equals one if the firm operates in a high-litigation industry (SIC codes 2833–2836; 3570–3577; 3600–3674; 5200–5961, and 7370–7374), and zero otherwise. *Big Four* is defined 1 if firm is audited by one of the Big 4 auditors and 0 otherwise

**Table 5: Spearman correlation**

Correlations																	
	DISCRETIONARY ABS	RM_PROXY ABS	DISCRS GEABS	DISCRR DABS	DISCRA DVABS	EARLY YEARS CFO	LASTY EARCFO	CFO tenure	CFO female	CFOTEN UREFEM ALE	CFOAGE	LEVERA GE	ROA	SIZE	Market to Book ratio	INDUST RY	BIG FOUR
DISCRETIONARYABS	1,000	,102**	,083**	,116**	,065	,003	,044*	,032	-,007	-,002	-,038	,041	-,022	-,118**	,166**	,125**	-,035
RM_PROXYABS	,102**	1,000	,845**	,392**	,250**	-,014	-,035	-,034	,051*	,002	-,012	-,054*	,040*	-,119**	,106**	,116**	-,030
DISCRSGEABS	,083**	,845**	1,000	,223**	,172**	-,015	-,028	-,034	,055**	,010	,012	-,040	,025	-,117**	,099**	,079**	-,049*
DISCRRDABS	,116**	,392**	,223**	1,000	,161**	-,027	-,023	-,033	,016	,018	-,055*	-,047	-,004	-,093**	,131**	,167**	,040
DISCRADVABS	,065	,250**	,172**	,161**	1,000	,051	,016	,060	,057	,015	,001	-,019	-,001	-,108**	,073*	-,004	,055
EARLYYEARS CFO	,003	-,014	-,015	-,027	,051	1,000	-,157**	,775**	,051*	,199**	-,246**	-,026	-,001	,072**	-,055**	,019	,018
LASTYEARCFO	,044*	-,035	-,028	-,023	,016	-,157**	1,000	,474**	-,004	,071**	,125**	,002	-,041*	,018	,020	,011	-,001
CFO tenure	,032	-,034	-,034	-,033	,060	,775**	,474**	1,000	,048*	,233**	-,151**	-,022	-,025	,074**	-,034	,018	,014
CFO female	-,007	,051*	,055**	,016	,057	,051*	-,004	,048*	1,000	,666**	-,114**	-,041	,084**	-,016	-,032	,040*	,002
CFOTENUREFEMALE	-,002	,002	,010	,018	,015	,199**	,071**	,233**	,666**	1,000	-,089**	-,028	,044*	,010	-,036	,020	,030
CFOAGE	-,038	-,012	,012	-,055*	,001	-,246**	,125**	-,151**	-,114**	-,089**	1,000	-,065*	,045*	,131**	-,131**	-,066**	,013
LEVERAGE	,041	-,054*	-,040	-,047	-,019	-,026	,002	-,022	-,041	-,028	-,065*	1,000	-,315**	-,046*	,200**	-,211**	-,036
ROA	-,022	,040*	,025	-,004	-,001	-,001	-,041*	-,025	,084**	,044*	,045*	-,315**	1,000	-,170**	-,470**	,123**	-,050*
SIZE	-,118**	-,119**	-,117**	-,093**	-,108**	,072**	,018	,074**	-,016	,010	,131**	-,046*	-,170**	1,000	-,642**	-,037	,154**
Market to Book ratio	,166**	,106**	,099**	,131**	,073*	-,055**	,020	-,034	-,032	-,036	-,131**	,200**	-,470**	-,642**	1,000	,039	-,077**
INDUSTRY	,125**	,116**	,079**	,167**	-,004	,019	,011	,018	,040*	,020	-,066**	-,211**	,123**	-,037	,039	1,000	,031
BIG FOUR	-,035	-,030	-,049*	,040	,055	,018	-,001	,014	,002	,030	,013	-,036	-,050*	,154**	-,077**	,031	1,000

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

The sample period is from 1992 to 2010. *DiscretionaryABS* is the absolute value of the discretionary accruals of firm *i* and year *t*, estimated as the residual of equation (3). *RM\_ProxyABS* is the absolute value of the discretionary expenses of firm *i* in year *t*, defined as sum of R&D, advertising, and selling, general and administrative expenses, estimated at the residual of equation (7). *DISCRSGEABS* is the absolute value of the discretionary expenses of firm *i* in year *t*, defined as the selling, general and administrative expenses, estimated at the residual of equation (6). *DISCRampDABS* is the absolute value of the discretionary expenses of firm *i* in year *t*, defined as the R&D expenses, estimated at the residual of equation (5). *DISCRADVABS* is the absolute value of the discretionary expenses of firm *i* in year *t*, defined as the advertising expenses, estimated at the residual of equation (4). *EarlyyearCFO* is an indicator variable that equals one for firm-years that correspond to the first three years of the firm's CFO, and is zero otherwise. *Lastyear* is an indicator variable that equals one for firm-years that correspond to the turnover year of the firm's CFO, and is zero otherwise. *CFO<sub>tenure</sub>* is an indicator variable that equals one for firm-years that correspond to the first three years and prior to the turnover year of the firm's CFO, and is zero otherwise. *CFO<sub>gender</sub>* is an indicator variable that equals 1 if firms CFO is a female in year *t*, and otherwise will be 0. *CFO<sub>tenure</sub>\*CFO<sub>gender</sub>* is an indicator variable that equals 1 when the CFO is a female and *CFO<sub>tenure</sub>* is present in year *t*, and otherwise will be 0. *CFO Age* is the CFO's age at the beginning of year *t*. *Leverage* is defined as total debt divided by total assets at the beginning of year *t*. *ROA* is earnings before extraordinary items in year *t* divided by total assets at the beginning of the year *t*. *Size* is defined as the natural logarithm of total assets for firm *i* in year *t*. *Market to book* is defined as the market value of equity divided by the book value of equity at the beginning of year. *Industry* is an indicator variable that equals one if the firm operates in a high-litigation industry (SIC codes 2833–2836; 3570–3577; 3600–3674; 5200–5961, and 7370–7374), and zero otherwise. *Big Four* is defined 1 if firm is audited by one of the Big 4 auditors and 0 otherwise

same correlation values between real earnings management and the proxy. The reason for this is because when SGE expenses is available, and data for R&D and ADV are missing, these two expenses are set to zero in order to calculate RM\_proxy.

Most of the independent variables are not significantly correlated with accrual-based earnings management and real earnings management in the Pearson correlation as well as in the Spearman correlation. Both table 4 and 5 presents a weak positive correlation between CFO<sub>tenure</sub> and accrual-based earnings management (Pearson 0.005 and Spearman 0.032). This correlation explains that firms of the sample that changed their CFO did not use more accrual-based earnings management then firms that did not changed their CFO. This is also shown for the LastYear tenure correlation with accrual-based earnings management. Where the Spearman test significant at the level of 0.05 and therefore assign the use of more accrual-based earnings management to the LastYear tenure of the CFO.

On the contrary, Pearson (-0,049) and Spearman (-0,034) reports a negative correlations with CFO<sub>tenure</sub> and real earnings management. This negative correlation indicates that firms of the sample that changed their CFO use less real earnings based management then firms that did not changed their CFO. However this correlation is only found significant in the Pearson test.

CFO<sub>gender</sub> is negative correlated with accrual-based earnings management (Pearson -0,034 and Spearman -0.007). This correlation explains that firms of the sample with female CFOs use less accrual-based earnings management then firms with male CFOs in place. This in line with the expectation of previous research (Burua et al, 2010), however this is not significant. But in comparison with accrual-based earnings management the findings are that there is a positive significant correlations with CFO<sub>gender</sub> and real earnings management (Pearson 0.048 and Spearman 0.051). Both tests are significant which gives evidence that this correlation indicates that firms of the sample with female CFOs use more real based earnings management then firms with male CFOs, which is contrary to findings of previous research.

Most of the control variables report a weak significant correlation with accrual based and real earnings management in both tests. The remarkable difference is that CFOage is only significant correlated with accrual based earnings management in the Pearson test, but not in the Spearman test. Also contrary to the expectation, the correlation indicates that Big 4 audit firm are less engaged in accrual based and real earnings management in both correlations test. But this may be due to the fact that 93% of the sample size is audited by a Big 4 audit firm which uncommon in previous research. But contrary to the expectations, the more the firms of

sample are audited by Big 4 the less the firms of sample are engaged with accrual-based and real earnings management.

In general, the Spearman correlation provide a stronger result than the Pearson correlation. This might be the fact that Spearman correlation is a non-parametric statistics and is not concerned with normal distribution, while the Pearson correlation is appropriate in a normal distributed sample (Field, 2013). To be sure whether the distributions for both earnings management strategies are approximately normal the skewness and kurtosis were checked. These indicates a non-normal distribution for both accrual-based earnings management (0,256 and 14,227) and real earnings management (1,145 and 7,533). In a normal distribution the skewness and kurtosis have a value of 0. Farther the value is away from zero, the more non-normal the distribution (Field, 2013, p.210). Also the normality of the distribution for both strategies were tested in SPSS using the Kolmogorov-Smirnov test. The Kolmogorov-Smirnov test is designed to test the normality by comparing the data to a normal distribution with the same mean and standard deviation of the sample (Field, 2013). Both test are significant at the level of 1%, indicating that the distribution are not normal. Therefore the Spearman correlation is more justifiable to be applied on the variables in this research. The next section presents the relations between the two dependent and different independent variables.

### **Multivariate regression results**

In order to test the developed hypotheses the multivariate equations will be regressed. The equations contain more than one independent variables such as CFO<sub>tenure</sub> and CFO<sub>gender</sub> related to accrual-based and real earnings management and control variables, which will explain both dependent variables real and accrual-based earnings management. The regressions are estimated on the bases of absolute values of the dependent variables. Which reflected in the absolute values of earnings management presenting only positive values, because otherwise the effect of earnings smoothing and ‘big bath’ accounting can obscure the use of both techniques (Kirschenheiter & Melumad, 2002). Also this research is not about if earnings management is positive or negative, but if both earnings management techniques are used and influenced by CFO tenure and CFO gender. Otherwise the negative and positive results will abolish the overall effect.

In the regression models the predicted variable should not be highly correlated with other predictors. To identify the correlations between the predictors a multicollinearity test has been conducted. The multicollinearity reports whether two or more predictors in a regression model are highly correlated. The multicollinearity is reported by the variance inflation factor

(VIF) and the tolerance value. VIF value should be lower than 10 and the tolerance value should be higher than 0.1 (computed as  $1/\text{VIF}$  value). The multicollinearity test for all the regression models used in this research reports a VIF value lower than 10 and tolerance value higher than 0.2. This indicates that the multivariate regression models do not demonstrate multicollinearity and the use of those models are justified (Field, 2013, p.213).

Table 6 below reports the outcome of the multivariate regression models. The Wilks' Lambda test is used in the analysis of variance to test whether there are differences between the means of CFO tenure, CFO gender, CFO tenure\*CFO gender and control variables on a combination of both discretionary accruals and real earnings management. Also in Appendix A the separated tests of between subject effects are presented. In order to keep the results uncluttered an overview is presented in Table 7. The coefficients are presented that explains how strong the independent and the dependent variables are associated. This also provides information whether the variables are positively or negatively associated and whether the variables are significantly associated. Table 6 presents the outcome of the multivariate regression model using Wilks' Lambda test. Whilst Table 7 presents how the dependent variables differ for the independent variables.

The Wilks' Lambda tested a combination of both discretionary accruals and real earnings management proxy. This is a direct measure of the proportion of variance in the combination of dependent variables that is unaccounted for by the independent variable. In the tables below a large proportion of the variance is accounted for by the independent variables. This suggests that there is an effect from the independent variables and that these have different mean values (Everitt & Dunn, 1991).

There was a statistically significant difference in earnings management based on CFO tenure,  $F(2, 1529) = 3.588, p < .05$ ; Wilk's  $\Lambda = 0.995$ . Which indicate that there is an approximately 2,8% chance that this outcome is based on the hypothesis that the two groups on both dependent variables had the same average. Thus, there is no significant difference between the two methods of earnings management (assuming a conventional significance level of 5%). Furthermore there is a statistically significant difference in earnings management based on CFO Gender,  $F(2, 1529) = 3.151, p < .05$ ; Wilk's  $\Lambda = 0.996$ . Therefore there is no significant difference between the two methods of earnings management. This is also presented in table 6, where there is a small statistically significant difference in earnings management based on CFO Tenure,  $F(2, 1527) = 2.814, p < .1$ ; Wilk's  $\Lambda = 0.996$  (assuming a conventional significance level of 10%). And also a small statistically significant difference in earnings management based on CFO Gender,  $F(2, 1527) = 3,088, p < .05$ ; Wilk's  $\Lambda = 0.996$ .

**Table 6: Wilks' Lambda test of multivariate regressions hypothesis 1-3**

	H1			H2			H3		
Effect	Value	F	Sig.	Value	F	Sig.	Value	F	Sig.
Intercept	,981	14,517 <sup>b</sup>	,000	,983	13,180 <sup>b</sup>	,000	,982	13,621 <sup>b</sup>	,000
CFOTENURE	,995	3,588 <sup>b</sup>	,028**				,996	2,814 <sup>b</sup>	,060*
CFOGENDER				,996	3,151 <sup>b</sup>	,043**	,996	3,088 <sup>b</sup>	,046**
CFOTENURE* CFOGENDER							,999	,697 <sup>b</sup>	,498
CFOAGE	1,00	,125 <sup>b</sup>	,882	,999	,451 <sup>b</sup>	,637	1,000	,210 <sup>b</sup>	,810
LEVERAGE	,996	2,886 <sup>b</sup>	,056*	,997	2,414 <sup>b</sup>	,090***	,997	2,487 <sup>b</sup>	,084*
ROA	,939	49,290 <sup>b</sup>	,000***	,940	48,482 <sup>b</sup>	,000***	,940	48,396 <sup>b</sup>	,000***
SIZE	,992	5,852 <sup>b</sup>	,003***	,991	6,615 <sup>b</sup>	,001***	,993	5,718 <sup>b</sup>	,003***
MarkettoBookratio	,997	2,403 <sup>b</sup>	,091*	,997	2,306 <sup>b</sup>	,100*	,997	2,465 <sup>b</sup>	,085*
INDUSTRY	,991	7,312 <sup>b</sup>	,001***	,991	7,028 <sup>b</sup>	,001***	,991	7,213 <sup>b</sup>	,001***
BIGFOUR	,999	,469 <sup>b</sup>	,625	,999	,516 <sup>b</sup>	,597	,999	,615 <sup>b</sup>	,541

\*\*\* Significant at the 1% level \*\*Significant at the 5% level \*Significant at the 10% level

Multivariate dependent variables: DiscretionaryABS and RM\_ProxyABS

H1 Design: Intercept + CFOTENURE + CFOAGE + LEVERAGE + ROA + SIZE + MarkettoBookratio + INDUSTRY + BIGFOURCONTROLVARIABLE

H2 Design: Intercept + CFOGENDER + CFOAGE + LEVERAGE + ROA + SIZE + MarkettoBookratio + INDUSTRY + BIGFOURCONTROLVARIABLE

H3 Design: Intercept + CFOTENURE + CFOGENDER + CFOTENURE\*CFOGENDER + CFOAGE + LEVERAGE + ROA + SIZE + MarkettoBookratio + INDUSTRY + BIGFOURCONTROLVARIABLE

**Table 7: Overview of the coefficients of the variables**

	H1		H2		H3	
Variables	Discretionary ABS	RM_Proxy ABS	Discretionary ABS	RM_Proxy ABS	Discretionary ABS	RM_Proxy ABS
Intercept	,075*** (17,308)	,197*** (17,232)	,080*** (17,558)	,147*** (12,853)	,078*** (17,083)	,164*** (14,399)
CFOTENURE	,000 (,001)	,080*** (7,036)			,000 (,024)	,061** (5,360)
CFOGENDER			,007 (1,586)	,044* (3,804)	,002 (,342)	,060** (5,271)
CFOTENURE* CFOGENDER					,001 (,186)	,015 (1,329)
CFO AGE	,001 (,250)	,001 (,080)	,002 (,399)	,004 (,363)	,002 (,364)	,000** (,020)
LEVERAGE	,000 (0,178)	,104** (5,167)	,001 (,125)	0,050** (4,361)	,001 (,137)	,035** (4,475)
ROA	,445*** (92,217)	,001 (,113)	,439*** (92,012)	,004 (,279)	,438*** (95,593)	,002 (,169)
SIZE	,014* (3,151)	,115*** (10,012)	,015* (3,267)	,133*** (11,562)	,015* (3,228)	,110*** (9,679)
MARKBOOK	,014* (3,086)	,028 (,014)	,013 (2,920)	,028 (2,409)	,013* (2,928)	,032* (2,774)
INDUSTRY	,030*** (6,453)	,118*** (10,348)	,030*** (6,633)	,110*** (9,570)	,030*** (6,614)	,114*** (10,003)
BIG FOUR	,002 (,370)	,005 (,425)	,002 (,452)	,005 (,421)	,002 (,447)	,007 (,593)
ADJUSTED R	,078	,021	,079	,019	,078	,024

\*\*\* Significant at the 1% level \*\*Significant at the 5% level \*Significant at the 10% level

The t-values are reported below the regression coefficients in parenthesis.

The sample period is from 1992 to 2010. *DiscretionaryABS* is the absolute value of the discretionary accruals of firm *i* and year *t*, estimated as the residual of equation (3). *RM\_ProxyABS* is the absolute value of the discretionary expenses of firm *i* in year *t*, defined as sum of R&D, advertising, and selling, general and administrative expenses, estimated at the residual of equation (7). *CFO<sub>tenure</sub>* is an indicator variable that equals one for firm-years that correspond to the first three years and prior to the turnover year of the firm's CFO, and is zero otherwise. *CFO<sub>gender</sub>* is an indicator variable that equals 1 if firm's CFO is a female in year *t*, and otherwise will be 0. *CFO<sub>tenure</sub> \* CFO<sub>gender</sub>* is an indicator variable that equals 1 when the CFO is a female and *CFO<sub>tenure</sub>* is present in year *t*, and otherwise will be 0. *CFO Age* is the CFO's age at the beginning of year *t*. *Leverage* is defined as total debt divided by total assets at the beginning of year *t*. *ROA* is earnings before extraordinary items in year *t* divided by total assets at the beginning of the year *t*. *Size* is defined as the natural logarithm of total assets for firm *i* in year *t*. *Market to book* is defined as the market value of equity divided by the book value of equity at the beginning of year. *Industry* is an indicator variable that equals one if the firm operates in a high-litigation industry (SIC codes 2833–2836; 3570–3577; 3600–3674; 5200–5961, and 7370–7374), and zero otherwise. *Big Four* is defined 1 if firm is audited by one of the Big 4 auditors and 0 otherwise.

Therefore, there is no significant difference between the two methods of earnings management. This is also presented in H3, where there is a small statistically significant difference in earnings management based on CFO Tenure,  $F(2, 1527) = 2.814, p < .1$ ; Wilk's  $\Lambda = 0.996$  (assuming a conventional significance level of 10%). And also a small statistically significant difference in earnings management based on CFO Gender,  $F(2, 1527) = 3.088, p < .05$ ; Wilk's  $\Lambda = 0.996$ .

### Coefficients of the regression variables

Because the above test achieved a statistically significant result, the dependent variables and how they differ from the independent variable can be calculated. All three hypothesis analyses in table 7 reports higher adjusted R squares for accrual-based earnings management compared to real earnings management. The adjusted R square indicates how well the independent variables such as the *CFO<sub>tenure</sub>* and the control variables explained the variance in both dependent variables, accrual-based and real earnings management. The variance in accrual-based and real earnings management concerning with respectively hypothesis 1 are explained by 7.8% and 2.1%. The adjusted R square for the accrual-based earnings management in hypothesis H2 is 7.9 %, while 1.9 % is noted for the proxy of real earnings management. The variance in hypothesis 3 are explained by 7.8% and 2.4% respectively for accrual-based earnings management and real earnings management. These low adjusted R square scores are consistent with prior studies such as Cohen et al. (2008).

Also the coefficients of the variables in the regressions are presented in Table 7. The intercept is the minimum value the dependent variable will take in case all the other variable have a value of zero. Table 7 reports that the intercepts are positively associated with the both earnings management methods, and that they are positive related and significant at level 1%. Therefore, it is unlikely that the effect is coincidence and thus there is a relationship between both discretionary accruals and real earnings management with the independent variables.

However it is noticeable that the intercepts for the real earnings management are slightly higher than for the accrual-based earnings management.

The reported coefficient of .000 for  $CFO_{tenure}$  shows a no association with accrual-based earnings management. Contrary the relationship between  $CFO_{tenure}$  and real earnings management shows a positive association of 8,0%. This association indicates that when a firm changed their CFO the real earnings management will increase by 8%. This relation is also significant at level 1% which indicate that is not based on coincidence.

$CFO_{gender}$  shows no association with accrual-based earnings management and a slightly positive association with real earnings management (4,4%). This relation is significant at the level of 10%. Therefore cautious is required because the effect is not significant at level 1% or 5%. The same applies to the mitigation effect of  $CFO_{tenure} * CFO_{gender}$ . There is no significant influence of the mitigation variable. However, the major difference is that the association from CFO Tenure with real earnings management has declined 1,9% and the association from CFO Gender with real earnings management has improved by 1,6%.

Also many of the control variables are significant association with both accrual-based and real earnings management. Leverage is associated with real earnings management while showing no effect with accrual-based earnings management. RAO on the other hand, shows a positive association with accrual-based earnings management, while showing no effect with real earnings management. Size has a small significant association with accrual based earnings management, but shows a greater significant effect with real earnings management. Market-to-book ratio shows only little significant effect, while Industry shows strong significant associations with both discretionary earnings management and real earnings management. BigFour shows no significant level at all. These described results will be analyzed in depth and compared with each hypothesis and previous research in the next section.

### **CFO tenure and earnings management analysis**

The expectation was that when firms changed their CFO the use of accrual-based and real earnings management will be increased, indicating a positive association. The findings are only partly consistent with the expectation of hypothesis 1. The findings presents no association between the CFO tenure and accrual-based earnings management. But shows a significant positive association with real earnings management. This support the notion that CFOs have incentive to overstate real earnings management components when CFO change tenure, was presumably because of the horizon problem of the old and new CFO. However, CFO tenure is not significantly associated with the use of accrual-based earnings management. Indicating that

CFOs do not use accrual-based earnings management to increase or decrease earnings one year prior and in the first three years of the CFO tenure. This is in contrast with previous findings of Ali & Zang (2015), where CEO tenure was tested. A possible explanation is that CEOs have different incentives or use different techniques compared with CFOs. This suggests that hypothesis 1 is only partially proven.

In order to make a distinction between earnings management in the first 3 years of the CFO tenure and last year of CFO tenure, the regression of hypothesis 1 is performed again with the individual variables *EarlyYears* and *LastYear* (Appendix B). This suggests that there is no significant effect with accrual-based earnings management. Whilst there is a significant effect of both individual variables with real earnings management. *EarlyYears* and *LastYear* have a positive association and are significant at level 0.05. Because they do not differ in level of significance and the coefficients are approximately equal, no statement can be made regarding if CFOs use real earnings management more frequently in the early years or in their final year of tenure.

The expectation was that CFO age had a negative link with earnings management, because when the CFOs get closer to retirement, their incentive to invest in R&D, ADV and GSE expensive reduces. And also because it's favorable effect on reported earnings is likely to show up only after they retire (Cheng & Warfield, 2005). However, no significant effect showed in both earnings management methods. Also the coefficient on *Big Four* is not significant, which is in line with the findings of Cohen et al. (2008). Because *Big Four* audit firms have shown lower income decreasing abnormal accruals compared with firms audited by other audit firms (Becker et al., 1998). An explanation for this is due to the fact that 93% of the S&P 500 firms in this research is audited by *Big Four* companies, while other research use other firms where the rate of *Big Four* audits is for example 44% (Yaşar, 2013).

There are other effects in the control variables of the accrual-based and real earnings models that are significant. The coefficient on *ROA* is significantly positive with accrual-based earnings management, consistent with the result in Kothari et al. (2005). They argue that there is spurious indication of discretionary accruals being high in firms with unusual performance. The coefficient on *Size* is significant with both models, consistent with the argument that smaller firms tend to spend proportionately more on R&D and advertising (Mansfield, 1981). The coefficient on *Leverage* is significant with real earnings management, suggesting that firms in financial distress tend to invest less in R&D and other discretionary expenses (Kini and Williams, 2012). But the coefficient on *Market to Book* ratio is only significant with accrual-based earnings management, which is inconsistent with the notion that growth firms tend to

spend more on R&D and marketing (Roychowdhury, 2006). Also, the control variable for a high-litigation industry is significant which is inconsistent with previous research (Huang, 2012).

### **CFO gender and earnings management analysis**

The expectation was that when a female CFO is in place the use of accrual-based and real earnings management will be decreased, indicating a negative association. The findings presented in table 7 are inconsistent with this expectation of hypothesis 2. The findings presents a small association between the CFO gender and accrual-based earnings management, which is not significant. Which is opposite of the findings of Barua et al. (2010), where CFO<sub>gender</sub> is negative and significant at level 0.01 in different regressions. In their research they use less observations and only data of one financial year simultaneously (2004 and 2005). Also real earnings management is not examined in their research. This difference may explain the discrepancy in findings.

CFO gender is however significantly associated with real earnings management. This finding indicate that when a female CFO is in place, more use is made of real earnings management. This associating is only significantly on the level of 10% which indicate that this correlation is not very strong and can be the effect of coincidence or error. Therefore, the results of this research only gives small support for the effect of CFO gender on real earnings management. Research of Adams & Ferreira (2009) can partially explain this finding, indicating that gender-diverse boards are more sensitive to stock performance and equity-based compensation.

But consistent with the influence of earning management on the control variables, the most of the control variables of CFO gender are significant. The only difference is that Market-to-Book ratio and Size are no longer significant associated with accrual-based earnings management. The coefficient of accrual based earnings management on ROA and Industry are significantly associated. Herewith the only difference compared with hypothesis 1, is that ROA is significant on a lower level. Leverage is significantly related with real earnings management which indicate that firms in financial distress with female CFOs tend to invest more in R&D and other discretionary expenses compared to male CFOs. Which is inconsistent with previous general research of Kini and Williams (2012) in which no significant findings were found between male and female CFOs. Furthermore, the control variables Size and Industry in the real earnings management model are significant.

### **Moderating effect of CFO gender analysis**

Given the fact that the relationship between the CFO and earnings management is a recent issue that mainly relies on one feature of tenure or gender diversity. This study includes the overall expectation that earnings management is not only influenced by CFO tenure but is also influenced by the gender of the CFO. An additional test examined the influence of CFO gender on the relationship between CFO tenure and earnings management. The expectation was that CFO gender will moderate this positive association between CFO tenure with earnings management.

The findings presented in table 7 are not consistent with this expectation of hypothesis 3. The findings presents no real change in the association between the CFO gender and accrual-based earnings management in hypothesis 2. This indicates that gender has no influence on the relationship between CFO tenure and discretionary earnings management. However gender does influence the variables CFO tenure and CFO gender on the dependent variable real earnings management compared with results from hypothesis 2. The major difference is that the association from CFO Tenure with real earnings management has declined 1,9% and the association from CFO Gender with real earnings management has improved by 1,6%. Also the level of the significantly has dropped from 1% to 5%, and has increased from 10% to 5% respectively for CFO Tenure and CFO Gender. But, the results of this research does not provide any evidence to support hypothesis 3. Therefore it can be stated that CFO gender will not moderate between the positive association between CFO tenure and earnings management.

The only major difference is that CFO Age turned significant associated with real earnings management. But beyond the control variables are overall consistent with CFO tenure in hypothesis 1. The coefficient of discretionary earnings management on ROA, Size, Market-to-Book ratio and Industry are significantly positive. Also the control variables Leverage, Size and Industry in the real earnings management model are similar significant.

### **Robustness check**

In order to estimates how the regression coefficient behave when specific information was added or modified a few robustness checks are examined. Hereby verifying the correctness of the research and the validity. The first robustness check examined evidence from previous research that firms use the two earnings management strategies as substitutes in managing earnings (Cohen et al. 2008; Cohen and Zarowin 2010; Zang, 2012). Hereby executives' trade-off the two earnings management strategies based on their relative costs and benefits (Zang, 2012). Because one earnings management technique cannot explain the overall effect of

earnings management (Fields et al., 2001). Therefore, if real earnings management turns out to be unexpectedly high (low), then managers will decrease (increase) the amount of accrual-based earnings management they carry out. Also studies show that firms switch from one type of earnings management to another after the passage of SOX (Cohen et al., 2008), or around seasoned equity offerings (Cohen and Zarowin, 2010) and through political connections (Braam et al., 2015). So by studying how CFOs trade off these two strategies, this robustness check sheds light on the substitution effect of both accrual based management and real earnings management, through adding the other earnings management technique as an independent variable to the regression model.

These regressions coefficients are presented in table 8 and reports significant influence of accrual based earnings management on real earnings management and vice versa. These findings indicates that firms use accrual based earnings management as a substitute for real earnings management and vice versa. However the main conclusions of this research remain intact. Because CFO tenure and CFO gender are still significant associated with real earnings management and not with accrual based earnings management.

**Table 8: Overview of the coefficients of the variables with substitution effect.**

Variables	H1		H2		H3	
	Discretionary ABS	RM_Proxy ABS	Discretionary ABS	RM_Proxy ABS	Discretionary ABS	RM_Proxy ABS
<b>Intercept</b>	,052*** (11,681)	,141*** (12,621)	,060*** (13,402)	,098*** (8,715)	,057*** (12,733)	,112***
<b>Discretionary ABS</b>		,414*** (37,076)		,424*** (37,860)		,422***
<b>RM_Proxy ABS</b>	,166*** (37,076)		,169*** (37,860)		,170*** (37,909)	
<b>CFO Tenure</b>	,001 (,144)	,080*** (7,175)			,001 (,271)	,062**
<b>CFO Gender</b>			,011 (2,394)	,053** (4,712)	,004 (,906)	,065**
<b>CFOtenure* CFOgender</b>					,000 (,065)	,013
<b>CFO AGE</b>	,001 (,243)	,000 (,000)	,002 (,539)	,006 (,503)	,002 (,400)	,001
<b>LEVERAGE</b>	,003 (,607)	,063** (5,595)	,002 (,469)	0,053** (4,704)	,002 (,500)	,054**
<b>ROA</b>	,441*** (98,459)	,015 (1,342)	,432*** (96,667)	,011 (,955)	,432*** (96,613)	,013
<b>SIZE</b>	,008 (1,687)	,095*** (8,537)	,007 (1,663)	,111*** (9,943)	,008 (1,753)	,091***
<b>MARKBOOK</b>	,011 (2,347)	,019 (1,718)	,010 (2,202)	,019 (1,692)	,010 (2,155)	,022
<b>INDUSTRY</b>	,019** (4,253)	,091*** (8,140)	,020** (4,465)	,083*** (7,396)	,020** (4,400)	,087***
<b>BIG FOUR</b>	,002 (,514)	,006 (,569)	,003 (,612)	,007 (,581)	,003 (,636)	,009
<b>ADJUSTED R</b>	,099	,044	,101	,042	,100	,047

\*\*\* Significant at the 1% level \*\*Significant at the 5% level \*Significant at the 10% level

The t-values are reported below the regression coefficients in parenthesis.

The sample period is from 1992 to 2010. **DiscretionaryABS** is the absolute value of the discretionary accruals of firm *i* and year *t*, estimated as the residual of equation (3). **RM\_ProxyABS** is the absolute value of the discretionary expenses of firm *i* in year *t*, defined as sum of R&D, advertising, and selling, general and administrative expenses, estimated at the residual of equation (7). **CFO<sub>tenure</sub>** is an indicator variable that equals one for firm-years that correspond to the first three years and prior to the turnover year of the firm's CFO, and is zero otherwise. **CFO<sub>gender</sub>** is an indicator variable that equals 1 if firm's CFO is a female in year *t*, and otherwise will be 0. **CFO<sub>tenure</sub> \* CFO<sub>gender</sub>** is an indicator variable that equals 1 when the CFO is a female and CFO<sub>tenure</sub> is present in year *t*, and otherwise will be 0. **CFO Age** is the CFO's age at the beginning of year *t*. **Leverage** is defined as total debt divided by total assets at the beginning of year *t*. **ROA** is earnings before extraordinary items in year *t* divided by total assets at the beginning of the year *t*. **Size** is defined as the natural logarithm of total assets for firm *i* in year *t*. **Market to book** is defined as the market value of equity divided by the book value of equity at the beginning of year. **Industry** is an indicator variable that equals one if the firm operates in a high-litigation industry (SIC codes 2833–2836; 3570–3577; 3600–3674; 5200–5961, and 7370–7374), and zero otherwise. **Big Four** is defined 1 if firm is audited by one of the Big 4 auditors and 0 otherwise.

Further, the measurement of accrual based and real earnings management components was repeated as a robustness check, using a spreadsheet of cross-sectional regression coefficients, made by Professor Bushee from the Wharton University of Pennsylvania. For each firm year observation the 2 digit SIC code was matched with the components of accrual based and real earnings management to calculate equation (1) to (7) again. All these coefficients were used in order to test hypotheses 1 to 3 with coefficients based on a larger group of firm instead of the S&P 500 index. The main conclusions remain unchanged, which provides added confidence in the results obtained using only S&P 500 firms within a 2 SIC code with a least 10 firm year observations.

## Chapter 5: Conclusion

The effect of the CFO on earnings management in general, and especially the influence of their tenure and gender on earnings management has received little attention in previous research. This while the CFO in general has a significant influence on the performance and reporting of a firm and financial results. Also the effect of CFOs' gender diversity in combination with earnings management is underexposed in contemporary research. Whilst there is evidence to indicate that females in executive positions affect firms' performance positively (Farrell & Hersch, 2005). In general the researchers indicate greater caution in deal-making by female board members (Burua et al, 2010). However there is still little know about the influence of gender on the role of the CFO. Therefore this study examined the influence of the CFO tenure and CFO gender on earning management. This resulted in the following research question:

*What is the influence of the CFO tenure and CFO gender on earning management?*

In order to answer the research question a sample is drawn over the firms listed on the S&P firm index over the years of 1992-2010. The results indicate that there is an association between CFO tenure and the use of real earnings management. However these results did not provide

evidence of association between CFO tenure and accrual-based earnings management. Therefore the results only suggest that use is made of discretionary expenses (R&D, ADV and SGE) to help management hide the poor/good performance of the company or to move a part of the extraordinary positive current earnings in the last year of CFO tenure or when a new CFO has been appointed. Additionally the research has shown a significant relationship between CFO gender and the use of real earnings management. Female CFOs are more likely to use real earnings management to overstate earnings compared with male CFOs, which is contrary to the predictions from previous studies. However, no significant evidence was found for gender influence in relation to accrual-based earnings management.

The outcome regarding the association between CFO tenure and accrual-based earnings management of this research is not significant. But, therefore, has resulted in new insights on this matter. Apparently the influence of CFOs tenure does not result in less or more use of earnings accrual-based earnings management. While previous research of CEO tenure finds a significant association (Ali & Zhang, 2015). This research indicates that there are major differences between CEO and CFO incentives and the use of earnings management.

Secondly, the finding of the association of CFO tenure and real earnings management open new insights in the use real earnings management in the early years and in the last year of tenure. However, in this study no difference can be found in early years compared with last year tenure of the CFO. Therefore further research has to be conducted to understand the use of real earnings management components over time. Furthermore, the effect of gender in this research indicates that CFO gender is of influence on the use of real earnings management. Which resulted in more questions of the direction of influence by gender on earnings management.

### **Limitation**

The limitation of this research is that the size of the sample was focused on S&P 500 firms' observations between 1992-2010. Compared with other studies such as Ali & Zhang (2015) and Cohen et al. (2008), the sample is relatively small. The sample used by Ali & Zhang (2015) for their research contains over 20,000 observations, while this final sample only contains 2450 firm year observations. The second limitation of this research is that other researchers made use of suspected firms in their analyses, which is not the case in this research. Due to lack of data to estimate the suspected firms and the merged information from Compustat and Execucomp sample, this research is tested on the final merged sample data. The third limitation concern the real earnings management proxy used in this study. The study of Cohen et al. (2008) includes abnormal CFO (cash flow from operations) and abnormal production costs (R\_PROD) as two

extra proxies of real earnings management. But in line with Ali & Zhang (2015) and for the ease of comparability with prior studies on earnings management and tenure, and due to lack of data, it was decided to use only discretionary expenses as proxy. However, if these extra proxies were taken into account the results may have been different. The last limitation is that other researchers use extra control variables as Institutional Ownership, Firm Age, Analyst following, Asset growth and Employment growth for instance. Which are not included in this research due to lack of available data.

### **Future research**

There are several suggestions for future research. This research is focused on a sample period of 1992-2010 years. The suggestion for future research would be the possibility to do the research over a recent period and include all the related control variables used by Ali & Zhang (2015). This will enlarge the sample and more accurate evidence can be provided regarding the trade-off between accrual and real earnings management in S&P 500 firms. Another suggestion is to investigate the association between CFO gender and earnings management for firms with earnings loss or firms beating/meeting the earnings benchmark. What also would be interesting to investigate is what the influence is of the economic crisis on the relationship between tenure and gender on the use of accrual-based and real earnings management.

## Bibliography

- Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of financial economics*, 94(2), 291-309.
- Aier, J. K., Comprix, J., Gunlock, M. T., & Lee, D. (2005). The financial expertise of CFOs and accounting restatements. *Accounting Horizons*, 19(3), 123-135.
- Ali, A., & Zhang, W. (2015). CEO tenure and earnings management. *Journal of Accounting and Economics*, 59(1), 60-79.
- Alvesson, M. & Billing, Y. D., (2009). Understanding gender and organizations. London: Sage
- Anderson, R. C., & Reeb, D. M. (2003). Founding-family ownership and firm performance: evidence from the S&P 500. *The journal of finance*, 58(3), 1301-1328.
- Baldry, J. C. (1987). Income tax evasion and the tax schedule: Some experimental results. *Public Finance= Finances publiques*, 42(3), 357-83.
- Ball, R. (2006). International Financial Reporting Standards (IFRS): pros and cons for investors. *Accounting and business research*, 36(sup1), 5-27.
- Barsky, R., Juster, T. & Kimball, M. & Shapiro, M., (1997). Preference parameters and behavioral heterogeneity: a historical approach in the health and retirement study. *Journal of economics*, Vol. 112, pp. 537-579.
- Barua, A., Davidson, L. F., Rama, D. V., & Thiruvadi, S. (2010). CFO gender and accruals quality. *Accounting Horizons*, 24(1), 25-39.
- Beaudoin, C. A., Cianci, A. M., & Tsakumis, G. T. (2015). The impact of CFOs' incentives and earnings management ethics on their financial reporting decisions: The mediating role of moral disengagement. *Journal of business ethics*, 128(3), 505-518.'
- Becker, C. L., DeFond, M. L., Jiambalvo, J., & Subramanyam, K. R. (1998). The effect of audit quality on earnings management. *Contemporary accounting research*, 15(1), 1-24.
- Bergstresser, D., & Philippon, T. (2006). CEO incentives and earnings management. *Journal of financial economics*, 80(3), 511-529.
- Burgess, Z., & Tharenou, P. (2002). Women board directors: Characteristics of the few. *Journal of Business Ethics*, 37(1), 39-49.
- Braam, G., Nandy, M., Weitzel, U., & Lodh, S. (2015). Accrual-based and real earnings management and political connections. *The International Journal of Accounting*, 50(2), 111-141.

Bramwell, J. (2013). Study Finds Fortune 500 CFOs Staying in Roles One Year Longer. Retrieved June 5, 2016, from <http://www.accountingweb.com/practice/team/study-finds-fortune-500-cfos-staying-in-roles-one-year-longer>.

Bratton, W. W. (2003). Enron, Sarbanes-Oxley and accounting: Rules versus principles versus rents. *Villanova Law Review*, 48(4), 1023.

Byrnes, J. P., Miller, D. C., & Schafer, W. D. (1999). Gender differences in risk taking: A meta-analysis. *Psychological bulletin*, 125(3), 367.

Campbell, K., Minguez-Vera, A., (2008). Gender diversity in the boardroom and firm financial performance. , *Journal of Business Ethics*, Vol. 83, pp. 435-451.

Chapple, L., & Humphrey, J. E. (2014). Does board gender diversity have a financial impact? Evidence using stock portfolio performance. *Journal of Business Ethics*, 122(4), 709-723.

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

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.

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.

Collins, D. W., & Hribar, P. (2000). Earnings-based and accrual-based market anomalies: one effect or two?. *Journal of Accounting and Economics*, 29(1), 101-123.

Conyon, M. J. (2006). Executive compensation and incentives. *The Academy of Management Perspectives*, 20(1), 25-44.

Darrough, M. N., & Stoughton, N. M. (1986). Moral hazard and adverse selection: The question of financial structure. *The Journal of Finance*, 41(2), 501-513.

Dechow, P. M., & Dichev, I. D. (2002). The quality of accruals and earnings: The role of accrual estimation errors. *The accounting review*, 77(s-1), 35-59.

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

- Dechow, P. M., & Sloan, R. G. (1991). Executive incentives and the horizon problem: An empirical investigation. *Journal of accounting and Economics*, 14(1), 51-89.
- Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *Accounting review*, 193-225.
- Dejong, D., & Ling, Z. (2013). Managers: Their effects on accruals and firm policies. *Journal of Business Finance & Accounting*, 40(1-2), 82-114.
- Dichev, I. D., Graham, J. R., Harvey, C. R., & Rajgopal, S. (2013). Earnings quality: Evidence from the field. *Journal of Accounting and Economics*, 56(2), 1-33.
- Eriksson, T., Madsen, E. S., Dilling-Hansen, M., & Smith, V. (2001). Determinants of CEO and board turnover. *Empirica*, 28(3), 243-257.
- Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of management review*, 14(1), 57-74.
- Everitt, B. S. D., Everitt, G. B. S., & Dunn, G. (1991). *Applied multivariate data analysis* (No. 519.5076 E9).
- EY. (2016). Do you define your CFO role? Or does it define you? Retrieved June 12, 2016, from [http://www.ey.com/Publication/vwLUAssets/EY-the-disruption-of-the-CFOs-DNA/\\$FILE/EY-the-disruption-of-the-CFOs-DNA.pdf](http://www.ey.com/Publication/vwLUAssets/EY-the-disruption-of-the-CFOs-DNA/$FILE/EY-the-disruption-of-the-CFOs-DNA.pdf)
- Fama, E. F. (1980). Agency Problems and the Theory of the Firm. *The journal of political economy*, 288-307.
- Farrell, K. A., & Hersch, P. L. (2005). Additions to corporate boards: the effect of gender. *Journal of Corporate finance*, 11(1), 85-106.
- Farrell, K. A., & Hersch, P. L. (2005). Additions to corporate boards: the effect of gender. *Journal of Corporate finance*, 11(1), 85-106.
- Feng, M., Ge, W., Luo, S., & Shevlin, T. (2011). Why do CFOs become involved in material accounting manipulations?. *Journal of Accounting and Economics*, 51(1), 21-36.
- Field, A. P. (2013). *Discovering statistics using IBM SPSS Statistics: and sex and drugs and rock 'n' roll* (fourth edition). London: Sage publications.
- Fields, T. D., Lys, T. Z., & Vincent, L. (2001). Empirical research on accounting choice. *Journal of accounting and economics*, 31(1), 255-307.

- Geiger, M. A., & North, D. S. (2006). Does hiring a new CFO change things? An investigation of changes in discretionary accruals. *The Accounting Review*, 81(4), 781-809.
- Geiger, M. A., O'Connell, B. T., Clikeman, P. M., Ochoa, E., Witkowski, K., & Basioudis, I. (2006). Perceptions of earnings management: The effects of national culture. *Advances in International Accounting*, 19, 175-199.
- Gibbons, R., & Murphy, K. J. (1992). Does executive compensation affect investment?. *NBER Working Paper*, (w4135).
- Gillett, P. R., & Uddin, N. (2005). CFO intentions of fraudulent financial reporting. *Auditing: A Journal of Practice & Theory*, 24(1), 55-75.
- Gul, F. A., Srinidhi, B., & Ng, A. C. (2011). Does board gender diversity improve the informativeness of stock prices?. *Journal of Accounting and Economics*, 51(3), 314-338.
- Godfrey, J., Mather, P., & Ramsay, A. (2003). Earnings and impression management in financial reports: the case of CEO changes. *Abacus*, 39(1), 95-123.
- Healy, P. M. (1985). The effect of bonus schemes on accounting decisions. *Journal of accounting and economics*, 7(1), 85-107.
- Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of accounting and economics*, 31(1), 405-440.
- 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.
- Holmstrom, B. (1982). Moral hazard in teams. *The Bell Journal of Economics*, 324-340.
- Holthausen, R. W., Larcker, D. F., & Sloan, R. G. (1995). Annual bonus schemes and the manipulation of earnings. *Journal of accounting and economics*, 19(1), 29-74.
- Hribar, P., & Craig Nichols, D. (2007). The use of unsigned earnings quality measures in tests of earnings management. *Journal of Accounting Research*, 45(5), 1017-1053.
- IFAC (2013). The role and expectations of a CFO: A global debate on preparing accounts for finance leadership. Retrieved June 24, 2016, from <https://www.ifac.org/system/files/publications/files/Role%20of%20the%20CFO.pdf>
- Indjejikian, R. J. (1999). Performance evaluation and compensation research: An agency perspective. *Accounting Horizons*, 13(2), 147-157.

- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of financial economics*, 3(4), 305-360.
- Jensen, M. C., & Murphy, K. J. (1990). Performance pay and top-management incentives. *Journal of political economy*, 225-264.
- Jenter, D., & Kanaan, F. (2006). *CEO turnover and relative performance evaluation* (No. w12068). National Bureau of Economic Research.
- Jiang, J. X., Petroni, K. R., & Wang, I. Y. (2010). CFOs and CEOs: Who have the most influence on earnings management?. *Journal of Financial Economics*, 96(3), 513-526.
- Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of accounting research*, 193-228.
- Kaden, S., & Sanchez, J. M. (2014). Chief Financial Officer Power, Pay Duration, and Earnings Quality. AAA.
- Kalyta, P. (2009). Accounting discretion, horizon problem, and CEO retirement benefits. *The Accounting Review*, 84(5), 1553-1573.
- Kini, O., & Williams, R. (2012). Tournament incentives, firm risk, and corporate policies. *Journal of Financial Economics*, 103(2), 350-376.
- Kirschenheiter, M., & Melumad, N. D. (2002). Can “Big Bath” and Earnings Smoothing Co-exist as Equilibrium Financial Reporting Strategies?. *Journal of Accounting Research*, 40(3), 761-796.
- Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of accounting and economics*, 39(1), 163-197.
- Krishnan, G. V., & Parsons, L. M. (2008). Getting to the bottom line: An exploration of gender and earnings quality. *Journal of Business Ethics*, 78(1-2), 65-76.
- Lev, B. (1989). On the usefulness of earnings and earnings research: Lessons and directions from two decades of empirical research. *Journal of accounting research*, 153-192.
- Mansfield, E., Schwartz, M., & Wagner, S. (1981). Imitation costs and patents: an empirical study. *The Economic Journal*, 91(364), 907-918.
- Meckling, W. H. (1976). Values and the Choice of the Model of the Individual in the Social Sciences. *Swiss Journal of Economics and Statistics (SJES)*, 112(IV), 545-560.

- Melamed, T. (1995). Career success: The moderating effect of gender. *Journal of Vocational Behavior*, 47(1), 35-60.
- Mian, S. (2001). On the choice and replacement of chief financial officers. *Journal of Financial Economics*, 60(1), 143-175.
- Murphy, K. J., & Zimmerman, J. L. (1993). Financial performance surrounding CEO turnover. *Journal of Accounting and Economics*, 16(1), 273-315.
- Murphy, K. J., & Zimmerman, J. L. (1993). Financial performance surrounding CEO turnover. *Journal of Accounting and Economics*, 16(1), 273-315.
- Pan, Y., Wang, T.Y. & Weisbach, M.S.,(2013). CEO Investment Cycles. Working Paper. University of Utah, University of Minnesota, Ohio State University
- Peni, E., & Vähämaa, S. (2010). Female executives and earnings management. *Managerial Finance*, 36(7), 629-645.
- Pourciau, S. (1993). Earnings management and nonroutine executive changes. *Journal of accounting and economics*, 16(1), 317-336.
- Rappaport, A. (1978). Executive incentives vs corporate growth. *Harvard Business Review*, 56(4), 81-88.
- Ronen, J., & Yaari, V. (2008). *Earnings management*. Springer US.
- Rose, J. M. (2007). Corporate directors and social responsibility: Ethics versus shareholder value. *Journal of Business Ethics*, 73(3), 319-331.
- Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of accounting and economics*, 42(3), 335-370.
- Scott, W. R. (2009). *Financial accounting theory*. Toronto, Ont: Pearson Prentice Hall.
- Sloan, R. (1996). Do stock prices fully reflect information in accruals and cash flows about future earnings?(Digest summary). *Accounting review*, 71(3), 289-315.
- Stewart, I., De, D., & Cole, A. (2016). The Deloitte CFO Survey. Retrieved June 12, 2016, from <http://www2.deloitte.com/content/dam/Deloitte/uk/Documents/finance/deloitte-uk-finance-cfo-survey-q1-2016.pdf>

- Sun, L. (2012). Executive compensation and contract-driven earnings management. *Asian Academy of Management Journal of Accounting and Finance*, 8(2), 111-127.
- Sun, L., & Rakhman, F. (2013). CFO financial expertise and corporate social responsibility: Evidence from S&P 500 companies. *International Journal of Law and Management*, 55(3), 161-172.
- Van der Walt, N. & Ingley, C., (2003). Board dynamics and the influence of professional background, gender and ethnic diversity of directors. *Corporate Governance: an international review*, Vol. 11, pp 218-234.
- Vorst, P. (2015). Real Earnings Management and Long-Term Operating Performance: The Role of Reversals in Discretionary Investment Cuts. *The Accounting Review*.
- Wells, P. (2002). Earnings management surrounding CEO changes. *Accounting & Finance*, 42(2), 169-193.
- Welytok, J. G. (2006). *Sarbanes-Oxley for dummies*. John Wiley & Sons.
- Wilson, M., & Wang, L. W. (2010). Earnings management following chief executive officer changes: the effect of contemporaneous chairperson and chief financial officer appointments. *Accounting & Finance*, 50(2), 447-480.
- Xu, Y. J. (2008). Gender disparity in STEM disciplines: A study of faculty attrition and turnover intentions. *Research in Higher Education*, 49(7), 607-624.
- Yasar, A. (2013). Big Four Auditors' Audit Quality and Earnings Management: Evidence from Turkish Stock Market. *International journal of business and social science*, 4(17).
- Ye, K., Zhang, R., & Rezaee, Z. (2010). Does top executive gender diversity affect earnings quality? A large sample analysis of Chinese listed firms. *Advances in Accounting*, 26(1), 47-54.
- Yu, F. F. (2008). Analyst coverage and earnings management. *Journal of Financial Economics*, 88(2), 245-271.
- 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.

## Appendix A

### Multivariate test between subjects outcome hypothesis 1

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	Discretionary accruals	,634 <sup>a</sup>	8	,079	17,308	,000
	RM_PROXY	,478 <sup>b</sup>	8	,060	5,220	,000
Intercept	Discretionary accruals	,075	1	,075	16,288	,000
	RM_PROXY	,197	1	,197	17,232	,000
CFOTENURE	Discretionary accruals	4,633E-6	1	4,633E-6	,001	,975
	RM_PROXY	,080	1	,080	7,036	,008***
CFOAGE	Discretionary accruals	,001	1	,001	,250	,617
	RM_PROXY	8,595E-5	1	8,595E-5	,008	,931
LEVERAGE	Discretionary accruals	,001	1	,001	,178	,673
	RM_PROXY	,059	1	,059	5,167	,023**
ROA	Discretionary accruals	,445	1	,445	97,217	,000***
	RM_PROXY	,001	1	,001	,113	,737
SIZE	Discretionary accruals	,014	1	,014	3,151	,076*
	RM_PROXY	,115	1	,115	10,012	,002***
MarkettoBookratio	Discretionary accruals	,014	1	,014	3,086	,079*
	RM_PROXY	,028	1	,028	2,456	,117
INDUSTRY	Discretionary accruals	,030	1	,030	6,453	,011**
	RM_PROXY	,118	1	,118	10,348	,001***
BIGFOURCONTROLVARIABLE	Discretionary accruals	,002	1	,002	,370	,543
	RM_PROXY	,005	1	,005	,425	,515
Error	Discretionary accruals	7,010	1530	,005		
	RM_PROXY	17,499	1530	,011		
Total	Discretionary accruals	11,382	1539			
	RM_PROXY	28,916	1539			
Corrected Total	Discretionary accruals	7,645	1538			
	RM_PROXY	17,977	1538			

a. R Squared = ,083 (Adjusted R Squared = ,078)

b. R Squared = ,027 (Adjusted R Squared = ,021)

\*\*\* Significant at the 1% level \*\*Significant at the 5% level \*Significant at the 10% level

The sample period is from 1992 to 2010. *Discretionary accruals* is the absolute value of the discretionary accruals of firm *i* and year *t*, estimated as the residual of equation (3). *RM\_Proxy* is the absolute value of the discretionary expenses of firm *i* in year *t*, defined as sum of R&D, advertising, and selling, general and administrative expenses, estimated at the residual of equation (7). *CFO<sub>Tenure</sub>* is an indicator variable that equals one for firm-years that correspond to the first three years and prior to the turnover year of the firm's CFO, and is zero otherwise. *CFO Age* is the CFO's age at the beginning of year *t*. *Leverage* is defined as total debt divided by total assets at the beginning of year *t*. *Big Four* is defined 1 if firm is audited by one of the Big 4 auditors and 0 otherwise. *ROA* is earnings before extraordinary items in year *t* divided by total assets at the beginning of the year *t*. *Size* is defined as the natural logarithm of total assets for firm *i* in year *t*. *Market to book* is defined as the market value of equity divided by the book value of equity at the beginning of year. *Industry* is an indicator variable that equals one if the firm operates in a high-litigation industry (SIC codes 2833–2836; 3570–3577; 3600–3674; 5200–5961, and 7370–7374), and zero otherwise.

## Multivariate test between subjects outcome hypothesis 2

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	Discretionary accruals	,642 <sup>a</sup>	8	,080	17,524	,000
	RM_PROXY	,441 <sup>b</sup>	8	,055	4,807	,000
Intercept	Discretionary accruals	,080	1	,080	17,558	,000
	RM_PROXY	,147	1	,147	12,853	,000
CFOGENDER	Discretionary accruals	,007	1	,007	1,586	,208
	RM_PROXY	,044	1	,044	3,804	,051
CFOAGE	Discretionary accruals	,002	1	,002	,399	,528
	RM_PROXY	,004	1	,004	,363	,547
LEVERAGE	Discretionary accruals	,001	1	,001	,125	,724
	RM_PROXY	,050	1	,050	4,361	,037
ROA	Discretionary accruals	,439	1	,439	96,012	,000
	RM_PROXY	,003	1	,003	,279	,598
SIZE	Discretionary accruals	,015	1	,015	3,267	,071
	RM_PROXY	,133	1	,133	11,562	,001
MarkettoBookratio	Discretionary accruals	,013	1	,013	2,920	,088
	RM_PROXY	,028	1	,028	2,409	,121
INDUSTRY	Discretionary accruals	,030	1	,030	6,633	,010
	RM_PROXY	,110	1	,110	9,570	,002
BIGFOURCONTR OLVARIABLE	Discretionary accruals	,002	1	,002	,452	,502
	RM_PROXY	,005	1	,005	,421	,516
Error	Discretionary accruals	7,003	1530	,005		
	RM_PROXY	17,536	1530	,011		
Total	Discretionary accruals	11,382	1539			
	RM_PROXY	28,916	1539			
Corrected Total	Discretionary accruals	7,645	1538			
	RM_PROXY	17,977	1538			

a. R Squared = ,084 (Adjusted R Squared = ,079)<sub>a</sub>

b. R Squared = ,025 (Adjusted R Squared = ,019)<sub>b</sub>

\*\*\* Significant at the 1% level \*\*Significant at the 5% level \*Significant at the 10% level

The sample period is from 1992 to 2010. **Discretionary accruals** is the absolute value of the discretionary accruals of firm  $i$  and year  $t$ , estimated as the residual of equation (3). **RM\_Proxy** is the absolute value of the discretionary expenses of firm  $i$  in year  $t$ , defined as sum of R&D, advertising, and selling, general and administrative expenses, estimated at the residual of equation (7). **CFOgender** is an indicator variable that equals 1 if firms CFO is a female in year  $t$ , and otherwise will be. **CFO Age** is the CFO's age at the beginning of year  $t$ . **Leverage** is defined as total debt divided by total assets at the beginning of year  $t$ . **Big Four** is defined 1 if firm is audited by one of the Big 4 auditors and 0 otherwise. **ROA** is earnings before extraordinary items in year  $t$  divided by total assets at the beginning of the year  $t$ . **Size** is defined as the natural logarithm of total assets for firm  $i$  in year  $t$ . **Market to book** is defined as the market value of equity divided by the book value of equity at the beginning of year. **Industry** is an indicator variable that equals one if the firm operates in a high-litigation industry (SIC codes 2833–2836; 3570–3577; 3600–3674; 5200–5961, and 7370–7374), and zero otherwise.

### Multivariate test between subjects outcome hypothesis 3

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	DISCRETIONARYABS	,643 <sup>a</sup>	10	,064	14,021	,000
	RM_PROXYABS	,543 <sup>b</sup>	10	,054	4,758	,000
Intercept	DISCRETIONARYABS	,078	1	,078	17,083	,000
	RM_PROXYABS	,164	1	,164	14,399	,000
CFOTENURE	DISCRETIONARYABS	,000	1	,000	,024	,877
	RM_PROXYABS	,061	1	,061	5,360	,021
CFOFEMALE	DISCRETIONARYABS	,002	1	,002	,342	,559
	RM_PROXYABS	,060	1	,060	5,271	,022
CFOTENUREFEMALE	DISCRETIONARYABS	,001	1	,001	,186	,666
	RM_PROXYABS	,015	1	,015	1,329	,249
CFOAGE	DISCRETIONARYABS	,002	1	,002	,364	,546
	RM_PROXYABS	,000	1	,000	,020	,888
LEVERAGE	DISCRETIONARYABS	,001	1	,001	,137	,711
	RM_PROXYABS	,051	1	,051	4,475	,035
ROA	DISCRETIONARYABS	,438	1	,438	95,593	,000
	RM_PROXYABS	,002	1	,002	,169	,681
SIZE	DISCRETIONARYABS	,015	1	,015	3,228	,073
	RM_PROXYABS	,110	1	,110	9,679	,002
MarkettoBookratio	DISCRETIONARYABS	,013	1	,013	2,928	,087
	RM_PROXYABS	,032	1	,032	2,774	,096
INDUSTRY	DISCRETIONARYABS	,030	1	,030	6,614	,010
	RM_PROXYABS	,114	1	,114	10,003	,002
BIGFOURCONTROLVARIABLE	DISCRETIONARYABS	,002	1	,002	,447	,504
	RM_PROXYABS	,007	1	,007	,593	,441
Error	DISCRETIONARYABS	7,002	1528	,005		
	RM_PROXYABS	17,434	1528	,011		
Total	DISCRETIONARYABS	11,382	1539			
	RM_PROXYABS	28,916	1539			
Corrected Total	DISCRETIONARYABS	7,645	1538			
	RM_PROXYABS	17,977	1538			

a. R Squared = ,084 (Adjusted R Squared = ,078)

\*\*\* Significant at the 1% level \*\*Significant at the 5% level \*Significant at the 10% level

The sample period is from 1992 to 2010. *DiscretionaryABS* is the absolute value of the discretionary accruals of firm *i* and year *t*, estimated as the residual of equation (3). *RM\_ProxyABS* is the absolute value of the discretionary expenses of firm *i* in year *t*, defined as sum of R&D, advertising, and selling, general and administrative expenses, estimated at the residual of equation (7). *CFO<sub>Tenure</sub>* is an indicator variable that equals one for firm-years that correspond to the first three years and prior to the turnover year of the firm's CFO, and is zero otherwise. *CFO<sub>gender</sub>* is an indicator variable that equals 1 if firms CFO is a female in year *t*, and otherwise will be 0. *CFO<sub>Tenure</sub> \* CFO<sub>gender</sub>* is an indicator variable that equals 1 when the CFO is a female and *CFO<sub>Tenure</sub>* is present in year *t*, and otherwise will be 0. *CFO Age* is the CFO's age at the beginning of year *t*. *Leverage* is defined as total debt divided by total assets at the beginning of year *t*. *Big Four* is defined 1 if firm is audited by one of the Big 4 auditors and 0 otherwise. *ROA* is earnings before extraordinary items in year *t* divided by total assets at the beginning of the year *t*. *Size* is defined as the natural logarithm of total assets for firm *i* in year *t*. *Market to book* is defined as the market value of equity divided by the book value of equity at the beginning of year. *Industry* is an indicator variable that equals one if the firm operates in a high-litigation industry (SIC codes 2833–2836; 3570–3577; 3600–3674; 5200–5961, and 7370–7374), and zero otherwise.

## Appendix B

### Multivariate test between subjects EarlyYearsCFO and LastYearCFO

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	DISCRETIONARYABS	,635 <sup>a</sup>	9	,071	15,392	,000
	RM_PROXYABS	,490 <sup>b</sup>	9	,054	4,760	,000
Intercept	DISCRETIONARYABS	,074	1	,074	16,045	,000
	RM_PROXYABS	,178	1	,178	15,546	,000
EARLYYEARS CFO	DISCRETIONARYABS	4,486E-6	1	4,486E-6	,001	,975
	RM_PROXYABS	,045	1	,045	3,954	,047
LASTYEARCFO	DISCRETIONARYABS	,001	1	,001	,142	,707
	RM_PROXYABS	,059	1	,059	5,146	,023
CFOAGE	DISCRETIONARYABS	,001	1	,001	,270	,603
	RM_PROXYABS	,000	1	,000	,014	,907
LEVERAGE	DISCRETIONARYABS	,001	1	,001	,181	,671
	RM_PROXYABS	,059	1	,059	5,165	,023
ROA	DISCRETIONARYABS	,444	1	,444	96,888	,000
	RM_PROXYABS	,002	1	,002	,135	,714
SIZE	DISCRETIONARYABS	,015	1	,015	3,235	,072
	RM_PROXYABS	,114	1	,114	9,959	,002
MarkettoBookratio	DISCRETIONARYABS	,014	1	,014	3,041	,081
	RM_PROXYABS	,029	1	,029	2,523	,112
INDUSTRY	DISCRETIONARYABS	,029	1	,029	6,377	,012
	RM_PROXYABS	,121	1	,121	10,583	,001
BIGFOURCONTROLVARIABLE	DISCRETIONARYABS	,002	1	,002	,382	,537
	RM_PROXYABS	,005	1	,005	,434	,510
Error	DISCRETIONARYABS	7,010	1529	,005		
	RM_PROXYABS	17,487	1529	,011		
Total	DISCRETIONARYABS	11,382	1539			
	RM_PROXYABS	28,916	1539			
Corrected Total	DISCRETIONARYABS	7,645	1538			
	RM_PROXYABS	17,977	1538			

a. R Squared = ,083 (Adjusted R Squared = ,078)

b. R Squared = ,027 (Adjusted R Squared = ,022)

The sample period is from 1992 to 2010. *DiscretionaryABS* is the absolute value of the discretionary accruals of firm *i* and year *t*, estimated as the residual of equation (3) *RM\_ProxyABS* is the absolute value of the discretionary expenses of firm *i* in year *t*, defined as sum of R&D, advertising, and selling, general and administrative expenses, estimated at the residual of equation (7). *EARLYYEARS CFO<sub>it</sub>* is an indicator variable that equals one for firm-years that correspond to the first three years, and is zero otherwise. *LASTYEARCFO* is an indicator variable that equals one for firm-years that correspond prior to the turnover year of the firm's CFO, and is zero otherwise. *CFO Age* is the CFO's age at the beginning of year *t*. *Leverage* is defined as total debt divided by total assets at the beginning of year *t*. *ROA* is earnings before extraordinary items in year *t* divided by total assets at the beginning of the year *t*. *Size* is defined as the natural logarithm of total assets for firm *i* in year *t*. *Market to book* is defined as the market value of equity divided by the book value of equity at the beginning of year. *Industry* is an indicator variable that equals one if the firm operates in a high-litigation industry (SIC codes 2833–2836; 3570–3577; 3600–3674; 5200–5961, and 7370–7374), and zero otherwise. *Big Four* is defined 1 if firm is audited by one of the Big 4 auditors and 0 otherwise.