UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

Executive Compensation and Earnings Management

A study of Swedish companies during the Global Financial Crisis

Victor Johansson

Master Degree Project in Accounting and Financial Management
Graduate School, Spring 2021

Abstract

This study examines the impact of executive short-term cash compensation on earnings management and how the relationship is influenced by an economic crisis, the global financial crisis. For a sample of Swedish listed firms between 2005-2012, I find evidence of a negative association between executive compensation and accruals-based earnings management, but comparing the crisis period to the period before I find a positive association that is stronger during the crisis than in the period before. However, no such association is found when comparing with the period after the crisis. I also find bonus compensation to be positively associated with overproduction of inventory. A positive association is also found between total compensation and most real earnings management models when comparing the crisis period to the period before and after. These findings indicate that the GFC influences the relationship between executive compensation and earnings management, which contributes to prior earnings management literature but also has implications for practitioners and policymakers setting the executive compensation.

Keywords: *Accruals-based earnings management, real earnings management, executive compensation, global financial crisis*

Supervisor: *Niuosha Samani*

Acknowledgements

First and foremost, I would like to express my sincere appreciation to my supervisor, Niuosha Samani, for the valuable guidance and input she has provided throughout the writing process. I would also like to thank my fellow students in the seminar group for the valuable feedback they have provided.

Gothenburg, 2021-05-26

_____

Victor Johansson

Table of Contents

1. INTRODUCTION **1**

2. THEORETICAL OVERVIEW AND HYPOTHESIS DEVELOPMENT **5**

2.1 AGENCY THEORY 5

2.2 EARNINGS MANAGEMENT 6

2.2.1 Accruals-based earnings management 7

2.2.2 Real earnings management 8

2.2.3 Earnings management trade-off 9

2.3 HYPOTHESIS DEVELOPMENT 10

3. METHOD **12**

3.1 SAMPLE SELECTION 12

3.2 EARNINGS MANAGEMENT MODELS 13

3.2.1 Modified Jones Model 14

3.2.2 Additional model by Kothari et al. (2005) 15

3.2.3 Real Earnings management 15

3.3 VARIABLE DEFINITION 17

3.4 REGRESSION MODELS 19

4. RESULTS **22**

4.1 DESCRIPTIVE STATISTICS 22

4.2 EXECUTIVE COMPENSATION AND ACCRUALS-BASED EARNINGS MANAGEMENT 25

4.3 EXECUTIVE COMPENSATION AND REAL EARNINGS MANAGEMENT 31

4.4 ADDITIONAL ANALYSIS 37

4.5 ROBUSTNESS TEST 37

4.5.1 Extending the crisis period 37

4.5.2 Additional control variables 38

5. CONCLUSION **40**

REFERENCES **42**

APPENDIX **48**

List of Tables

METHOD

3.1 SAMPLE SELECTION 13
3.2 DEFINITION OF INDEPENDENT AND CONTROL VARIABLES 19

RESULTS

4.1 DESCRIPTIVE STATISTICS 23
4.2 CORRELATION MATRIX 24
4.3 RESULTS FOR BONUS COMPENSATION AND ACCRUALS-BASED EARNINGS MANAGEMENT..... 27
4.4 RESULTS FOR TOTAL COMPENSATION AND ACCRUALS-BASED EARNINGS MANAGEMENT 30
4.5 RESULTS FOR BONUS COMPENSATION AND REAL EARNINGS MANAGEMENT 33
4.6 RESULTS FOR TOTAL COMPENSATION AND REAL EARNINGS MANAGEMENT 36

1. Introduction

Over the years, various studies have examined the concept of earnings management and found executive compensation to be a common incentivizing factor for managers to engage in earnings management (e.g., Balsam, 1998; Baker, Collins & Reitenga, 2003; Bergstresser & Philippon, 2006; Burns & Kedia, 2006). When managers are compensated based on firm performance, they are motivated to take action in order to increase their own compensation (Healy & Wahlen, 1999). This includes making accounting choices to boost short-term results in order to meet the firm's earnings target (Balsam, 1998), or intentionally lowering the yearly result to increase the possibility of getting maximum compensation the coming year (Caruso, Ferrari & Pisano, 2016; Holthausen, Larcker & Sloan, 1995). While executives might benefit from engaging in earnings management through increased personal utility, there could be negative consequences from this that could be detrimental to the company. It could for instance make the company's financial reporting less credible, as the concept of earnings management includes making choices that alter the content of the firm's financial report in a way that does not accurately reflect the underlying economics of the firm (Healy & Wahlen, 1999). It could also result in a damaged reputation (Verbruggen, Christaens & Milis, 2008), as the unethical aspect of the concept could influence how the company is perceived by investors (Kaplan, 2001).

Compensating managers by giving them bonuses that are tied to firm performance could also make their interest align with the interest of the shareholders (Ferrarini, Moloney & Ungureanu, 2010). It would make them more willing to put down a greater effort as they are rewarded for it (Bång & Waldenström, 2009). However, during periods of economic crises it is more difficult for firms to meet their earnings target, which makes it likely that they would make accounting choices in order for the financial position of the company to look stronger (Iatridis & Dimitras, 2013). It is also common for firms to manipulate earnings in order to prevent earnings from decreasing and from making losses (Burgstahler & Dichev, 1997). Difficulties to meet earnings targets would consequently also mean that there would be strong incentives for managers to influence their reported earnings to ensure that they would receive maximum compensation. Therefore, this report aims to identify how earnings management is affected by periods of economic crises by studying the concept during the global financial crisis (GFC). More

specifically, I aim to identify the effect that executive compensation has on earnings management during the GFC.

Poor performance, especially during crisis periods, could motivate firms to make adjustments in order to satisfy their owners. Investors could, however, expect firms to exhibit lower profitability during these periods. This would consequently mean that there would be no need for firms to adjust their numbers to please their investors and, hence, not have as much incentive to manipulate earnings (Papadaki & Tzovas, 2017). With poor performance being more accepted during the GFC period, prior studies also find evidence of lower levels of earnings management during the GFC period (Filip & Raffournier, 2014). In addition, higher accruals quality has also been found during the GFC period as a consequence of close monitoring activity from auditors (Cimini, 2015). In contrast to this, prior studies have also found that there is a tendency for increasing levels of earnings management during the GFC, which is believed to occur due to uncertainty and a need to protect the firm's financial position, but also to reduce negative effects from financial distress (Iatridis & Dimitras, 2013). Furthermore, instead of adjusting accruals, managers may use other ways of engaging in earnings management, such as real activities manipulation (Zang, 2012), as there are situations where accruals-based earnings management is more costly. Research of real earnings management during the GFC also indicates both increasing (Xu & Ji, 2016) and decreasing (Li, Hsu & Gao, 2020) levels of earnings management. This indicates that firms might use real earnings management as a substitute to accruals-based earnings management during the GFC.

While there are a number of prior studies investigating how the degree of earnings management is affected by crisis periods, not many of them are looking more specifically at the effect of executive compensation. Assenso-Okofo, Ali and Ahmed (2020), studied the changing relationship between earnings management and CEO compensation of Australian companies during the periods surrounding the GFC. They find that the relationship between bonus compensation, in particular, and earnings management was stronger during the crisis period compared to periods before and after, arguing that a reason for this is managers' motivation to maintain their compensation levels during the crisis period (Assenso-Okofo et al., 2020). With the incentivizing effect of executive compensation, there are reasons to believe that the firm's earnings management would increase during crisis periods. For this reason, I expect executive compensation to have a positive effect on earnings management during the GFC and for the effect to be stronger than in the periods before and after.

This study focuses on publicly listed Swedish companies between the years 2005-2012. Prior studies examining European countries have found that earnings management in Sweden decreased during the GFC (Cimini, 2015; Filip & Raffournier, 2014), but there is no evidence of the effect that executive compensation has on earnings management for these companies during this period. This study will also focus on short-term cash compensation as it is commonly believed that executive compensation played a big role in the GFC, as the possibility to get compensation based on the firms' short-term performance encouraged executives to take on unnecessary risk (Bebchuk et al., 2010), but also as this type of compensation is mainly contingent on meeting accounting-based earnings targets (Ibrahim & Lloyd, 2011) rather than targets based on the firm stock price. Prior studies also find that only a small part of the compensation the Swedish executives receive are equity-based while a larger part comes from short-term cash compensation (Fernandes, Ferreira, Matos & Murphy, 2009; Murphy, 2013). Therefore, Sweden provides a good sample in which to examine the effect of short-term compensation on earnings management.

As found by Gao, Gao and Wang (2017), there could be issues when focusing solely on one type of earnings management as this could create biased results. Therefore, this report examines accruals-based earnings management through the Modified Jones model (Dechow, Sloan & Sweeney, 1995) and a further extension of the model by Kothari, Leone and Wasley (2005). Real earnings management is examined through the three models proposed by Roychowdhury (2006) as well as a combination of the three models. As an additional analysis I also include the other earnings management proxy as control variable in order to control for potential substitution effect between the earnings management proxies. Furthermore, for robustness purposes I control for an extended crisis period, ownership concentration and CEO ownership.

The findings of this study suggest a negative association between executive compensation and accruals-based earnings management when looking at the entire sample period. I further find a positive association when comparing the GFC period with the pre-GFC period that is stronger during the GFC than in the period before, but this association is not found when comparing to the post-GFC period. The findings also show that bonus compensation is positively associated with overproduction of inventory when looking at the entire sample period. A positive association is also found between total compensation and most real earnings management models when comparing the GFC period to the pre- and post-GFC period that is stronger during the GFC than in the period before and after. Overall, these findings show that there is a positive effect of executive compensation on earnings management that is stronger in the crisis period

compared to the periods before and after. These results are therefore in support of executives taking on more risk as a consequence of being compensated for short-term performance (Bebchuk et al., 2010), and with difficulties to meet the firm's earnings expectations during crisis periods managers manipulate earnings to a greater extent.

These findings contribute to the literature examining the relationship between short-term compensation and earnings management (e.g., Assenso-Okofo et al., 2020; Balsam, 1998; Holthausen et al., 1995; Hossain & Monroe, 2015; Shuto, 2007) and to the literature examining earnings management during crisis periods (e.g., Cimini, 2015; Filip & Raffournier, 2014; Iatridis & Dimitras, 2013; Papadaki & Tzovas, 2017). While these relationships have mostly been studied separately, this study contributes to prior literature by showing that an economic crisis such as the GFC affects the relationship between executive compensation and earnings management. Thus, in particular, this study contributes to the stream of research examining these concepts together (Assenso-Okofo et al., 2020), by showing the effect of a crisis period on the relationship between executive compensation and different methods of earnings management. There could also be implications for practitioners and policymakers, where the findings indicate that executives might be more willing to take on excessive risk during crisis periods when they are awarded for good short-term performance. Therefore, these results could have implications for practitioners and policymakers in the process of setting executive compensation.

The rest of the paper is structured as the following. In section 2, the theoretical overview is presented, including previous research on earnings management and develops the hypothesis of the study. Section 3 presents the research design of the study, and in section 4 the descriptive statistics, main results, additional analysis and robustness test is presented. Section 5 presents the conclusion as well as suggestions for future research and limitations of the study.

2. Theoretical overview and hypothesis development

2.1 Agency theory

The agency theory describes the situation and problems that arise when there is separation of ownership and control, which occurs when a person (agent) gets authority to act on behalf of another person (principal) (Jensen & Meckling, 1976). A common situation for this is when the manager of the firm acts on behalf of the shareholders. The theory builds on the assumption that all individuals are utility maximizers and hence act in their own self-interest, which makes it plausible that the manager will act in the interest of themselves rather than in the interest of the shareholders (Jensen & Meckling, 1976). In other words, this means that there is a misalignment in the interest of the manager and shareholders which creates a conflict between the two, the principal-agent conflict (Panda & Leepsa, 2017). There is also an underlying assumption that there is asymmetric information between the principal and the agent (Eisenhardt, 1989). This is because the manager runs the firm and therefore has all the information about what is happening within the firm and how the business is going, while the owner on the other hand is not involved in the same manner and therefore only get the information that is provided to them by the manager (Panda & Leepsa, 2017).

In order to align the interests of the principal and the agent, there must be proper incentives for the manager to act in a certain way that will be beneficial for both parties, and through monitoring costs (Jensen & Meckling, 1976). The monitoring costs are those commonly associated with the observing, assessing and compensating the agent (Panda & Leepsa, 2017). There are many researchers that have studied potential remedies to the agency problem, and according to Panda and Leepsa (2017) some of these include the appointment of independent board of directors, granting managerial ownership and executive compensation. Hall and Liebman (1998) expressed a strong belief that the performance of the company must be connected with the executive compensation in order to solve the agency problem. *"If there is no meaningful link between CEO pay and company performance, it is doubtful that the trillions of dollars of assets in public corporations are being managed efficiently."* (Hall & Liebman, 1998, p.654). Using equity is one way of incentivizing managers to act properly and in accordance with the interest of the shareholders, and the inclusion of equity in compensation contracts is found to be positively related to firm performance (Mehran, 1995). A reason for this is that these incentives can encourage managers to work in ways that are aligned with the

interest of shareholders rather than their self-interest and is therefore seen as a way of decreasing the agency cost (Cheng & Warfield, 2005; Nyberg, Fulmer, Gerhart & Carpenter, 2010).

The equity compensation offered to managers are often contingent on meeting certain long-term targets. That is, targets that are supposed to be reached after about 3-5 years (Healy, 1985). The compensation contracts can also consist of more short-term compensation such as bonus-plans. This type of compensation is rather contingent on meeting certain annual targets and can therefore be considered to be more short-term compensation (Hossain & Monroe, 2015). Similar to equity, bonus compensation can reduce agency cost when they are structured properly and connect to firm performance (Ferrarini et al., 2010), When the CEO takes part in the profit made by the firm they will put in a greater effort and consequently work in the same direction as the firm (Bång & Waldenström, 2009), and previous literature finds a positive relationship between CEO cash compensation and firm performance (Ozkan, 2011). However, while the offering of equity as compensation has been found to align the interest of the managers and shareholders, the short-term bonus compensation has mostly been found to have an opposite effect. As such, this type of compensation has often been found to influence the decision managers take regarding accruals, and to motivate them to alter their reported earnings (Almadi & Lazic, 2016; Holthausen et al., 1995; Shuto, 2007). In other words, the compensation incentivizes managers to engage in earnings management, meaning that instead of being a solution to the agency problem, it can make the situation even worse.

2.2 Earnings management

There is no single definition in the literature of what constitutes earnings management. However, one definition that has been commonly used by previous researchers come from Healy and Wahlen (1999, p. 368):

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

The definition suggests that there are two ways of managing earnings, by using the judgement in financial reporting (i.e., accruals-based earnings management) but it also includes

operational decisions that are intended to change the reported earnings (i.e., real earnings management).

2.2.1 Accruals-based earnings management

There are different ways that managers can alter the reported earnings by making different choices in the financial reporting. The different approaches are dependent on the reason to obtain a changed result, and this means that there are reasons to both increase and decrease the reported earnings. One of the most common ways is to maximize the reported earnings, which means that managers make income-increasing accounting choices in order to increase their bonus compensation (Healy, 1985). However, managers may also choose to make income-decreasing accounting choices if their bonuses are already maximized (Holthausen et al., 1995). Another approach to the accruals-based earnings management is income-smoothing, which means that managers make either income-increasing or income-decreasing choices in order to maintain a certain budget target and to achieve more smooth earnings over time (Holthausen et al., 1995). A motivation for obtaining more smooth earnings is that investors would perceive them as being less risky (Graham, Harvey and Rajgopal, 2005). Lastly, it is possible for firms to find themselves in a situation where they have reached such low earnings that there are no accounting choices that could be made to reach their earnings target (Healy, 1985). In this situation managers would instead be willing to reduce the yearly earnings additionally in order to get a better position in the coming year instead (Caruso et al., 2016). This approach is usually referred to as “Big bath accounting” and could be achieved for instance by deferring revenues or increasing write-offs (Healy, 1985).

There are several studies examining accruals-based earnings management and executive compensation, which finds they are positively related (e.g Almadi & Lazic, 2016; Assenso-Okofo et al., 2020; Bergstresser & Philippon, 2006; Burns & Kedia, 2006). Increasing bonus compensation is something most managers strive for, and by making income-increasing accounting choices to alter the reported earnings prior studies suggests it is possible for managers to influence the outcome and to increase their bonus compensation (Balsam, 1998; Matsunaga & Park, 2001). Another reason for why managers might be motivated to manage earnings is that being unable to meet the firm’s earnings target can make the CEO receive a lower annual bonus compensation (Matsunaga & Park, 2001). On the other hand, managers that don't receive any bonus compensation could still be motivated to influence earnings. Instead, managers have been found to engage in income-decreasing earnings management

when they are not receiving any bonuses as this could increase the possibility of receiving bonus compensation the coming year (Shuto, 2007). However, other studies don't find support for these types of compensation (Burns & Kedia, 2006), meaning there is conflicting evidence.

When it comes to the association between earnings management and equity incentives, prior studies find that when managers get large equity incentives it makes it more likely that they will manipulate earnings in order to reach or outperform the expectations of analysts (Cheng & Warfield, 2005). There could also be an increased likelihood of using discretionary accruals in order to manage earnings when the compensation is more sensitive to stock price (Bergstresser & Philippon, 2006; Burns & Kedia, 2006), as managers that engage in aggressive accounting practices will experience a wealth benefit from stock price increases that is greater than the wealth loss from stock price declines (Burns & Kedia, 2006). There is also evidence of a negative relationship between CEOs equity incentives and the frequency of accounting irregularities (Armstrong, Jagolinzer & Larcker, 2010), which rather suggest the compensation aligns the interest of the manager and the shareholders. While these studies provide conflicting evidence, there is evidence which suggests that executive compensation could be a driving factor for the occurrence of earnings management.

2.2.2 Real earnings management

In addition to adjusting accruals, firms can also make certain operational decisions in order to alter their reported earnings, which is referred to real earnings management (Roychowdhury, 2006). In contrast to the accruals-based earnings management, altering reported earnings through these real activities has an actual effect on the cash-flow in the current period (Zang, 2012). There are different ways in which real earnings management is being conducted, but according to Roychowdhury (2006) the most common approaches are through sales manipulation, overproduction of inventory and lastly reduction of discretionary expenses.

By sales manipulation it means that sales are temporarily increased by using different methods, and there are two ways to achieve these unsustainable sales as mentioned by Roychowdhury (2006). Firstly, offering price discounts, often in the later period of the fiscal year, which will likely lead to higher volumes and total earnings. A second way is to offer more lenient credit terms such as extremely low interest rates, which means a lower amount of cash inflow. The result of these methods for temporarily increasing sales is that there will be decreasing levels of cash flow from operations in the current period, but also higher production costs which can be regarded abnormal given the level of sales (Roychowdhury, 2006). Another negative effect

for the firm, in regard to the price discounts in particular, could be customers expecting to receive the same discount for all purchases they make, or continue to make purchases at the end of the year in order to receive lower prices (Jackson & Wilcox, 2000).

The second approach is an overproduction of inventory, which means that when firms produce more goods than needed, it will result in the fixed costs per unit to drop and consequently also the total unit cost (Roychowdhury, 2006). The effect of this approach would be that the firm would report a lower unit cost of goods sold, leading to improved levels of operating margin. However, the extra inventory that has been created means that there are additional costs for the firm in terms of holding the extra inventory (Roychowdhury, 2006).

The last approach mentioned above includes a reduction of discretionary expenses. The reasoning behind this approach is that lowering the levels of this type of expenses would help the firm to improve their results and therefore help them to meet certain earnings targets (Roychowdhury, 2006). There are different types of expenses that can be categorized as discretionary expenses. Research and development (R&D) costs is one of the expenses that are included here, which has commonly been reduced in order to improve short-term results, despite being seen as a source for growth and competitive advantage (Cheng, 2004). Advertising costs are also included as a discretionary expense, which has been found by Cohen, Mashruwala and Zach (2010) to be used in order to avoid losses and decreasing levels of earnings. Lastly, discretionary expenses also include sales, general and administrative costs (SG&A), as these often include costs such as employee training, maintenance and travel (Roychowdhury, 2006).

2.2.3 Earnings management trade-off

Prior studies find that there is a trade-off between the two methods, which is dependent on the relative cost and the timing of the activities (Gao et al., 2017; Zang, 2012). There are findings which suggest that when the scrutiny of accounting praxis is high or when there has been manipulation in earlier years leading to lower flexibility in the current year accruals, more firms will choose the real earnings management method (Zang, 2012). On the other hand, lower industry competitive status, poor financial conditions and large tax expenses during the current year would instead make the real earnings management method more costly (Zang, 2012). Hence, in these situations firms will likely prefer the accruals-based over the real earnings management method. Moreover, it has also been found that factors such as the legal environment, growth prospect, firm leverage and corporate governance mechanisms influence

the choice of earnings management method (Gao et al., 2017). The two methods can therefore be seen as substitutes to one another, and when the outcome from the real earnings management activities is not satisfactory the accruals-based method is used as a final adjustment to reach the desired result (Zang, 2012). This is because the two activities do not occur at the same time, as the real activities manipulation occurs during the fiscal year while the adjustment of accruals occurs after the fiscal year ends. In other words, the effect from the real activities manipulation can be unexpectedly low (high) at the end of the fiscal year compared to what was expected, which means that managers may use the accruals-based method more (less) to get the intended effect and to reach their desired result (Zang, 2012).

2.3 Hypothesis development

As the literature presented above shows, there are previous studies in support of a positive influence of executive compensation on earnings management (e.g Almadi & Lazic, 2016; Assenso-Okofo et al., 2020; Bergstresser & Philippon, 2006; Burns & Kedia, 2006). In addition to this, research regarding accruals-based earnings management during crisis periods indicates both decreasing (Cimini, 2015; Filip & Raffournier, 2014) as well as increasing (Iatridis & Dimitras, 2013) levels of earnings management, but it has also been found to be a stronger relationship between CEO compensation and earnings management during crisis periods (Assenso-Okofo et al., 2020). Findings relating to real earnings management during the crisis period are also conflicting, as there are results pointing to both increasing (Xu & Ji, 2016) and decreasing (Li, Hsu & Gao, 2020) levels of earnings management as well as results indicating the earnings management practice is unaffected by the crisis (Papadaki & Tzovas, 2017). This means that the context of a financial crisis could influence the occurrence of earnings management.

The literature presented previously in section 2.2.1 shows that both long-term (Bergstresser & Philippon, 2006; Burns & Kedia, 2006; Cheng & Warfield, 2005) and short-term compensation (Assenso-Okofo et al., 2020; Matsunaga & Park, 2001; Shuto, 2007) could encourage executives to manipulate earnings, which could have a negative impact on the shareholder value in the long run. Furthermore, it is commonly believed that executive compensation played a big role in the GFC, as the possibility to get compensation based on the firms' short-term performance encouraged executives to take on unnecessary risk (Bebchuk et al., 2010). In other words, short-term compensation influenced managers during the GFC, which led them to take more riskful decisions for their own personal gain.

Overall, the result from the studies presented in the literature review shows a conflicting view of how earnings management is affected by the GFC. There is, however, evidence that the earnings management practice is affected by the crisis. With the effect that short-term compensation had during the GFC, it could likely be a driving force for earnings management during this period, and with managers striving to maximize compensation it is likely that the short-term compensation will positively influence earnings management during this period. Therefore, based on the literature presented relating the occurrence of earnings management with both executive compensation and the GFC-period, the following hypotheses has been formulated:

H1a: There is a positive association between executive compensation and earnings management.

H1b: The positive association between executive compensation and earnings management is stronger during the period of the GFC, compared to the period before and after.

3. Method

3.1 Sample Selection

The dataset in this report is in the form of panel data and consists of publicly listed Swedish companies between the years 2005-2012. The exact period for the GFC is not entirely clear and previous studies have used different starting years for the crisis period. While some studies have used 2007 as the starting year (Assenso-Okofo et al., 2020; Rusmin, Scully & Tower, 2013), others have set the starting year as 2008 (Filip & Raffournier, 2014; Habib, Bhuiyan & Islam, 2013) or even 2009 (Iatridis & Dimitras, 2013; Papadaki & Tzovas, 2017). In this study, the period between 2008-2009 is used as the GFC-period while the years between 2005-2007 and 2010-2012 are used as the pre-GFC and post-GFC period, respectively. The years chosen to be included in the GFC-period will naturally have an effect on the result of study. By using 2008 as the starting year of the GFC, it is intended to ensure that the GFC-period captures only the effect of the crisis period and not the effect from the pre- and post-crisis period.

The data included in the study consists of financial data used to measure earnings management and CEO data including the compensation and other data necessary for the executive-specific control variables (see section 3.3). The financial data has been collected from S&P Capital IQ and the compensation data has previously been hand-collected and provided by my supervisor Niousha Samani. The sample selection process took a starting point from the compensation dataset, and as can be seen from Table 3.1, the sample started with 262 unique companies and 1876 firm-year observations. In line with previous studies (e.g., Burns & Kedia, 2006; Chen, Cheng & Wang, 2015; Filip & Raffournier, 2014) financial firms with industry SIC-codes between 60-69 have been excluded from the sample. The reason for this is that it is also believed that there could exist different motivations for the executives in these industries to manipulate earnings (Cheng & Warfield, 2005). Another reason is that the model to measure earnings management was rather developed for commercial and industrial industries (Filip & Raffournier, 2014) which means that measuring earnings management in financial industries could be rather complicated (Chen et al., 2015).

The effect of eliminating the financial firms was a decrease of 41 firms and 290 observations. Additionally, observations with missing finance data in S&P Capital IQ were eliminated, resulting in 4 firms and 154 observations being dropped. Lastly, observations that had missing information relating to the CEO compensation (salary and bonus) or characteristics (such as

age or tenure) were eliminated, resulting in a final sample consisting of 207 unique firms and a total of 1245 firm-year observations. The distribution of these observations over the examined period is also presented in Table 3.1.

Table 3.1 Sample Selection

Panel A: Eliminations		
Description	Firm-year observations	No. of firms
Starting sample	1876	262
Financial firms (SIC 60-69)	(290)	(41)
Finance data missing	(154)	(4)
Compensation data missing	(187)	(10)
Final Sample	1245	207
Panel B: Observations per year		
Year	N	%
2005	144	11,57
2006	153	12,29
2007	163	13,09
2008	160	12,85
2009	161	12,93
2010	149	11,97
2011	159	12,77
2012	156	12,53
Total	1245	100,00

Notes: Table 3.1 shows the sample selection process in Panel A and Panel B shows the sample distribution by year (2005-2012).

3.2 Earnings management models

This report examines two types of earnings management: accruals-based and real earnings management. In order to measure accruals-based earnings management the modified Jones model (Dechow et al., 1995) is used, which is a development of the Jones model (1991) that according to Walker (2013) led to *"significant improvements in statistical performance"* (p. 454). The model has commonly been used in previous studies (e.g., Baker et al., 2003; Bergstresser & Philippon, 2006; Filip & Raffournier, 2014; Hossain & Monroe, 2015) when

measuring discretionary accruals, and Walker (2013) argues that it became the standard model to measure earnings management when it was published by Dechow et al. (1995).

In addition to this, a model developed by Kothari et al. (2005) is used as an additional robustness test. The model is a further development of the modified Jones model, which adds the performance indicator ROA to the model. To measure real earnings management the three models proposed by Roychowdhury (2006) are used. The models look at the deviation from normal levels of three different variables. Firstly, sales manipulation is examined by looking at abnormal levels of cash from operations. Secondly, abnormal levels of production costs which are used to obtain a lower cost of goods sold. Lastly, abnormal levels of discretionary expenditures, i.e., a reduction of R&D, marketing and SG&A expenditures. In line with previous research, all regressions for both accruals-based (Kothari et al., 2005) as well as real earnings management (Roychowdhury, 2006) will be run industry-by-industry[1] and year-by-year.

3.2.1 Modified Jones Model

In the modified Jones model, it is intended to distinguish between the discretionary and non-discretionary part of total accruals. As opposed to the Jones (1991) model, it is believed that earnings management is the causing factor for all credit changes in the event period (Dechow et al., 1995) with the argument that it is easier to conduct earnings management by using discretion when recognizing revenue on credit sales rather than on cash sales. Therefore, the modified model also includes an adjustment of the change in total revenues by the change in account receivables. The modified Jones model is formulated as the following:

$$TA_{it} = \Delta CA_{it} - \Delta CL_{it} - \Delta Cash_{it} + \Delta STD_{it} - Dep_{it} \quad \text{(Eq. 1)}$$

$$TA_{it}/A_{i,t-1} = \alpha_1(1/A_{i,t-1}) + \alpha_2(\Delta REV_{it} - \Delta REC_{it})/A_{i,t-1} + \alpha_3(PPE_{it}/A_{i,t-1}) + \varepsilon_{it} \quad \text{(Eq. 2)}$$

Where:

TA_{it} = Total accruals for firm *i* in year *t-1*.

ΔCA_{it} = Change in Current Asset for firm *i* between year *t-1* and *t*.

ΔCL_{it} = Change in Current Liabilities for firm *i* between year *t-1* and *t*.

$\Delta Cash_{it}$ = Change in Cash and Cash Equivalent for firm *i* between year *t-1* and *t*.

ΔSTD_{it} = Change in Short Term Debt for firm *i* between year *t-1* and *t*.

Dep_{it} = Depreciation and Amortization for firm *i* in year *t*.

[1] Industries are represented by 2-digit SIC codes

$A_{i,t-1}$ = Total Asset for firm *i* in year *t-1*.

ΔREV_{it} = Change in Revenues for firm *i* between year *t-1* and *t*.

ΔREC_{it} = Change in Accounts Receivable for firm *i* between year *t-1* and *t*.

PPE_{it} = Gross Property Plant and Equipment for firm *i* in year *t*.

The first part of the model can be seen in Equation 1, in which total accruals (TA) is calculated using the changes in current assets (ΔCA), current liabilities (ΔCL), cash (ΔCash), short-term debt (ΔSTD) and depreciation and amortization (Dep). The second part of the model can be seen in Equation 2, in which total accruals is used as the dependent variable. Hence, the left side of the equation shows the sum of the firms' total accruals, scaled by the lagged total assets to normalize the variable in order to reduce heteroscedasticity (Jones, 1991). The right side of the equation shows the sum of non-discretionary accruals, which is also scaled by the lagged total assets. The residual in the equation (ε_{it}) consequently equals the sum of the discretionary accruals, which is used as a proxy for earnings management.

3.2.2 Additional model by Kothari et al. (2005)

As mentioned previously, the modified Jones model was further developed by Kothari et al. (2005), who added the performance indicator return on assets (ROA) to the model. It is argued by Kothari et al. (2005) that the change variable used in the modified Jones model (ΔREV - ΔREC) can potentially lead to large, estimated values for the discretionary accruals in the case of firms with high growth in the test period compared to the estimation period. This means that the discretionary accruals are likely affected by the performance of the firm and therefore, ROA as a proxy for performance is added to the model, which is formulated as the following:

$$TA_{it}/A_{i,t-1} = \alpha_1(1/A_{i,t-1}) + \alpha_2(\Delta REV_{it} - \Delta REC_{it})/A_{i,t-1} + \alpha_3(PPE_{it}/A_{i,t-1}) + \alpha_4 ROA_{it} + \varepsilon_{it} \quad \text{(Eq. 3)}$$

Where:

ROA_{it} = Return on assets, calculated as net income over total assets, for firm *i* in year *t*.

The left side of the equation is estimated the same way as in the modified Jones model (see Equation 1) and represents the total accruals, while the right side represents the sum of non-discretionary accruals. As in the modified Jones model, the residual in the equation equals the sum of discretionary accruals and, hence, represents the proxy for earnings management.

3.2.3 Real Earnings management

Roychowdhury (2006) proposed three different models in order to measure real earnings management, representing three different approaches to real earnings management that has

been presented previously (see section *2.2.2 Real earnings management*). While previous research studying real earnings management has mostly focused on R&D expenditures (Roychowdhury, 2006), the proposed models expand the area to also include other ways to avoid losses. The first model focuses on sales manipulation, either by offering price discounts or more lenient credit terms (Roychowdhury, 2006). In all three models, the normal level of each variable is estimated according to Dechow, Kothari and Watts (1998). In the first model, this implies that the normal levels of cash flow from operations are derived from the current period sales and change in sales (Roychowdhury, 2006). The first model is formulated as the following:

$$CFO_{it}/A_{i,t-1} = \alpha_0 + \alpha_1(1/A_{i,t-1}) + \alpha_2(REV_{it}/A_{i,t-1}) + \alpha_3(\Delta REV_{it}/A_{i,t-1}) + \varepsilon_{it} \quad \text{(Eq. 4)}$$

Where:

CFO_{it} = Cash flow from operations for firm *i* in year *t*.

$A_{i,t-1}$ = Total Asset for firm *i* in year *t-1*.

REV_{it} = Revenues for firm *i* in year *t*.

ΔREV_{it} = Change in Revenues for firm *i* between year *t-1* and *t*.

The second model focuses on the overproduction of inventory, i.e., producing more goods than needed, resulting in a lower total cost per unit (Roychowdhury, 2006). The effect of this method is that the firm will report a lower unit cost of goods sold (COGS), leading to improved levels of operating margin. In the model, the production cost (PROD) is derived from the cost of goods sold (COGS) and the change in inventory (ΔINV). The normal levels of COGS and ΔINV are again according to Dechow et al. (1998). The second model is formulated as the following:

$$PROD_{it}/A_{i,t-1} = \alpha_0 + \alpha_1(1/A_{i,t-1}) + \alpha_2(REV_{it}/A_{i,t-1}) + \alpha_3(\Delta REV_{it}/A_{i,t-1}) + \alpha_4(\Delta REV_{i,t-1}/A_{i,t-1}) + \varepsilon_{it} \quad \text{(Eq. 5)}$$

Where:

$PROD_{it}$ = Production cost, calculated as the sum of COGS and ΔINV, for firm *i* in year *t*.

$\Delta REV_{i,t-1}$ = Change in Revenues for firm *i* between year *t-2* and *t-1*.

The third model focuses on the reduction of discretionary expenses, where the idea is that lowering the levels of these expenses could help companies improve their results and meet certain earnings targets (Roychowdhury, 2006). The types of expenses that are included are R&D, advertising and SG&A and the normal levels of these expenses are again according to Dechow et al (1998). The third model is formulated as the following:

$$DISEXP_{it}/A_{i,t-1} = \alpha_0 + \alpha_1(1/A_{i,t-1}) + \alpha_2(REV_{i,t-1}/A_{i,t-1}) + \varepsilon_{it} \quad \text{(Eq. 6)}$$

Where:

$DISEXP_{it}$ = Discretionary expenditures, calculated as the sum of R&D, advertising and SG&A, for firm *i* in year *t*.

$REV_{i,t-1}$ = Revenues for firm *i* in year *t-1*.

The residual from each of the three models shown above (Equation 4-6) shows the deviation from normal levels and therefore represents the proxy for real earnings management. The direction of the residuals from the three models are interpreted in different ways, where more negative values of the abnormal parts of CFO and DISEXP indicate a presence of more real earnings management while higher (positive) values of PROD indicate more earnings management (Achleitner, Günther, Kaserer & Siciliano, 2014). Therefore, the residuals of both CFO (Eq. 4) and DISEXP (Eq. 6) are multiplied by -1 so that higher values of each of the three methods indicates a presence of more earnings management (Gao et al., 2017), which consequently will simplify the interpretation of the results. Following prior studies (Chi, Lisic & Pevzner, 2011; Cohen, Dey & Lys, 2008; Ferentinou & Anagnostopoulou, 2016) I also aggregate the three models into one combined proxy for real earnings management (REM), which was made possible as both CFO and DISEXP was multiplied with -1.

3.3 Variable definition

The independent variables used in the regression models are the different measures of executive compensation. One component of these is the fixed compensation, which generally consists of the base salary for the executive. The compensation can also be in a variable form, commonly through different types of bonuses. In this study, the focus is therefore on executive cash compensation, which is represented by a bonus compensation measure (BONCOMP) measured as the bonus compensation in relation to the total compensation, and a total compensation variable (TOTCOMP), which is represented by the natural logarithm of the sum of the fixed and bonus compensation. All regression variables are shown in Table 3.2.

The models include a number of firm-specific control variables that have commonly been used by previous earnings management studies. In order to control for size (Size), I use the natural logarithm of total assets. A reason to control for size, as mentioned by Dechow and Dichev (2002), is that larger firms will likely have higher accruals quality compared to smaller firms, as they often have more stability and predictability in their operations. It can therefore be expected that larger firms will have lower levels of earnings management. In order to capture

possible growth opportunities, I include a market-to-book ratio (MTB), which is defined as the natural logarithm of market capitalization divided by common equity. As shown by Skinner and Sloan (2002), missing earnings forecasts can result in dramatic effects for growth firms and will have a large negative impact on the firm's stock price. This would mean that growth firms would likely be more willing to engage in earnings management. I control for leverage (Lev) by dividing long-term debt by total assets. As mentioned by Becker, DeFond, Jiambalvo and Subramanyam (1998), a higher degree of leverage can be representative of being close to violating debt covenants. This means that firms that are more leveraged could in fact be more willing and incentivized to report higher earnings in order to avoid these violations and, hence, more incentivized to manage their earnings (Hossain & Monroe, 2015). However, there is also a possibility that high-leveraged firms engage in more transparent and conservative reporting strategies in order to signal financial reporting credibility to their investors (Barton & Waymire, 2004). This would instead be indications of a negative association between the degree of leverage and earnings management.

For firms that experience losses there could exist different motivations to manage earnings (Ibrahim & Lloyd, 2011), but it could also suggest that these firms have stronger incentives to do so in order to convince their financiers (Bigus & Hillebrand, 2017; Hsieh, Chen, Tseng & Lin, 2018). In order to control for this, I include the loss frequency (Loss), which takes a value of 1 if the firm incurred a loss in two preceding years and 0 otherwise. I also control for firm age (Age), because younger companies could be more motivated to manage earnings as they often have more unstable earnings and poor financial performances (Gounopoulos & Pham, 2017). Firm age is defined as the natural logarithm of one plus the number of years since the company was founded. Lastly, as a proxy for performance I include return on assets (ROA), defined as net income over total assets, as the performance of a firm is associated with their discretionary accruals (Kothari et al., 2005). As found by Dechow and Dichev (2002), firms that are performing poorly seem to have accruals of lower quality. This means that these firms would likely be more motivated to engage in earnings management (Chen et al., 2015).

There are also some executive-specific control variables included in the regressions. I control for age (CEO_age), as it has been found to be a connection between the age of the CEO and earnings management. Prior research has found that when the CEO is close to retirement, there is a greater likelihood that they will engage in earnings management (Ali & Zhang, 2015; Davidson, Xie, Xu & Niang, 2007). In particular, a reason for the CEO to manage earnings close to retirement is if they get compensation that is based on the reported earnings, which

consequently would make them more incentivized to do so (Davison et al., 2007). I also control for tenure (CEO_tenure), which is defined as the number of years that the CEO has held their position (with the starting year being equal to zero). I control for tenure as it is found by Ali and Zhang (2015) that there is a larger amount of earnings being managed upwards when the CEO has recently been appointed. Therefore, there is a greater likelihood that CEO's will conduct earnings management when they are new to the position. Lastly, I include gender (CEO_gender) as a control variable, which takes a value of 1 if the CEO is male and 0 if female. It is found by previous research that female CEOs compared to male CEO's leads to a lower degree of earnings management (Gavious, Segev & Yosef, 2012), as male CEOs tend to engage in more aggressive earnings management methods (Na & Hong, 2017).

Table 3.2 Definition of independent and control variables

Variables	Definition
BONCOMP	CEO bonus compensation, measured as a ratio of bonus compensation to total compensation, for firm *i* in year *t*.
TOTCOMP	CEO total compensation, defined as the logarithmic value of the sum of fixed and bonus compensation, for firm i in year t.
Size	The natural logarithm of total asset for firm *i* in year *t*.
MTB	The natural logarithm of Market-to-Book ratio for firm *i* in year *t*.
Lev	Long-term debt over total assets, for firm *i* in year *t*.
Loss	A dummy variable which equals 1 if the firm incurred a loss in two preceding years, and 0 otherwise, for firm *i* in year *t*.
Age	The natural logarithm of (1 + the number of years since the company was founded), for firm *i* in year *t*.
ROA	Return on assets, calculated as net income over total assets, for firm *i* in year *t*.
CEO_age	The age of the CEO, for firm *i* in year *t*.
CEO_tenure	The number of years the CEO has been in the position, for firm *i* in year *t*.
CEO_gender	A dummy variable which equals 1 if the CEO is male, and 0 if female, for firm *i* in year *t*.

Notes: Table 3.2 shows the description of the independent and control variables used in the regression models.

3.4 Regression models

There are several different regression models used in this study. Although I expect the effect of compensation on earnings management to be stronger in the crisis period compared to both

the pre- and post-crisis period, there might be differences between the pre- and post-crisis periods as well. This is mainly due to the fact that there is no clear end year for the crisis, which means there will be delayed effects of the crisis period. Therefore, there is one model comparing the crisis period with the pre-crisis period and a second model comparing the crisis period with the post-crisis period.

Firstly, I use two models for the accruals-based earnings management in order to study discretionary accruals, where the dependent variables are represented by the modified Jones model and the model by Kothari et al. (2005). The models for accruals-based earnings management are formulated as the following:

$$AEM_{it} = \alpha_0 + \alpha_1 COMP_{it} + \alpha_2 GFC1_{it} + \alpha_3 GFC1xCOMP_{it} + \alpha' Controls_{it} + \varepsilon_{it} \quad \text{(Eq. 6)}$$

$$AEM_{it} = \alpha_0 + \alpha_1 COMP_{it} + \alpha_2 GFC2_{it} + \alpha_3 GFC2xCOMP_{it} + \alpha' Controls_{it} + \varepsilon_{it} \quad \text{(Eq. 7)}$$

Where:

AEM_{it} = One of the two accruals-based earnings management variables, for firm *i* in year *t*.

$COMP_{it}$ = Represents one of the two compensation variables, BONCOMP and TOTCOMP, for firm *i* in year *t*.

$GFC1_{it}$ = Dummy variable which equals 1 if the firm-year observation comes from the GFC period (2008-2009), and 0 if it comes from the pre-crisis period (2005-2007), for firm *i* in year *t*.

$GFC1xCOMP_{it}$ = Interaction between the variables GFC1 and each one of the different compensation variables, for firm *i* in year *t*.

$GFC2_{it}$ = Dummy variable which equals 1 if the firm-year observation comes from the GFC period (2008-2009), and 0 if it comes from the post-crisis period (2010-2012), for firm *i* in year *t*.

$GFC2xCOMP_{it}$ = Interaction between the variables GFC2 and each one of the different compensation variables, for firm *i* in year *t*.

$Controls_{it}$ = The set of control variables that is used in the regressions, defined in Table 3.2.

Secondly, I use two models for the real earnings management, in order to test the different ways for real manipulation. The dependent variable in these models is represented by the three methods for real earnings management by Roychowdhury (2006) as well as the combined proxy. The models for real earnings management are formulated as the following:

$$REM_{it} = \alpha_0 + \alpha_1 COMP_{it} + \alpha_2 GFC1_{it} + \alpha_3 GFC1xCOMP_{it} + \alpha' Controls_{it} + \varepsilon_{it} \quad \text{(Eq. 8)}$$

$$REM_{it} = \alpha_0 + \alpha_1 COMP_{it} + \alpha_2 GFC2_{it} + \alpha_3 GFC2xCOMP_{it} + \alpha' Controls_{it} + \varepsilon_{it} \quad \text{(Eq. 9)}$$

Where:

REM_{it} = One of the four real earnings management variables, for firm *i* in year *t*.

Following prior studies (Bergstresser & Philippon, 2006; Habib et al., 2013; Jiang, Petroni & Wang, 2010), all continuous variables (except for those that are logarithmized) are winsorized at the top and bottom 1% level in order to control for potential outlier issues. However, in the case of the accruals-based earnings management variables the values are stated in absolute values, therefore these variables are only winsorized at the top 1% level (Buchholz, Lopatta & Maas, 2020). In addition to this, standard errors will also be clustered at firm level in order to control for serial correlation and potential heteroskedasticity (Wooldridge, 2012). Lastly, I include industry fixed effects in all regression models in order to control for systematic differences between different industries.

4. Results

4.1 Descriptive statistics

The descriptive statistics for all variables after correcting for outliers are presented in Table 4.1. The two measures of absolute discretionary accruals (Modified Jones and Kothari) present quite similar numbers with a mean value of 0.058 and 0.057, respectively. However, the Modified Jones variable has a higher standard deviation (0.071) compared to the Kothari variable (0.066). For the other dependent variables, the proxies for real earnings management, both PROD and DISEXP have a mean value of 0.002 while the third proxy, CFO, has a significantly lower mean value of 0.0001 and the aggregated proxy, REM, a higher mean value of 0.004. CFO also has a lower standard deviation (0.117) compared to both PROD (0.185), DISEXP (0.191) and REM (0.360). The ratio of bonus compensation to total compensation ranges between 0 and 54.7 percent, which can be compared to the mean of 15.3 percent that is closer to the min value. On the other hand, the logarithmic value of total compensation (TOTCOMP) ranges between 11.576 to 17.683 with a mean value (15.095) that is closer to the max value. Although, it can also be seen that the non-logarithmized value for total compensation ranges between 106.5 to 47,800, with a mean value (5,142) closer to the min value.

The table further shows a mean value for loss frequency of 15.7 percent, indicating that only a small portion of the sample has experienced consecutive losses in the preceding years. While firm performance (ROA) ranges between -74.2 to 30.4 percent, the mean firm performance has a positive value of 1.8 percent. The mean value for CEO gender is 98.6 percent, indicating there is a clear majority of CEOs that are male. Furthermore, the age of CEOs range between 31 and 67, but the mean age is 50. The value of CEO tenure has a max value of 40, but this can be compared to the mean CEO tenure of 5.675, indicating that, on average, CEOs only stay in their positions for a couple of years.

The Pearson correlations between the variables are presented in Table 4.2. The table shows a positive correlation of 0.569 between the two independent variables bonus compensation and total compensation. However, this correlation won't pose any problems since these variables will be run in separate regressions. There is a negative correlation of -0.569 between ROA and Loss. This result is not very surprising as both of the variables are used to measure the performance of the firm and firms that suffer from consecutive losses would consequently lead

to lower levels of ROA. There is also a positive correlation between total compensation and size of 0.751, which could be considered significantly high. However, running a variation inflation factor (VIF) test shows a VIF-score of 3.67 for the Size variable, which is the highest VIF-score of all variables. A VIF-score of 4 or 10 has commonly been used as a cutoff point or rule of thumb for multicollinearity (O'brien, 2007; Wooldridge, 2012). Hence, the correlation matrix presented in Table 4.2 does not indicate issues with multicollinearity in the regression models.

Table 4.1 Descriptive statistics

Variables	N	mean	sd	min	max
Modified Jones	1,229	0.058	0.071	0	0.440
Kothari	1,226	0.057	0.066	0	0.357
CFO	1,233	0.0001	0.117	-0.367	0.443
PROD	1,222	0.002	0.185	-0.652	0.513
DISC_Exp	1,232	0.002	0.191	-0.712	0.399
REM	1,245	0.004	0.360	-1.265	0.879
BONCOMP	1,245	0.153	0.151	0	0.547
TOTCOMP	1,245	15.095	0.838	11.576	17.683
TCC	1,245	5,142	5,098	106.5	47,800
Size	1,245	7.485	1.979	3.189	12.828
MTB	1,238	0.728	0.855	-3.666	4.117
Loss	1,245	0.157	0.364	0	1
Age	1,245	3.532	0.973	0.693	6.001
Lev	1,245	0.115	0.133	0	0.527
ROA	1,245	0.018	0.166	-0.742	0.304
CEO_gender	1,245	0.986	0.119	0	1
CEO_age	1,245	49.798	6.738	31	67
CEO_tenure	1,245	5.675	6.505	0	40

Notes: Table 4.1 presents the descriptive statistics for all dependent, independent and control variables. TCC is the non-logarithmized value, in thousand SEK, of total bonus compensation. All other independent and control variables are defined in Table 3.2.

Table 4.2 Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) Modified Jones	1.000																
(2) Kothari	0.917*	1.000															
(3) CFO	0.219*	0.225*	1.000														
(4) PROD	0.036	0.043	0.362*	1.000													
(5) DISC_Exp	-0.135*	-0.128*	-0.238*	0.594*	1.000												
(6) REM	0.016	0.026	0.387*	0.941*	0.743*	1.000											
(7) BONCOMP	-0.114*	-0.105*	-0.140*	0.025	0.016	-0.024	1.000										
(8) TOTCOMP	-0.184*	-0.174*	-0.121*	0.048	0.075*	0.025	0.569*	1.000									
(9) Size	-0.260*	-0.263*	-0.112*	0.058*	0.115*	0.053	0.345*	0.751*	1.000								
(10) MTB	0.111*	0.154*	-0.099*	-0.214*	-0.226*	-0.263*	0.175*	0.112*	-0.079*	1.000							
(11) Lev	-0.146*	-0.149*	0.027	0.072*	0.081*	0.086*	0.055	0.224*	0.407*	-0.110*	1.000						
(12) ROA	-0.269*	-0.260*	-0.533*	-0.193*	0.139*	-0.201*	0.228*	0.215*	0.300*	0.085*	-0.010	1.000					
(13) Loss	0.217*	0.218*	0.373*	0.097*	-0.122*	0.105*	-0.164*	-0.209*	-0.350*	0.024	-0.074*	-0.569*	1.000				
(14) Age	-0.166*	-0.198*	-0.094*	0.026	0.098*	0.034	0.108*	0.323*	0.454*	-0.122*	0.171*	0.160*	-0.181*	1.000			
(15) CEO_age	-0.034	-0.049	0.023	0.015	-0.027	0.005	0.032	0.145*	0.233*	-0.016	0.128*	0.031	-0.062*	0.133*	1.000		
(16) CEO_tenure	-0.029	-0.043	-0.065*	-0.102*	-0.051	-0.099*	0.012	-0.051	-0.036	0.075*	0.016	0.155*	-0.140*	0.094*	0.377*	1.000	
(16) CEO_gender	-0.032	-0.031	0.023	0.092*	0.055	0.083*	0.071*	0.116*	0.113*	0.014	0.072*	0.048	-0.040	0.009	0.006	0.055	1.000

Notes: Table 4.2 presents the Pearson correlation for all dependent, independent and control variables. All independent and control variables are defined in Table 3.2. * indicates that the coefficient is at least significant at 5% level.

4.2 Executive compensation and accruals-based earnings management

The regression results for the accruals-based earnings management models are presented in Table 4.3 and Table 4.4. The first table presents regression results with bonus compensation (BONCOMP) as the independent variable and both proxies for accruals-based earnings management (Modified Jones and Kothari model) as dependent variables. The table shows that there is a significant (at 10% level) negative effect of bonus compensation on both Modified Jones and Kothari when looking at the entire sample period (model 1 and 2). I hypothesized that there would be a positive association between executive compensation and earnings management. However, these results indicate that there is a negative association between them, which suggest that higher bonus compensation leads to lower levels of earnings management. Although not consistent with my hypothesis, a reason for this result could be that offering managers compensation that is based on their performance motivates them to work in ways that benefit the firm and not only themselves. Thus, although the compensation is based on the firm's short-term performance, the effect of it may therefore motivate managers to work in ways that benefit the firm in the long run.

These results do, however, consider the entire sample period (2005-2012) and do not distinguish between the effects in different periods. I therefore hypothesized that the positive association between executive compensation and earnings management would be stronger in the GFC period compared to the period before and after. In model (3) and (4) of table 4.2, the results of the pre-GFC and GFC period are shown (denoted GFC1 period). The results indicate that when there is no crisis, there is a significant (at 5% level) negative effect of bonus compensation on both Modified Jones (model 3) and Kothari (model 4). However, when looking at the interaction variable (GFC1xBONCOMP), which shows the effect of bonus compensation on earnings management during the GFC period compared to the pre-crisis period, there is a positive effect of bonus compensation on both proxies for earnings management, where both variables are significant at 5% level. The positive relationship indicates that, compared to the pre-crisis period, the level of bonus compensation positively influences earnings management during the GFC period, which is in support of my hypothesis. This might be a result of the increased difficulty to reach earnings targets during the crisis periods, which makes the CEOs that receive compensation conditional on reaching certain short-term results more willing to take more risks and manage earnings (Bebchuk et al., 2010).

The table also presents similar results for the comparison of the GFC and post-GFC periods (denoted GFC2 period). As shown by model (5) and (6), when there is no crisis, there is a negative effect of bonus compensation on both earnings management proxies. There is also a positive effect of bonus compensation on earnings management when looking at the interaction variable (GFC2xBONCOMP). However, none of these results are significant, which means that in these models I find no support to my hypothesis. On the other hand, this result is not entirely unexpected, and it is the reason why I analyzed the pre-crisis and post-crisis periods separately. As mentioned in section 3.4, with the GFC having no clear end year, there may be delayed effects of the crisis which could end up in the post-crisis period. Therefore, when comparing the effects of compensation on earnings management between the GFC period and the post-GFC period, there is no significant difference, which could arguably be caused by this delayed effect influencing the results in the post-crisis period.

When it comes to the results of the firm-specific control variables, Leverage is negatively and significantly associated with earnings management in all six regressions for bonus compensation, though only at a 5% level in model (5) and at 10% level in model (6). This implies that firms that are more leveraged are less involved in earnings management, which is not in line with the expectations of leveraged firms being more involved. However, it is consistent with the idea that firms are more transparent and conservative in their reporting as they want to signal credibility to their investors (Barton & Waymire, 2004). The coefficient for ROA is negative in all regressions and significant in all models except for those in the GFC2 period (model 5 and 6), with significance levels varying between 1% and 10%. The results suggest that firms with a lower ROA are conducting more earnings management. This result is expected, as poorly performing firms have been found to have lower accruals quality (Dechow & Dichev, 2002) and to be more motivated to engage in earnings management (Chen et al., 2015).

The coefficient for MTB is positive and significant in all regressions except in model (3), with significance levels ranging between 1% and 10%. Firms with higher MTB therefore engage more in earnings management, and a plausible reason for this result is that growth firms would be more willing to manage earnings as they would be more severely affected from missing earnings forecasts (Skinner & Sloan, 2002). Firm age is found to be negatively related to earnings management, but only significant at 5% for model (1), (2) and (6). The negative relationship indicates that younger firms engage more in earnings management, which could be a consequence of unstable earnings and poor performance (Gounopoulos & Pham, 2017).

Table 4.3 Results for Bonus Compensation and Accruals-based Earnings Management

Variables	(1) Modified Jones	(2) Kothari	(3) Modified Jones	(4) Kothari	(5) Modified Jones	(6) Kothari
BONCOMP	-0.0283*	-0.0257*	-0.0596**	-0.0536**	-0.0295	-0.0203
	(-1.932)	(-1.865)	(-2.528)	(-2.264)	(-1.304)	(-1.049)
GFC1			-0.0201***	-0.0172***		
			(-3.051)	(-2.878)		
GFC1xBONCOMP			0.0677**	0.0532**		
			(2.361)	(2.080)		
GFC2					-0.0023	0.0008
					(-0.363)	(0.153)
GFC2xBONCOMP					0.0339	0.0116
					(1.102)	(0.454)
Size	-0.0011	-0.0009	-0.0009	-0.0010	-0.0016	-0.0009
	(-0.718)	(-0.702)	(-0.513)	(-0.619)	(-1.104)	(-0.686)
MTB	0.0085**	0.0107***	0.0044	0.0072**	0.0093*	0.0117***
	(1.981)	(3.350)	(1.078)	(2.353)	(1.772)	(2.946)
Lev	-0.0610***	-0.0489***	-0.0699***	-0.0607***	-0.0455**	-0.0300*
	(-2.672)	(-2.726)	(-2.868)	(-2.989)	(-2.148)	(-1.699)
ROA	-0.0833*	-0.0766**	-0.0786**	-0.0928***	-0.0693	-0.0611
	(-1.915)	(-2.529)	(-2.122)	(-3.650)	(-1.304)	(-1.584)
Loss	0.0126	0.0129	0.0101	0.0071	0.0148	0.0167
	(1.117)	(1.404)	(0.843)	(0.703)	(1.089)	(1.511)
Age	-0.0043**	-0.0050**	-0.0032	-0.0035	-0.0034	-0.0051**
	(-2.027)	(-2.454)	(-1.385)	(-1.602)	(-1.447)	(-2.279)
CEO_age	0.0004	0.0003	0.0003	0.0002	0.0007*	0.0004
	(1.284)	(0.889)	(0.565)	(0.435)	(1.726)	(1.075)
CEO_tenure	0.0003	0.0002	0.0004	0.0003	0.0002	0.0001
	(0.823)	(0.537)	(0.942)	(0.885)	(0.466)	(0.315)
CEO_gender	0.0057	-0.0052	0.0157	0.0072	0.0005	-0.0121
	(0.264)	(-0.393)	(0.977)	(0.617)	(0.018)	(-0.736)
Constant	-0.0167	0.0908***	0.0175	0.1275***	-0.0246	0.0704*
	(-0.543)	(3.029)	(0.546)	(5.012)	(-0.697)	(1.673)
Industry FE	YES	YES	YES	YES	YES	YES
Observations	1,222	1,219	766	767	770	768
R^2	0.179	0.206	0.174	0.215	0.182	0.217

Notes: Table 4.3 presents the regression results for the accruals-based earnings management models, where the independent variable is bonus compensation (BONCOMP). Model 1 and 2 examines the entire sample period (2005-2012), model 3 and 4 examines the difference between the GFC and pre-GFC period and model 5 and 6 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Among the CEO characteristics variables, the coefficient for CEO age is positively associated with earnings management, but only significant (at 10% level) for the Modified Jones model in the GFC2 period (model 5). The positive sign suggests that firms with older CEOs would engage more in earnings management, which could be an effect of the CEOs being more motivated to do so when they are close to retirement (Ali & Zhang, 2015; Davison et al., 2007).

Table 4.4 presents the regression results with total compensation (TOTCOMP) as the independent variable and both proxies for accruals-based earnings management as dependent variables. The table shows that there is a significant (at 10% level) negative effect of total compensation on Modified Jones when looking at the entire sample period (model 1). However, the association is found to be insignificant in the Kothari model (model 2). Similar as with the bonus compensation regressions, this result is not consistent with my hypothesis of a positive association between executive compensation and earnings management. Therefore, a negative association between the variables could, again, arguably be caused by managers getting enough incentives from this compensation to work to benefit the company in the long run.

The results for the pre-GFC and GFC period (model 3 and 4) are also similar to those presented in table 4.3. That is, when there is no crisis, there is a significant (at 1% level) negative effect of total compensation on both earnings management proxies. There is also a significant (at 1% level) and positive effect of bonus compensation on both proxies for earnings management when looking at the interaction variable (GFC1xTOTCOMP) comparing the crisis period with the pre-crisis period. The results indicate that in the GFC period, compared to the pre-crisis period, total compensation positively influences earnings management, which means there is support for my hypothesis in these models as well. That is, there is a positive association in the GFC period that is stronger compared to the pre-GFC period, that could arguably be caused by the great uncertainty surrounding companies during such a period, and the difficulty for firms to reach their earnings target during this period (Assenso-Okofo et al., 2020).

Table 4.4 also presents similar results for the comparison of the GFC and post-GFC periods as in table 4.3. This means that neither of the variables of interest is significant in these models (5 and 6). Therefore, I find no support to my hypothesis in these models either, which arguably is caused by the delayed effect from the GFC period influencing the results for the post-GFC period. Although there are a few small differences between the result for the bonus and total compensation regressions, in general, there are no major differences between them. This would

mean that the results are mainly driven by the bonus part of the compensation, rather than the fixed part. This is not very surprising, as this part of the compensation is not tied to the performance of the firm. That is, regardless of whether or not the firm meets their earnings target, the manager will receive their fixed compensation (i.e., their salary). As such, there is no major incentivizing effect from this compensation that would motivate managers to engage in earnings management. The positive effect of compensation on earnings management that was found in the GFC1 period could therefore mainly be attributed to the performance-based bonus compensation.

When it comes to the firm-specific control variables, the direction and significance level of the coefficients for firm age and CEO age are the same as in Table 4.3. The same goes for ROA, but with the exception of model (1) and (2) that have slightly higher significance levels. The coefficients for Leverage and MTB also have the same direction and significance level as in Table 4.3, but with the exception of model (6) for Leverage and model (4) for MTB, which is found to be insignificant. Furthermore, the table shows that size is negatively and significantly (at 10% level) associated with earnings management in the GFC2 period (model 5 and 6). This means that larger firms engage less in earnings management, which could be a consequence of larger firms having more stability and predictability in their operations compared to smaller firms (Dechow & Dichev, 2002).

Table 4.4 Results for Total Compensation and Accruals-based Earnings Management

Variables	(1) Modified Jones	(2) Kothari	(3) Modified Jones	(4) Kothari	(5) Modified Jones	(6) Kothari
TOTCOMP	-0.0067*	-0.0048	-0.0171***	-0.0151***	0.0007	0.0031
	(-1.750)	(-1.325)	(-3.361)	(-3.163)	(0.178)	(0.796)
GFC1			-0.1979***	-0.1939***		
			(-2.763)	(-2.910)		
GFC1xTOTCOMP			0.0124***	0.0122***		
			(2.664)	(2.819)		
GFC2					-0.0775	-0.0437
					(-1.231)	(-0.772)
GFC2xTOTCOMP					0.0053	0.0031
					(1.309)	(0.832)
Size	0.0005	0.0000	0.0028	0.0020	-0.0032*	-0.0030*
	(0.239)	(0.005)	(1.104)	(0.885)	(-1.722)	(-1.706)
MTB	0.0087**	0.0107***	0.0057	0.0081**	0.0082	0.0105***
	(2.008)	(3.292)	(1.340)	(2.537)	(1.600)	(2.715)
Lev	-0.0624***	-0.0493***	-0.0787***	-0.0682***	-0.0428**	-0.0270
	(-2.782)	(-2.799)	(-3.300)	(-3.544)	(-2.027)	(-1.499)
ROA	-0.0866**	-0.0795***	-0.0809**	-0.0955***	-0.0701	-0.0623
	(-1.990)	(-2.631)	(-2.221)	(-3.821)	(-1.315)	(-1.628)
Loss	0.0133	0.0133	0.0125	0.0091	0.0144	0.0160
	(1.182)	(1.451)	(1.045)	(0.904)	(1.054)	(1.451)
Age	-0.0042**	-0.0048**	-0.0034	-0.0036	-0.0032	-0.0048**
	(-1.972)	(-2.380)	(-1.473)	(-1.641)	(-1.311)	(-2.102)
CEO_age	0.0004	0.0003	0.0003	0.0003	0.0007*	0.0004
	(1.347)	(0.955)	(0.683)	(0.547)	(1.718)	(1.102)
CEO_tenure	0.0003	0.0002	0.0003	0.0003	0.0002	0.0001
	(0.741)	(0.457)	(0.775)	(0.751)	(0.406)	(0.262)
CEO_gender	0.0059	-0.0053	0.0195	0.0104	-0.0009	-0.0135
	(0.275)	(-0.394)	(0.993)	(0.778)	(-0.036)	(-0.818)
Constant	0.0646	0.1491***	0.2299***	0.3180***	-0.0273	0.0371
	(1.081)	(2.627)	(3.024)	(4.684)	(-0.431)	(0.554)
Industry FE	YES	YES	YES	YES	YES	YES
Observations	1,222	1,219	766	767	770	768
R^2	0.178	0.204	0.182	0.222	0.180	0.216

Notes: Table 4.4 presents the regression results for the accruals-based earnings management models, where the independent variable is total compensation (TOTCOMP). Model 1 and 2 examines the entire sample period (2005-2012), model 3 and 4 examines the difference between the GFC and pre-GFC period and model 5 and 6 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

4.3 Executive compensation and real earnings management

The regression results for the real earnings management models are presented in Table 4.5 and Table 4.6. The first table presents regression results with bonus compensation (BONCOMP) as the independent variable and the four proxies for real earnings management (CFO, PROD, DISEXP and REM) as dependent variables. The table shows that there is a significant (at 10% level) and positive effect of bonus compensation on PROD (model 2) when looking at the entire sample period, while the other three measures (model 1, 3 and 4) are found to be insignificant. I hypothesized that there would be a positive association between executive compensation and earnings management, and although only one out of four measures for real earnings management is found to be significant, I find some evidence in support of this. That is, higher bonus compensation leads to higher levels of earnings management. This result is in contrast to the result from the accruals-based earnings management, which suggested a negative association when looking at the entire sample period. Arguably, this could indicate that managers feel the need to manage earnings through real activities manipulation in all periods, regardless of whether or not there is a financial crisis.

This view is further supported by the results from the comparison of the GFC period with the pre-GFC period (model 5-8) and with the post-GFC period (model 9-12). Although all of these models show a positive coefficient for the interaction variable (GFC1xBONCOMP and GFC2xBONCOMP), none of them is significant. This means that in regard to the hypothesis of a stronger association in the GFC period compared to the period before and after, I find no support. Thus, I find no difference in the effect of bonus compensation on earning management in the crisis period, which has also been found by previous studies (Papadaki & Tzovas, 2017). Moreover, taking into account the result from the entire sample period it could indicate that managers are willing to manage earnings in all periods, at least through overproduction of inventory (PROD). While a significant difference was found with the pre-crisis period for the accruals-based models, it could possibly be the result of firms that trade-off earnings management methods depending on their relative cost (Zang, 2012). It could for instance suggest that the real activities manipulation was found to be too costly, which led to increased use of accruals-based methods. The potential trade-off effect between the earnings management methods is controlled for in section 4.4.

When it comes to the results of the firm-specific control variables, ROA is negatively and significantly (at 1% level) related to CFO, PROD and REM in all regression models. This result is in support of previous research (Gao et al., 2017) and strengthens the view of poorly

performing firms being more motivated to engage in earnings management (Chen et al., 2015). However, the coefficient is positive and significant (at 5% level) for DISEXP in model (3) and (7) and is found to be insignificant in model (11), which is in contrast to previous research that suggests poorly performing firms have lower accruals quality (Dechow & Dichev, 2002). The coefficient for MTB is negative and significant (at 1% level) in all models for PROD, DISEXP and REM. It is also negative and significant (at 10% level) for CFO in the GFC2 period (model 5), but insignificant in the other two models (1 and 9). The results suggest that growth firms (i.e., those with high MTB values) are conducting earnings management to a larger extent, which could be a result of the significant value loss for growth firms that are unable to meet their earnings expectations (Skinner & Sloan, 2002).

Size is found to be positive and significant at a 10% level for CFO in the GFC2 period (model 9), which means that larger firms tend to conduct earnings management to a lower degree. An explanation for this is that larger firms tend to have operations that are more stable and predictable (Dechow & Dichev, 2002). However, the coefficients for all other models are found to be insignificant, which could question the robustness of this result. Furthermore, the coefficient for Loss is positive and significant (at 1% level for model 1 and 5% level for model 5 and 9) for CFO, suggesting that firms that have experienced years of losses are engaging in earnings management to a larger extent. The association could be a consequence of firms having a greater need to convince their financiers (Bigus & Hillebrand, 2017). Among the CEO characteristics variables, the coefficient for CEO gender is found to be positive and significant for PROD and REM at 10% significance level for model (2), (4) and (12) and 5% significance level for model (10). The finding suggests that male CEOs engage in earnings management to a larger extent compared to female CEOs, which is in line with previous studies (Gavious et al., 2012) as female CEOs are found to use less aggressive earnings management methods in order to increase the reported earnings (Na & Hong, 2017). However, the positive relation is only applied for two of the proxies, which means that CEO gender is still somewhat ambiguous in regard to real earnings management.

Table 4.5 Results for Bonus Compensation and Real Earnings Management

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	CFO	PROD	DISEXP	REM	CFO	PROD	DISEXP	REM	CFO	PROD	DISEXP	REM
BONCOMP	-0.0168	0.1051*	0.0056	0.0969	-0.0354	0.0383	-0.0737	-0.0749	-0.0237	0.1022	0.0461	0.1461
	(-0.620)	(1.844)	(0.115)	(0.880)	(-0.723)	(0.434)	(-0.820)	(-0.423)	(-0.636)	(1.252)	(0.710)	(0.990)
GFC1					-0.0281***	-0.0487***	-0.0371*	-0.1103***				
					(-2.707)	(-2.610)	(-1.748)	(-3.100)				
GFC1xBONCOMP					0.0453	0.1249	0.0937	0.2501				
					(0.977)	(1.395)	(0.917)	(1.395)				
GFC2									-0.0062	-0.0208	-0.0117	-0.0334
									(-0.614)	(-1.101)	(-0.581)	(-0.944)
GFC2xBONCOMP									0.0137	0.0722	0.0111	0.0671
									(0.318)	(0.803)	(0.123)	(0.408)
Size	0.0057	0.0056	0.0007	0.0126	0.0021	0.0068	0.0048	0.0141	0.0076*	0.0066	0.0003	0.0141
	(1.578)	(0.909)	(0.094)	(1.022)	(0.629)	(1.072)	(0.641)	(1.105)	(1.818)	(0.985)	(0.034)	(1.056)
MTB	-0.0074	-0.0446***	-0.0515***	-0.1043***	-0.0164*	-0.0458***	-0.0458***	-0.1092***	0.0003	-0.0468***	-0.0630***	-0.1100***
	(-1.051)	(-3.799)	(-3.894)	(-4.547)	(-1.961)	(-4.014)	(-2.963)	(-4.735)	(0.035)	(-3.157)	(-4.273)	(-3.893)
Lev	0.0152	0.0488	0.0708	0.1236	0.0225	0.0788	0.1188	0.2068	0.0003	0.0023	0.0266	0.0240
	(0.383)	(0.752)	(1.037)	(0.953)	(0.549)	(1.154)	(1.561)	(1.467)	(0.006)	(0.031)	(0.350)	(0.169)
ROA	-0.3601***	-0.2206***	0.1691**	-0.4293***	-0.3570***	-0.1995***	0.1636**	-0.3966***	-0.3700***	-0.2306***	0.1387	-0.4834***
	(-6.989)	(-3.731)	(2.074)	(-3.750)	(-7.381)	(-3.844)	(2.265)	(-3.743)	(-6.241)	(-2.995)	(1.343)	(-3.217)
Loss	0.0404***	0.0104	-0.0177	0.0252	0.0376**	0.0233	-0.0123	0.0462	0.0334**	-0.0020	-0.0236	0.0015
	(3.183)	(0.508)	(-0.760)	(0.652)	(2.307)	(0.835)	(-0.377)	(0.818)	(2.286)	(-0.085)	(-0.961)	(0.035)
Age	-0.0043	0.0026	0.0089	0.0062	-0.0060	-0.0016	0.0118	0.0031	-0.0019	0.0032	0.0032	0.0047
	(-0.730)	(0.206)	(0.760)	(0.247)	(-0.987)	(-0.116)	(0.900)	(0.118)	(-0.339)	(0.246)	(0.255)	(0.188)
CEO_age	0.0005	0.0010	-0.0008	0.0006	0.0008	0.0004	-0.0009	0.0007	0.0003	0.0015	0.0003	0.0020
	(0.821)	(0.665)	(-0.558)	(0.226)	(1.150)	(0.259)	(-0.534)	(0.205)	(0.430)	(0.904)	(0.186)	(0.610)
CEO_tenure	0.0003	-0.0021	-0.0016	-0.0032	0.0003	-0.0018	-0.0017	-0.0030	0.0004	-0.0016	-0.0014	-0.0026
	(0.493)	(-1.171)	(-0.946)	(-0.897)	(0.442)	(-0.891)	(-0.758)	(-0.714)	(0.502)	(-0.831)	(-0.809)	(-0.701)
CEO_gender	0.0412	0.1539*	0.0907	0.2834*	0.0103	0.0982	0.0511	0.1578	0.0474	0.1838**	0.1220	0.3504*
	(1.339)	(1.952)	(1.068)	(1.822)	(0.180)	(0.907)	(0.443)	(0.680)	(1.428)	(2.020)	(1.181)	(1.968)
Constant	-0.0658	-0.0783	0.0445	-0.2071	0.0882	0.0398	0.0804	0.1977	-0.1298	-0.2461*	-0.0802	-0.4679*
	(-0.836)	(-0.724)	(0.401)	(-0.868)	(1.327)	(0.295)	(0.547)	(0.706)	(-1.561)	(-1.949)	(-0.608)	(-1.847)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,226	1,215	1,225	1,238	771	767	771	779	773	764	772	779
R^2	0.313	0.114	0.094	0.130	0.330	0.105	0.093	0.127	0.336	0.128	0.122	0.155

Notes: Table 4.5 presents the regression results for the real earnings management models, where the independent variable is bonus compensation (BONCOMP). Model 1 to 4 examines the entire sample period (2005-2012), model 5 to 8 examines the difference between the GFC and pre-GFC period and model 9 to 12 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table 4.6 presents the regression results with total compensation (TOTCOMP) as the independent variable and the four proxies for real earnings management as dependent variables. The table shows that all models are insignificant when looking at the entire sample (model 1-4). One difference can be found here compared to the results for the bonus compensation. That PROD, although still positive, is no longer significant. This means that in regard to the hypothesis of a positive association between executive compensation and earnings management, I find no support. Similar as in the case of accruals-based earnings management, this could arguably be caused by the fact that the main effect of compensation on earnings management comes from the variable part (i.e., the bonus) rather than the fixed part. Again, this is not very surprising, as the fixed compensation is not tied to the performance of the firm the same way as the bonus compensation. This means that the main incentivizing effect from compensation can be attributed to the performance-based bonus.

The results for the pre-GFC and GFC period (model 5-8) show different results to those presented for the bonus compensation. When there is no crisis, there is a significant (at 10% level) negative effect of total compensation on CFO (model 5), while all other models are insignificant (model 6-8). However, when looking at the interaction variable (GFC1xTOTCOMP), which shows the effect of total compensation on earnings management during the GFC period compared to the pre-crisis period, the coefficient is insignificant in model (5), but positive and significant for PROD (model 6) at 5% level and for REM (model 8) at 1% level. The positive relationship indicates that, compared to the pre-crisis period, the level of total compensation positively influences earnings management during the GFC period, which is in support of my hypothesis of a stronger association in the GFC period. This could be seen as a result of a need to meet market expectations (Xu & Ji, 2016), which could be difficult during a crisis period (Assenso-Okofo et al., 2020).

The table also presents similar results for the comparison of the GFC and post-GFC periods. As shown by model (10) to (12), the interaction variable shows a positive and significant effect on earnings management, with PROD (model 10) and REM (model 12) being significant at 5% level while DISEXP (model 11) is significant at 1% level. This indicates that, compared to the post-crisis period, the level of total compensation positively influences earnings management during the GFC period, which is in support of my hypothesis. On the other hand, for the last proxy, CFO (model 9), a negative relationship is found between total compensation and earnings management that is significant at 10% level. This result is not in support of my hypothesis and is in contrast to the findings from the other three proxies.

An interesting observation can be made from these results. Compared to the findings from the bonus compensation regressions, a significant difference is found between the GFC and both pre- and post-GFC period. While no such difference was found for bonus compensation, it would arguably indicate that this significant difference for the total compensation is mainly driven by the fixed part of the compensation, which is quite unexpected. As mentioned previously, the fixed compensation is not tied to the performance of the firm the same way as the bonus compensation, and this compensation would therefore not be expected to have a huge impact on managers willingness to engage in earnings management. This would mean that during the GFC, managers that receive a higher fixed compensation (and hence also total compensation) would engage in earnings management to a greater extent. A possible explanation for this result is that the manager's job may be at risk when the firm is performing poorly during the crisis period. This would mean that managers that are well-compensated, are willing to manipulate earnings during the crisis not to receive a higher compensation but to keep their well-compensated job even when firm performance is going down.

When it comes to the firm-specific control variables, the direction and significance level of the coefficients for ROA, MTB and Loss are the same as in Table 4.5. The coefficient for Size also has the same direction as in Table G, but with model (9) being significant at 5% level and model (1) at 10% level. Furthermore, the table shows that Leverage is positively and significantly (at 10% level) associated with DISEXP (model 7) in the GFC1 period. This result indicates that firms that are more leveraged are more involved in earnings management, which is in line with prior research suggesting that these firms could be more incentivized to manage earnings in order to avoid debt covenant violations (Becker et al., 1998; Hossain & Monroe, 2015). Still, as there is only one out of the six models that is found to be significant, the robustness of this result is questionable. Among the CEO characteristics variables, the coefficient for CEO gender has the same direction as in Table 4.5, but model (2) and (12) are instead significant at 5% level.

Table 4.6 Results for Total Compensation and Real Earnings Management

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	CFO	PROD	DISEXP	REM	CFO	PROD	DISEXP	REM	CFO	PROD	DISEXP	REM
TOTCOMP	-0.0128	0.0173	0.0182	0.0247	-0.0167*	0.0229	0.0221	0.0276	-0.0088	0.0090	0.0087	0.0142
	(-1.585)	(1.210)	(1.141)	(0.902)	(-1.732)	(1.293)	(1.110)	(0.776)	(-1.027)	(0.548)	(0.508)	(0.479)
GFC1					-0.0431	-0.3554**	-0.2553	-0.6291*				
					(-0.367)	(-2.124)	(-1.251)	(-1.955)				
GFC1xTOTCOMP					0.0015	0.0215**	0.0152	0.0366*				
					(0.192)	(1.974)	(1.146)	(1.748)				
GFC2									0.1861	-0.4053**	-0.5434***	-0.7292**
									(1.648)	(-2.238)	(-2.713)	(-2.196)
GFC2xTOTCOMP									-0.0125*	0.0259**	0.0352***	0.0464**
									(-1.715)	(2.229)	(2.730)	(2.175)
Size	0.0098*	0.0026	-0.0057	0.0066	0.0074	-0.0018	-0.0059	0.0003	0.0116**	0.0044	-0.0057	0.0089
	(1.844)	(0.331)	(-0.540)	(0.421)	(1.373)	(-0.205)	(-0.504)	(0.019)	(2.053)	(0.503)	(-0.496)	(0.525)
MTB	-0.0059	-0.0442***	-0.0542***	-0.1054***	-0.0142*	-0.0478***	-0.0507***	-0.1140***	0.0015	-0.0450***	-0.0641***	-0.1084***
	(-0.889)	(-3.796)	(-4.252)	(-4.682)	(-1.844)	(-4.239)	(-3.447)	(-5.022)	(0.189)	(-3.093)	(-4.430)	(-3.950)
Lev	0.0083	0.0492	0.0824	0.1301	0.0130	0.0878	0.1388*	0.2268	-0.0027	-0.0030	0.0288	0.0186
	(0.207)	(0.758)	(1.207)	(1.003)	(0.314)	(1.283)	(1.803)	(1.579)	(-0.063)	(-0.040)	(0.378)	(0.131)
ROA	-0.3629***	-0.2090***	0.1714**	-0.4173***	-0.3576***	-0.1861***	0.1624**	-0.3876***	-0.3729***	-0.2117***	0.1468	-0.4593***
	(-7.165)	(-3.572)	(2.100)	(-3.664)	(-7.568)	(-3.537)	(2.243)	(-3.588)	(-6.420)	(-2.786)	(1.440)	(-3.097)
Loss	0.0422***	0.0088	-0.0205	0.0224	0.0414**	0.0170	-0.0186	0.0369	0.0348**	-0.0024	-0.0253	-0.0006
	(3.280)	(0.432)	(-0.886)	(0.584)	(2.527)	(0.612)	(-0.574)	(0.657)	(2.335)	(-0.104)	(-1.026)	(-0.013)
Age	-0.0043	0.0020	0.0090	0.0057	-0.0063	-0.0019	0.0122	0.0029	-0.0021	0.0017	0.0032	0.0031
	(-0.735)	(0.158)	(0.768)	(0.227)	(-1.049)	(-0.144)	(0.921)	(0.109)	(-0.357)	(0.132)	(0.261)	(0.123)
CEO_age	0.0005	0.0009	-0.0008	0.0006	0.0009	0.0004	-0.0008	0.0008	0.0003	0.0014	0.0002	0.0018
	(0.831)	(0.605)	(-0.561)	(0.206)	(1.214)	(0.239)	(-0.479)	(0.237)	(0.430)	(0.851)	(0.155)	(0.564)
CEO_tenure	0.0003	-0.0020	-0.0016	-0.0031	0.0002	-0.0017	-0.0015	-0.0028	0.0003	-0.0015	-0.0013	-0.0023
	(0.481)	(-1.125)	(-0.947)	(-0.877)	(0.296)	(-0.807)	(-0.698)	(-0.665)	(0.464)	(-0.775)	(-0.754)	(-0.646)
CEO_gender	0.0435	0.1546**	0.0865	0.2820*	0.0157	0.0904	0.0385	0.1431	0.0459	0.1902**	0.1277	0.3608**
	(1.450)	(2.037)	(1.026)	(1.845)	(0.298)	(0.851)	(0.351)	(0.625)	(1.439)	(2.197)	(1.276)	(2.105)
Constant	0.0850	-0.2891	-0.1757	-0.5041	0.2854**	-0.2119	-0.1665	-0.0964	-0.0341	-0.3281	-0.1542	-0.6050
	(0.693)	(-1.366)	(-0.786)	(-1.170)	(2.142)	(-0.787)	(-0.600)	(-0.178)	(-0.272)	(-1.369)	(-0.627)	(-1.345)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,226	1,215	1,225	1,238	771	767	771	779	773	764	772	779
R^2	0.316	0.110	0.097	0.130	0.334	0.106	0.097	0.128	0.340	0.121	0.128	0.153

Notes: Table 4.6 presents the regression results for the real earnings management models, where the independent variable is total compensation (TOTCOMP). Model 1 to 4 examines the entire sample period (2005-2012), model 5 to 8 examines the difference between the GFC and pre-GFC period and model 9 to 12 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

4.4 Additional analysis

As discussed in section 2.2.3, it has been found by prior studies that firm's trade-off between accruals-based and real earnings management based on their relative cost and the timing of activities (Gao et al., 2017; Zang, 2012). Therefore, in order to control for the potential substitution effect between these two ways of manipulating earnings I include the earnings management proxy for the other method as a control variable. In the accruals-based models I include the combined proxy (REM) in order to capture as much of the effect of real earnings management as possible. For the real earnings management models, I include the Modified Jones model proxy as it is used largely by earnings management studies. The regression output is presented in Appendix 1-4. In the accruals-based models, REM is insignificant in all models, meaning that I find no evidence of any trade-off effect in these models. Although the Modified Jones proxy is insignificant in most of the real earnings management models, it is found to be positive and significant for sales manipulation (CFO). This result suggests that more accruals-based earnings management leads to more real earnings management, which would not suggest a substitution effect between the two methods. However, an important aspect is that only sales manipulation (CFO) was found significant in some of the models, while all other variables were found insignificant. This means that the robustness of the effect may be questionable.

4.5 Robustness test

4.5.1 Extending the crisis period

Previous studies examining the occurrence of earnings management during the GFC period have used different starting years and different period lengths. In this study, the years 2008-2009 has been used as the GFC period, but for robustness purposes additional regressions have been done where the GFC period has been extended. While some studies have only examined the crisis period until 2009 (Filip & Raffournier, 2014; Rusmin et al., 2013) there has also been studies extending the crisis period beyond 2009 (Cimini, 2015; Habib et al., 2013; Iatridis & Dimitras, 201). Therefore, I rerun equation 6-9 using 2008-2010 as the GFC period and the result of these regressions are presented in Appendix 5-8. The results for the accruals-based earnings management indicates that the variables of interest are similar to those presented in section 4.2, with a decreased significance level for GFC1xBONCOMP in the Kothari model as an exception. Hence, there are no clear effects on the regression results. For the real earnings management proxies there are several variables with decreasing significance levels, as the variables of interest are insignificant in all models. Therefore, significant effects on the results

in the GFC2 period are found for the real earnings management proxies, while the results for the GFC1 period remain insignificant.

4.5.2 Additional control variables

In addition to the control variables discussed in section 3.3, other variables relating to stock ownership may also influence earnings management. Therefore, I again rerun equation 6-9 including two additional variables (separately). As the data for these variables was limited, it led to the exclusion of several observations. Therefore, in order to avoid a large shortfall of observations in the main analysis, these variables are included as a robustness test. Firstly, I include OWNCON as a proxy for ownership concentration, which takes a value of 1 if the ratio of shares held by the top shareholder compared to the total number of shares outstanding exceeds 50 percent, and 0 otherwise. Previous literature finds a positive association between ownership concentration and earnings management, mainly due to the connection to managers' private benefits (Leuz, Nanda and Wysocki, 2003). However, other studies find a negative relationship (Usman & Yero, 2012) which could be attributed to managers being more closely monitored as a consequence of more concentrated ownership.

The result (shown in Appendix 9 and 10) shows that OWNCON is insignificant in all accruals-based models. However, in the real earnings management models (shown in Appendix 11 and 12), a significant and negative association is found in model (7) and (8), i.e., for the discretionary expenses (DISEXP) and the combined model (REM). Thus, these results show that in the case of discretionary expenses and total real earnings management, more concentrated ownership leads to less earnings management. The result also shows that the significance levels for all models decrease significantly compared to the main result (presented in section 4.2 and 4.3). However, an important factor to consider is the massive drop in observations due to missing ownership data, which could be a contributing factor both to the result of the OWNCON variable but also to the drop in significance levels in the variables of interest (i.e., the interaction variable). Thus, the robustness of these results could be questionable, and the result should therefore be interpreted with this in mind.

Secondly, I include CEO_ownership measured as the percentage of total number of shares outstanding that is held by the CEO. Previous studies find a positive association between CEO stock ownership and earnings management (Ali & Zhang, 2015; Cheng & Warfield, 2005), reasoning that managers holding a larger percentage of the outstanding shares in the company are more likely to report higher earnings in order to boost the stock price to be able to sell

shares at a higher price in the subsequent period (Cheng & Warfield, 2005). The result (shown in Appendix 13-16), however, only shows a negative and significant association in one of the models (model 6 in Appendix 13) while all other models are found to be insignificant. The negative association is in contrast to the previous studies (Ali & Zhang, 2015; Cheng & Warfield, 2005). Arguably, a plausible explanation for this is that the stock ownership has a positive effect on aligning the interest of the manager and the firm, which consequently would make managers with high stock ownership less willing to manage earnings. Still, as only one of the models is found to be significant, I am unable to draw any valid conclusion based on this.

5. Conclusion

In this study I investigate the influence of executive short-term cash compensation on the occurrence of both accruals-based and real earnings management during the global financial crisis. I hypothesize that executive compensation will positively influence the occurrence of earnings management and for the effect to be stronger in the crisis period than in the periods before and after. For a sample of Swedish listed firms between 2005-2012, I find that executive compensation is negatively related to accruals-based earnings management when looking at the entire sample period. I also find a positive association when comparing the GFC period with the pre-GFC period that is stronger in the GFC period than in the period before the crisis. However, when comparing with the period after the crisis the findings are insignificant. For the real earnings management models, I find that bonus compensation is positively related to overproduction of inventory when looking at the entire sample period. I also find a positive association between real earnings management and total compensation when comparing the GFC period with the pre- and post-GFC period that is stronger in the GFC period than in the period before and after the crisis. Overall, I find evidence that suggests that there is a positive effect of executive compensation on earnings management that is stronger in the crisis period compared to the periods before and after.

These findings suggests that executives might be willing to take on more risk when they are compensated based on short-term results (Bebchuk et al., 2010), which could further lead to increased earnings management activity during crisis periods as a consequence of the difficulty to reach these earnings targets (Assenso-Okofo et al., 2020). While the relation with accruals-based earnings management was mainly found significant when comparing to the pre-crisis period, the opposite was found for the real earnings management proxies. This could be a result from firms that trade-off earnings management methods depending on their relative cost (Zang, 2012). However, when controlling for this association I find no evidence in support of this. The findings of this study contribute to the literature on earnings management and executive compensation, where I show that an economic shock such as the GFC has an effect on the relationship between executive compensation and earnings management. The findings also have implications for practitioners and policymakers, as the result suggests that executives might be more willing to take on excessive risk during crisis periods when they are

compensated based on short-term performance. These results could therefore have implications for practitioners and policymakers in the process of setting executive compensation.

Although the findings in this paper indicate a positive relationship during the GFC, the results might not hold when applied to a more recent economic crisis. Therefore, future research should expand the research field and study a more recent economic crisis to see whether such a relationship still exists. The outbreak of the coronavirus (COVID-19) in 2020 had a major impact on the world economy and could therefore be a good context for future studies to see whether this relationship still exists. The focus of this study, as well as many prior studies, has been on the compensation of the CEO in relation to occurrence of earnings management. However, previous research has also found that the CFO might actually have a greater influence on the earnings management carried out in the company (Chava & Purnanandam, 2010; Hossain & Monroe, 2015; Jiang et al., 2010) as they are the one with the main responsibility for the financial reporting. The compensation of the CFO could therefore influence the earnings management activities in the firm. This opens up for future research to further explore the relationship between executive compensation and earnings management, by also analyzing the compensation of the CFO and how this relationship is affected by an economic crisis.

This study is not without its limitations. Limiting the study to only Swedish companies means the sample size could be considered quite small. Also, analyzing the pre- and post-crisis periods separately in order to consider potential differences between the periods means that an even smaller sample size for each regression is used, which could pose limitations to the study. Potential limitations with the financial data collected from databases is always an issue, as these may not always be completely correct. The choice to focus only on short-term cash compensation could also pose limitations to the study, as other more long-term types such as equity-based compensation could also influence managers' willingness to engage in earnings management. Lastly, endogeneity issues are common for earnings management and compensation studies. Although I have included a number of control variables in the regression models in order to minimize the problem of potential omitted variables, there might also be other variables that I have not controlled for due to data limitations or the possibility to capture them. Therefore, the result of this study should be interpreted with these limitations in mind.

References

Achleitner, A. K., Günther, N., Kaserer, C., & Siciliano, G. (2014). Real earnings management and accrual-based earnings management in family firms. *European Accounting Review, 23*(3), 431-461.

Ali, A., & Zhang, W. (2015). CEO tenure and earnings management. *Journal of Accounting and Economics, 59*(1), 60-79.

Almadi, M., & Lazic, P. (2016). CEO incentive compensation and earnings management. *Management Decision, 54*(10), 2447-2461.

Armstrong, C. S., Jagolinzer, A. D., & Larcker, D. F. (2010). Chief executive officer equity incentives and accounting irregularities. *Journal of Accounting Research, 48*(2), 225-271.

Assenso-Okofo, O., Ali, J., & Ahmed, K. (2020). The effects of global financial crisis on the relationship between CEO compensation and earnings management. *International Journal of Accounting & Information Management, 28*(2), 389-408.

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

Balsam, S. (1998). Discretionary accounting choices and CEO compensation. *Contemporary Accounting Research, 15*(3), 229-252.

Barton, J., & Waymire, G. (2004). Investor protection under unregulated financial reporting. *Journal of Accounting and Economics, 38*, 65-116

Bebchuk, L. A., Cohen, A., & Spamann, H. (2010). The wages of failure: Executive compensation at Bear Stearns and Lehman 2000-2008. *Yale Journal on Regulation, 27*(2), 257-282.

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.

Bigus, J., & Hillebrand, C. (2017). Bank relationships and private firms' financial reporting quality. *European Accounting Review, 26*(2), 379-409.

Buchholz, F., Lopatta, K., & Maas, K. (2020). The deliberate engagement of narcissistic CEOs in earnings management. *Journal of Business Ethics, 167*(4), 663-686.

Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of accounting and economics, 24*(1), 99-126.

Burns, N., & Kedia, S. (2006). The impact of performance-based compensation on misreporting. *Journal of financial economics, 79*(1), 35-67.

Bång, J., & Waldenström, D. (2009). Rörlig ersättning till vd–vad säger forskningen?. *Ekonomisk Debatt, 37*(5), 41-56.

Caruso, G. D., Ferrari, E. R., & Pisano, V. (2016). Earnings management and goodwill impairment: An empirical analysis in the Italian M & A context. *Journal of Intellectual Capital, 17*(1), 120-147.

Chava, S., & Purnanandam, A. (2010). CEOs versus CFOs: Incentives and corporate policies. *Journal of financial Economics, 97*(2), 263-278.

Chen, X., Cheng, Q., & Wang, X. (2015). Does increased board independence reduce earnings management? Evidence from recent regulatory reforms. *Review of Accounting Studies, 20*(2), 899-933.

Cheng, S. (2004). R&D expenditures and CEO compensation. *The Accounting Review, 79*(2), 305-328.

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

Chi, W., Lisic, L. L., & Pevzner, M. (2011). Is enhanced audit quality associated with greater real earnings management? *Accounting Horizons, 25*(2), 315–335.

Cimini, R. (2015). How has the financial crisis affected earnings management? A European study. *Applied economics, 47*(3), 302-317.

Cohen, D., 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., Mashruwala, R., & Zach, T. (2010). The use of advertising activities to meet earnings benchmarks: Evidence from monthly data. *Review of Accounting Studies, 15(*4), 808-832.

Davidson, W., Xie, N., Xu, B., & Ning, W. (2007). The influence of executive age, career horizon and incentives on pre-turnover earnings management. *Journal of Management & Governance, 11*(1), 45-60

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

Dechow, P. M., Kothari, S. P., & Watts, R. L. (1998). The relation between earnings and cash flows. *Journal of accounting and Economics, 25*(2), 133-168.

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

Eisenhardt, K. M. (1989). Agency theory: An assessment and review. Academy of management review, 14(1), 57-74.

Ferentinou, A. C., & Anagnostopoulou, S. C. (2016). Accrual-based and real earnings management before and after IFRS adoption. *Journal of Applied Accounting Research, 17*(1), 2-23.

Fernandes, N., Ferreira, M. A., Matos, P., & Murphy, K. J. (2009). The pay divide:(Why) are US top executives paid more. *University of Southern California working paper*.

Ferrarini, G., Moloney, N., & Ungureanu, M. C. (2010). Executive remuneration in crisis: a critical assessment of reforms in Europe. *Journal of Corporate Law Studies, 10*(1), 73-118.

Filip, A., & Raffournier, B. (2014). Financial crisis and earnings management: The European evidence. *The International Journal of Accounting, 49*(4), 455-478.

Gao, J., Gao, B., & Wang, X. (2017). Trade-off between real activities earnings management and accrual-based manipulation-evidence from China. *Journal of International Accounting, Auditing and Taxation, 29*, 66-80.

Gavious, I., Segev, E., & Yosef, R. (2012). Female directors and earnings management in high-technology firms. *Pacific Accounting Review, 24*(1), 4-32.

Gounopoulos, D., & Pham, H. (2017). Credit ratings and earnings management around IPOs. *Journal of Business Finance & Accounting, 44*(1-2), 154-195.

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

Habib, A., Bhuiyan, B. U., & Islam, A. (2013). Financial distress, earnings management and market pricing of accruals during the global financial crisis. *Managerial Finance, 39*(2), 155-180.

Hall, B. J., & Liebman, J. B. (1998). Are CEOs really paid like bureaucrats?. *The Quarterly Journal of Economics, 113*(3): 653-691.

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

Healy, P. M., & Wahlen, J. M. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting horizons, 13*(4), 365-383.

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.

Hossain, S., & Monroe, G. S. (2015). Chief Financial Officers' Short-and Long-term Incentive-based Compensation and Earnings Management. *Australian Accounting Review, 25*(3), 279-291.

Hsieh, Y. T., Chen, T. K., Tseng, Y. J., & Lin, R. C. (2018). Top management team characteristics and accrual-based earnings management. *The International Journal of Accounting, 53*(4), 314-334.

Iatridis, G., & Dimitras, A. I. (2013). Financial crisis and accounting quality: evidence from five European countries. *Advances in Accounting, 29*(1), 154-160.

Ibrahim, S., & Lloyd, C. (2011). The association between non-financial performance measures in executive compensation contracts and earnings management. *Journal of Accounting and Public Policy, 30*(3), 256-274.

Jackson, S. B., & Wilcox, W. E. (2000). Do managers grant sales price reductions to avoid losses and declines in earnings and sales?. *Quarterly Journal of Business and Economics, 39*(4), 3-20.

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.

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, 29*(2), 193-228.

Kaplan, S. E. (2001). Further evidence on the ethics of managing earnings: an examination of the ethically related judgments of shareholders and non-shareholders. *Journal of Accounting and Public Policy, 20(*1), 27-44.

Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of accounting and economics, 39*(1), 163-197.

Leuz, C., Nanda, D., & Wysocki, P. D. (2003). Earnings management and investor protection: an international comparison. *Journal of financial economics, 69*(3), 505-527.

Li, Z., Hsu, Y. T., & Gao, X. (2020). How does real earnings management respond to the 2007-2008 financial crisis?. *Pacific Accounting Review, 32*(4), 495-517.

Matsunaga, S. R., & Park, C. W. (2001). The effect of missing a quarterly earnings benchmark on the CEO's annual bonus. *The Accounting Review, 76*(3), 313-332.

Mehran, H. (1995). Executive compensation structure, ownership, and firm performance. *Journal of Financial Economics, 38*: 163-184

Murphy, K. (2013). Executive Compensation: Where We Are, and How We Got There. In *Handbook of the Economics of Finance* (Vol. 2, pp. 211-356). Elsevier B.V.

Na, K., & Hong, J. (2017). CEO gender and earnings management. *Journal of Applied Business Research (JABR), 33*(2), 297-308.

Nyberg, A. J., Fulmer, I. S., Gerhart, B., & Carpenter, M. A. (2010). Agency theory revisited: CEO return and shareholder interest alignment. *Academy of Management Journal, 53*(5), 1029-1049.

O'brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & quantity, 41*(5), 673-690.

Ozkan, N. (2011). CEO compensation and firm performance: An empirical investigation of UK panel data. *European Financial Management, 17*(2), 260-285.

Panda, B., & Leepsa, N. M. (2017). Agency theory: Review of theory and evidence on problems and perspectives. *Indian Journal of Corporate Governance, 10*(1), 74-95.

Papadaki, A., & Tzovas, C. (2017). Financial crisis and accrual and real earnings management in Europe. *Journal of Corporate Ownership and Control, 14(*3), 8-19.

Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of accounting and economics, 42*(3), 335-370.

Rusmin, R., Scully, G., & Tower, G. (2013). Income smoothing behaviour by Asian transportation firms. *Managerial Auditing Journal, 28*(1), 23-44.

Shuto, A. (2007). Executive compensation and earnings management: Empirical evidence from Japan. *Journal of International Accounting, Auditing and Taxation, 16*(1), 1-26.

Skinner, D. J., & Sloan, R. G. (2002). Earnings surprises, growth expectations, and stock returns or don't let an earnings torpedo sink your portfolio. *Review of accounting studies, 7*(2), 289-312.

Usman, S. H., & Yero, J. I. (2012). Ownership concentration and earnings management practice of Nigerian listed conglomerates. *American International journal of contemporary Research, 2*(7), 157-171.

Verbruggen, S., Christaens, J., & Milis, K. (2008). Earnings management: a literature review. *HUB Research paper, 14*.

Walker, M. (2013). How far can we trust earnings numbers? What research tells us about earnings management. *Accounting and Business Research, 43*(4), 445-481.

Wooldridge, J. M. (2012). *Introductory econometrics: A modern approach 5th Edition*. Mason, OH: South-Western Cengage Learning.

Xu, G. L., & Ji, X. (2016). Earnings management by top Chinese listed firms in response to the global financial crisis. *International Journal of Accounting and Information Management, 24*(3), 226-251.

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

Appendix 1. Bonus Compensation and Accruals-based Earnings Management including REM as control variable

Variables	(1) Modified Jones	(2) Kothari	(3) Modified Jones	(4) Kothari	(5) Modified Jones	(6) Kothari
BONCOMP	-0.0287**	-0.0265*	-0.0594**	-0.0529**	-0.0295	-0.0208
	(-1.985)	(-1.952)	(-2.516)	(-2.248)	(-1.321)	(-1.082)
GFC1			-0.0198***	-0.0162***		
			(-2.878)	(-2.672)		
GFC1xBONCOMP			0.0668**	0.0511*		
			(2.270)	(1.968)		
GFC2					-0.0023	0.0009
					(-0.356)	(0.176)
GFC2xBONCOMP					0.0339	0.0113
					(1.092)	(0.440)
REM	0.0038	0.0079	0.0033	0.0081	0.0001	0.0035
	(0.337)	(0.851)	(0.311)	(0.909)	(0.009)	(0.311)
Size	-0.0011	-0.0010	-0.0009	-0.0011	-0.0016	-0.0010
	(-0.721)	(-0.752)	(-0.524)	(-0.678)	(-1.072)	(-0.705)
MTB	0.0089**	0.0115***	0.0048	0.0080***	0.0093**	0.0121***
	(2.479)	(4.340)	(1.284)	(2.852)	(2.121)	(3.628)
Lev	-0.0615***	-0.0498***	-0.0706***	-0.0624***	-0.0455**	-0.0301*
	(-2.751)	(-2.814)	(-2.973)	(-3.103)	(-2.160)	(-1.701)
ROA	-0.0816*	-0.0733**	-0.0773*	-0.0895***	-0.0692	-0.0594
	(-1.748)	(-2.227)	(-1.960)	(-3.360)	(-1.209)	(-1.422)
Loss	0.0125	0.0126	0.0099	0.0067	0.0148	0.0167
	(1.112)	(1.381)	(0.834)	(0.668)	(1.091)	(1.511)
Age	-0.0044**	-0.0050**	-0.0032	-0.0035	-0.0034	-0.0051**
	(-2.072)	(-2.527)	(-1.398)	(-1.639)	(-1.451)	(-2.305)
CEO_age	0.0004	0.0003	0.0003	0.0002	0.0007*	0.0004
	(1.272)	(0.877)	(0.565)	(0.432)	(1.682)	(1.046)
CEO_tenure	0.0003	0.0002	0.0004	0.0003	0.0002	0.0001
	(0.894)	(0.631)	(0.997)	(0.977)	(0.478)	(0.346)
CEO_gender	0.0046	-0.0075	0.0152	0.0060	0.0004	-0.0133
	(0.227)	(-0.615)	(0.932)	(0.537)	(0.018)	(-0.902)
Constant	-0.0153	0.0913***	0.0181	0.1260***	-0.0245	0.0717*
	(-0.497)	(3.083)	(0.569)	(5.058)	(-0.691)	(1.708)
Industry FE	YES	YES	YES	YES	YES	YES
Observations	1,222	1,219	766	767	770	768
R^2	0.179	0.207	0.174	0.216	0.182	0.217

Notes: Appendix 1 presents the regression results for the accruals-based earnings management models, where the independent variable is bonus compensation (BONCOMP). Model 1 and 2 examines the entire sample period (2005-2012), model 3 and 4 examines the difference between the GFC and pre-GFC period and model 5 and 6 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix 2. Total Compensation and Accruals-based Earnings Management including REM as control variable

Variables	(1) Modified Jones	(2) Kothari	(3) Modified Jones	(4) Kothari	(5) Modified Jones	(6) Kothari
TOTCOMP	-0.0068*	-0.0049	-0.0172***	-0.0154***	0.0007	0.0031
	(-1.810)	(-1.395)	(-3.453)	(-3.288)	(0.181)	(0.788)
GFC1			-0.1949***	-0.1880***		
			(-2.657)	(-2.793)		
GFC1xTOTCOMP			0.0123**	0.0119***		
			(2.570)	(2.714)		
GFC2					-0.0781	-0.0417
					(-1.211)	(-0.723)
GFC2xTOTCOMP					0.0054	0.0029
					(1.288)	(0.784)
REM	0.0037	0.0078	0.0043	0.0089	-0.0008	0.0026
	(0.331)	(0.839)	(0.424)	(1.019)	(-0.057)	(0.229)
Size	0.0005	-0.0000	0.0028	0.0020	-0.0032*	-0.0030*
	(0.225)	(-0.025)	(1.108)	(0.889)	(-1.694)	(-1.700)
MTB	0.0091**	0.0115***	0.0062	0.0091***	0.0082*	0.0108***
	(2.527)	(4.281)	(1.621)	(3.104)	(1.919)	(3.363)
Lev	-0.0629***	-0.0503***	-0.0796***	-0.0702***	-0.0428**	-0.0270
	(-2.874)	(-2.902)	(-3.458)	(-3.726)	(-2.036)	(-1.499)
ROA	-0.0850*	-0.0763**	-0.0792**	-0.0920***	-0.0704	-0.0611
	(-1.822)	(-2.328)	(-2.042)	(-3.505)	(-1.231)	(-1.481)
Loss	0.0132	0.0131	0.0124	0.0088	0.0144	0.0160
	(1.176)	(1.430)	(1.036)	(0.873)	(1.056)	(1.451)
Age	-0.0042**	-0.0049**	-0.0034	-0.0036*	-0.0032	-0.0048**
	(-2.012)	(-2.447)	(-1.489)	(-1.677)	(-1.312)	(-2.116)
CEO_age	0.0004	0.0003	0.0003	0.0003	0.0007*	0.0004
	(1.337)	(0.945)	(0.683)	(0.543)	(1.683)	(1.079)
CEO_tenure	0.0003	0.0002	0.0003	0.0003	0.0002	0.0001
	(0.805)	(0.544)	(0.826)	(0.839)	(0.409)	(0.282)
CEO_gender	0.0049	-0.0075	0.0189	0.0091	-0.0006	-0.0144
	(0.241)	(-0.615)	(0.941)	(0.688)	(-0.027)	(-0.980)
Constant	0.0671	0.1517***	0.2321***	0.3189***	-0.0278	0.0383
	(1.153)	(2.718)	(3.100)	(4.763)	(-0.442)	(0.573)
Industry FE	YES	YES	YES	YES	YES	YES
Observations	1,222	1,219	766	767	770	768
R^2	0.179	0.206	0.183	0.224	0.180	0.217

Notes: Appendix 2 presents the regression results for the accruals-based earnings management models, where the independent variable is total compensation (TOTCOMP). Model 1 and 2 examines the entire sample period (2005-2012), model 3 and 4 examines the difference between the GFC and pre-GFC period and model 5 and 6 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix 3. Bonus Compensation and Real Earnings Management including Modified Jones as control variable

Variables	(1) CFO	(2) PROD	(3) DISEXP	(4) REM	(5) CFO	(6) PROD	(7) DISEXP	(8) REM	(9) CFO	(10) PROD	(11) DISEXP	(12) REM
BONCOMP	-0.0125	0.1131**	0.0046	0.1061	-0.0235	0.0538	-0.0865	-0.0654	-0.0200	0.1024	0.0412	0.1432
	(-0.460)	(1.986)	(0.093)	(0.959)	(-0.488)	(0.609)	(-0.940)	(-0.364)	(-0.535)	(1.259)	(0.631)	(0.966)
GFC1					-0.0251**	-0.0447**	-0.0416*	-0.1115***				
					(-2.478)	(-2.421)	(-1.937)	(-3.070)				
GFC1xBONCOMP					0.0335	0.1149	0.1125	0.2560				
					(0.723)	(1.299)	(1.100)	(1.431)				
GFC2									-0.0061	-0.0207	-0.0128	-0.0352
									(-0.614)	(-1.090)	(-0.631)	(-0.980)
GFC2xBONCOMP									0.0039	0.0712	0.0182	0.0658
									(0.088)	(0.790)	(0.200)	(0.397)
Modified Jones	0.1853**	0.1091	-0.1776	0.1068	0.1483*	0.1960	-0.2282	0.0952	0.1736	-0.0300	-0.1255	0.0036
	(2.273)	(0.665)	(-0.924)	(0.330)	(1.743)	(1.244)	(-1.249)	(0.304)	(1.628)	(-0.151)	(-0.542)	(0.009)
Size	0.0055	0.0056	0.0004	0.0117	0.0022	0.0069	0.0046	0.0140	0.0075*	0.0065	0.0001	0.0135
	(1.537)	(0.908)	(0.052)	(0.943)	(0.660)	(1.089)	(0.617)	(1.092)	(1.780)	(0.971)	(0.012)	(1.006)
MTB	-0.0096	-0.0459***	-0.0502***	-0.1075***	-0.0175**	-0.0472***	-0.0453***	-0.1121***	-0.0014	-0.0465***	-0.0619***	-0.1110***
	(-1.359)	(-3.962)	(-3.900)	(-4.729)	(-2.065)	(-4.125)	(-2.932)	(-4.833)	(-0.177)	(-3.246)	(-4.340)	(-3.999)
Lev	0.0296	0.0564	0.0616	0.1372	0.0329	0.0928	0.1049	0.2157	0.0109	0.0007	0.0202	0.0269
	(0.746)	(0.875)	(0.917)	(1.067)	(0.801)	(1.342)	(1.364)	(1.511)	(0.250)	(0.009)	(0.267)	(0.190)
ROA	-0.3412***	-0.2144***	0.1528**	-0.4173***	-0.3455***	-0.1888***	0.1441**	-0.3991***	-0.3526***	-0.2326***	0.1297	-0.4774***
	(-7.058)	(-3.772)	(1.989)	(-3.798)	(-7.176)	(-3.725)	(2.032)	(-3.716)	(-6.246)	(-3.155)	(1.283)	(-3.263)
Loss	0.0416***	0.0089	-0.0154	0.0304	0.0368**	0.0208	-0.0101	0.0442	0.0348**	-0.0013	-0.0218	0.0059
	(3.456)	(0.428)	(-0.694)	(0.783)	(2.268)	(0.752)	(-0.316)	(0.783)	(2.484)	(-0.055)	(-0.882)	(0.135)
Age	-0.0030	0.0033	0.0083	0.0079	-0.0054	-0.0007	0.0111	0.0037	-0.0009	0.0031	0.0027	0.0052
	(-0.507)	(0.260)	(0.703)	(0.317)	(-0.893)	(-0.056)	(0.840)	(0.140)	(-0.161)	(0.243)	(0.219)	(0.206)
CEO_age	0.0006	0.0009	-0.0007	0.0009	0.0008	0.0004	-0.0009	0.0006	0.0003	0.0015	0.0004	0.0022
	(0.908)	(0.640)	(-0.491)	(0.329)	(1.084)	(0.224)	(-0.486)	(0.185)	(0.423)	(0.905)	(0.238)	(0.678)
CEO_tenure	0.0002	-0.0021	-0.0015	-0.0033	0.0003	-0.0019	-0.0015	-0.0029	0.0002	-0.0016	-0.0013	-0.0027
	(0.346)	(-1.166)	(-0.910)	(-0.925)	(0.435)	(-0.899)	(-0.706)	(-0.688)	(0.357)	(-0.821)	(-0.787)	(-0.738)
CEO_gender	0.0409	0.1529*	0.0914	0.2844*	0.0080	0.0948	0.0544	0.1576	0.0486	0.1838**	0.1223	0.3530**
	(1.374)	(1.924)	(1.086)	(1.810)	(0.136)	(0.872)	(0.463)	(0.675)	(1.522)	(2.022)	(1.198)	(1.975)
Constant	-0.2035***	-0.2198*	0.0095	-0.3712	-0.0011	-0.1211	-0.0258	-0.1589	-0.2174***	-0.2796**	-0.0531	-0.5009*
	(-3.190)	(-1.919)	(0.082)	(-1.603)	(-0.015)	(-0.830)	(-0.164)	(-0.530)	(-3.144)	(-2.124)	(-0.395)	(-1.934)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,216	1,206	1,215	1,222	762	758	762	766	768	760	767	770
R^2	0.328	0.114	0.097	0.132	0.334	0.106	0.097	0.123	0.347	0.127	0.124	0.155

Notes: Appendix 3 presents the regression results for the real earnings management models, where the independent variable is bonus compensation (BONCOMP). Model 1 to 4 examines the entire sample period (2005-2012), model 5 to 8 examines the difference between the GFC and pre-GFC period and model 9 to 12 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix 4. Total Compensation and Real Earnings management including Modified Jones as control variable

Variables	(1) CFO	(2) PROD	(3) DISEXP	(4) REM	(5) CFO	(6) PROD	(7) DISEXP	(8) REM	(9) CFO	(10) PROD	(11) DISEXP	(12) REM
TOTCOMP	-0.0126	0.0191	0.0179	0.0252	-0.0140	0.0280	0.0190	0.0320	-0.0097	0.0095	0.0089	0.0123
	(-1.537)	(1.311)	(1.094)	(0.901)	(-1.399)	(1.540)	(0.909)	(0.868)	(-1.120)	(0.577)	(0.510)	(0.408)
GFC1					-0.0208	-0.3407**	-0.3112	-0.6635**				
					(-0.175)	(-2.029)	(-1.504)	(-2.030)				
GFC1xTOTCOMP					0.0001	0.0207*	0.0188	0.0389*				
					(0.009)	(1.894)	(1.401)	(1.833)				
GFC2									0.2075*	-0.4136**	-0.5692***	-0.7594**
									(1.818)	(-2.272)	(-2.790)	(-2.245)
GFC2xTOTCOMP									-0.0140*	0.0265**	0.0369***	0.0482**
									(-1.902)	(2.263)	(2.809)	(2.219)
Modified Jones	0.1813**	0.1032	-0.1702	0.1044	0.1394	0.2138	-0.2040	0.1283	0.1805*	-0.0463	-0.1397	-0.0223
	(2.207)	(0.632)	(-0.887)	(0.324)	(1.597)	(1.359)	(-1.096)	(0.410)	(1.697)	(-0.233)	(-0.603)	(-0.057)
Size	0.0097*	0.0022	-0.0059	0.0058	0.0069	-0.0031	-0.0055	-0.0013	0.0121**	0.0040	-0.0062	0.0085
	(1.803)	(0.275)	(-0.556)	(0.364)	(1.256)	(-0.347)	(-0.467)	(-0.069)	(2.099)	(0.457)	(-0.537)	(0.500)
MTB	-0.0079	-0.0456***	-0.0530***	-0.1083***	-0.0155*	-0.0499***	-0.0501***	-0.1176***	-0.0000	-0.0447***	-0.0633***	-0.1092***
	(-1.209)	(-3.972)	(-4.291)	(-4.880)	(-1.968)	(-4.418)	(-3.432)	(-5.168)	(-0.003)	(-3.173)	(-4.505)	(-4.056)
Lev	0.0222	0.0569	0.0735	0.1427	0.0239	0.1052	0.1244	0.2392	0.0083	-0.0057	0.0209	0.0180
	(0.557)	(0.882)	(1.093)	(1.110)	(0.574)	(1.523)	(1.589)	(1.642)	(0.189)	(-0.076)	(0.275)	(0.128)
ROA	-0.3437***	-0.2023***	0.1552**	-0.4050***	-0.3459***	-0.1733***	0.1433**	-0.3865***	-0.3551***	-0.2152***	0.1359	-0.4562***
	(-7.219)	(-3.609)	(2.019)	(-3.711)	(-7.318)	(-3.352)	(2.003)	(-3.505)	(-6.448)	(-2.975)	(1.368)	(-3.175)
Loss	0.0436***	0.0073	-0.0184	0.0276	0.0401**	0.0136	-0.0166	0.0341	0.0362**	-0.0015	-0.0235	0.0048
	(3.569)	(0.351)	(-0.832)	(0.718)	(2.469)	(0.497)	(-0.528)	(0.609)	(2.552)	(-0.063)	(-0.954)	(0.110)
Age	-0.0031	0.0027	0.0085	0.0074	-0.0058	-0.0009	0.0117	0.0038	-0.0011	0.0017	0.0028	0.0036
	(-0.523)	(0.210)	(0.718)	(0.295)	(-0.961)	(-0.065)	(0.873)	(0.143)	(-0.180)	(0.130)	(0.225)	(0.144)
CEO_age	0.0006	0.0008	-0.0007	0.0008	0.0008	0.0003	-0.0008	0.0006	0.0003	0.0014	0.0003	0.0021
	(0.944)	(0.570)	(-0.502)	(0.299)	(1.160)	(0.172)	(-0.442)	(0.197)	(0.436)	(0.853)	(0.205)	(0.635)
CEO_tenure	0.0002	-0.0020	-0.0015	-0.0031	0.0002	-0.0016	-0.0014	-0.0026	0.0002	-0.0014	-0.0012	-0.0025
	(0.319)	(-1.111)	(-0.905)	(-0.898)	(0.290)	(-0.788)	(-0.640)	(-0.620)	(0.293)	(-0.756)	(-0.720)	(-0.676)
CEO_gender	0.0434	0.1536**	0.0873	0.2833*	0.0130	0.0855	0.0422	0.1411	0.0474	0.1902**	0.1279	0.3641**
	(1.499)	(2.013)	(1.044)	(1.837)	(0.237)	(0.797)	(0.379)	(0.612)	(1.555)	(2.202)	(1.295)	(2.113)
Constant	-0.0580	-0.4414*	-0.2183	-0.6768	0.1643	-0.4435	-0.2435	-0.5211	-0.1143	-0.3621	-0.1192	-0.6146
	(-0.512)	(-1.945)	(-0.905)	(-1.553)	(1.127)	(-1.549)	(-0.816)	(-0.904)	(-0.963)	(-1.440)	(-0.462)	(-1.324)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,216	1,206	1,215	1,222	762	758	762	766	768	760	767	770
R^2	0.331	0.110	0.100	0.132	0.337	0.108	0.100	0.125	0.352	0.120	0.130	0.154

Notes: Appendix 4 presents the regression results for the real earnings management models, where the independent variable is total compensation (TOTCOMP). Model 1 to 4 examines the entire sample period (2005-2012), model 5 to 8 examines the difference between the GFC and pre-GFC period and model 9 to 12 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix 5. Bonus Compensation and Accruals-based Earnings Management with GFC set as 2008-2010

Variables	(1) Modified Jones	(2) Kothari	(3) Modified Jones	(4) Kothari
BONCOMP	-0.0579**	-0.0532**	-0.0314	-0.0210
	(-2.427)	(-2.219)	(-1.286)	(-0.951)
GFC1	-0.0177***	-0.0147***		
	(-2.989)	(-2.676)		
GFC1xBONCOMP	0.0523**	0.0450*		
	(2.040)	(1.818)		
GFC2			-0.0009	0.0025
			(-0.148)	(0.414)
GFC2xBONCOMP			0.0254	0.0087
			(0.988)	(0.333)
Size	-0.0008	-0.0009	-0.0017	-0.0010
	(-0.473)	(-0.621)	(-1.186)	(-0.711)
MTB	0.0049	0.0080**	0.0091*	0.0115***
	(1.058)	(2.317)	(1.735)	(2.896)
Lev	-0.0683**	-0.0575***	-0.0449**	-0.0300*
	(-2.567)	(-2.718)	(-2.147)	(-1.711)
ROA	-0.0840*	-0.0866***	-0.0689	-0.0610
	(-1.898)	(-2.755)	(-1.303)	(-1.588)
Loss	0.0111	0.0107	0.0150	0.0167
	(0.838)	(1.017)	(1.105)	(1.516)
Age	-0.0031	-0.0033	-0.0035	-0.0051**
	(-1.294)	(-1.435)	(-1.481)	(-2.296)
CEO_age	0.0005	0.0004	0.0007*	0.0004
	(1.259)	(1.071)	(1.725)	(1.079)
CEO_tenure	0.0004	0.0002	0.0002	0.0001
	(0.942)	(0.580)	(0.444)	(0.313)
CEO_gender	0.0225*	0.0015	-0.0001	-0.0126
	(1.719)	(0.123)	(-0.004)	(-0.759)
Constant	-0.0019	0.1219***	-0.0225	0.0712*
	(-0.066)	(4.901)	(-0.632)	(1.688)
Industry FE	YES	YES	YES	YES
Observations	912	913	770	768
R^2	0.175	0.210	0.181	0.217

Notes: Appendix 5 presents the regression results for the accruals-based earnings management models, where the independent variable is bonus compensation (BONCOMP). Model 1 and 2 examines the difference between the GFC and pre-GFC period and model 3 and 4 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix 6. Total Compensation and Accruals-based Earnings Management with GFC set as 2008-2010

Variables	(1) Modified Jones	(2) Kothari	(3) Modified Jones	(4) Kothari
TOTCOMP	-0.0156***	-0.0140***	0.0005	0.0034
	(-3.257)	(-3.115)	(0.111)	(0.864)
GFC1	-0.1780***	-0.1746***		
	(-2.751)	(-2.909)		
GFC1xTOTCOMP	0.0111***	0.0110***		
	(2.624)	(2.796)		
GFC2			-0.0552	-0.0143
			(-0.901)	(-0.257)
GFC2xTOTCOMP			0.0039	0.0012
			(0.974)	(0.333)
Size	0.0021	0.0014	-0.0032*	-0.0029*
	(0.897)	(0.675)	(-1.712)	(-1.665)
MTB	0.0058	0.0086**	0.0080	0.0103***
	(1.226)	(2.443)	(1.560)	(2.675)
Lev	-0.0750***	-0.0632***	-0.0425**	-0.0269
	(-2.872)	(-3.116)	(-2.016)	(-1.504)
ROA	-0.0873**	-0.0899***	-0.0702	-0.0624
	(-1.988)	(-2.892)	(-1.321)	(-1.634)
Loss	0.0128	0.0122	0.0144	0.0159
	(0.964)	(1.150)	(1.055)	(1.452)
Age	-0.0032	-0.0033	-0.0033	-0.0049**
	(-1.323)	(-1.439)	(-1.356)	(-2.140)
CEO_age	0.0005	0.0005	0.0007*	0.0004
	(1.395)	(1.201)	(1.753)	(1.123)
CEO_tenure	0.0003	0.0002	0.0002	0.0001
	(0.825)	(0.472)	(0.387)	(0.254)
CEO_gender	0.0242*	0.0026	-0.0013	-0.0142
	(1.662)	(0.198)	(-0.052)	(-0.851)
Constant	0.1969***	0.3023***	-0.0231	0.0324
	(2.800)	(4.668)	(-0.347)	(0.468)
Industry FE	YES	YES	YES	YES
Observations	912	913	770	768
R^2	0.181	0.215	0.180	0.217

Notes: Appendix 6 presents the regression results for the accruals-based earnings management models, where the independent variable is total compensation (TOTCOMP). Model 1 and 2 examines the difference between the GFC and pre-GFC period and model 3 and 4 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix 7. Bonus Compensation and Real Earnings Management with GFC set as 2008-2010

Variables	(1) CFO	(2) PROD	(3) DISEXP	(4) REM	(5) CFO	(6) PROD	(7) DISEXP	(8) REM
BONCOMP	-0.0430	0.0360	-0.0632	-0.0755	-0.0015	0.1580*	0.0526	0.2350
	(-0.885)	(0.408)	(-0.714)	(-0.427)	(-0.038)	(1.721)	(0.721)	(1.443)
GFC1	-0.0222**	-0.0352**	-0.0311	-0.0880***				
	(-2.278)	(-2.158)	(-1.626)	(-2.752)				
GFC1xBONCOMP	0.0392	0.0792	0.0850	0.1953				
	(0.868)	(0.974)	(0.931)	(1.212)				
GFC2					0.0006	0.0073	0.0027	0.0154
					(0.071)	(0.410)	(0.153)	(0.475)
GFC2xBONCOMP					-0.0265	-0.0392	0.0017	-0.0933
					(-0.665)	(-0.461)	(0.021)	(-0.611)
Size	0.0035	0.0063	0.0024	0.0131	0.0075*	0.0064	0.0002	0.0137
	(1.021)	(1.019)	(0.326)	(1.046)	(1.807)	(0.960)	(0.022)	(1.041)
MTB	-0.0121	-0.0447***	-0.0486***	-0.1075***	0.0004	-0.0468***	-0.0625***	-0.1094***
	(-1.460)	(-3.748)	(-3.403)	(-4.524)	(0.046)	(-3.158)	(-4.251)	(-3.897)
Lev	0.0313	0.0882	0.1015	0.2084	0.0001	0.0012	0.0251	0.0214
	(0.740)	(1.301)	(1.390)	(1.520)	(0.003)	(0.015)	(0.330)	(0.151)
ROA	-0.3452***	-0.1630***	0.1872**	-0.3291***	-0.3689***	-0.2264***	0.1415	-0.4753***
	(-6.423)	(-2.799)	(2.528)	(-3.010)	(-6.276)	(-2.958)	(1.386)	(-3.187)
Loss	0.0478***	0.0408	-0.0073	0.0770*	0.0333**	-0.0017	-0.0224	0.0030
	(2.905)	(1.638)	(-0.256)	(1.657)	(2.271)	(-0.070)	(-0.916)	(0.071)
Age	-0.0055	0.0005	0.0104	0.0043	-0.0020	0.0032	0.0035	0.0052
	(-0.904)	(0.036)	(0.841)	(0.164)	(-0.341)	(0.252)	(0.284)	(0.206)
CEO_age	0.0005	0.0007	-0.0004	0.0009	0.0003	0.0015	0.0003	0.0021
	(0.714)	(0.427)	(-0.290)	(0.296)	(0.441)	(0.930)	(0.208)	(0.643)
CEO_tenure	0.0003	-0.0019	-0.0018	-0.0032	0.0003	-0.0016	-0.0014	-0.0026
	(0.518)	(-0.973)	(-0.912)	(-0.812)	(0.486)	(-0.844)	(-0.819)	(-0.717)
CEO_gender	0.0274	0.1160	0.0426	0.1855	0.0459	0.1765*	0.1172	0.3376*
	(0.775)	(1.313)	(0.427)	(0.990)	(1.416)	(1.908)	(1.127)	(1.870)
Constant	0.0673	0.0105	0.0747	0.0701	-0.1286	-0.2549**	-0.0865	-0.4769*
	(1.359)	(0.090)	(0.577)	(0.287)	(-1.559)	(-1.983)	(-0.654)	(-1.877)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	917	913	918	927	773	764	772	779
R^2	0.315	0.105	0.092	0.126	0.336	0.126	0.121	0.154

Notes: Appendix 7 presents the regression results for the real earnings management models, where the independent variable is bonus compensation (BONCOMP). Model 1 to 4 examines the difference between the GFC and pre-GFC period and model 5 to 8 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix 8. Total Compensation and Real Earnings Management with GFC set as 2008-2010

Variables	(1) CFO	(2) PROD	(3) DISEXP	(4) REM	(5) CFO	(6) PROD	(7) DISEXP	(8) REM
TOTCOMP	-0.0171*	0.0177	0.0210	0.0212	-0.0072	0.0099	0.0092	0.0174
	(-1.835)	(1.033)	(1.101)	(0.621)	(-0.815)	(0.586)	(0.520)	(0.572)
GFC1	-0.1040	-0.1810	-0.0347	-0.3195				
	(-1.006)	(-1.188)	(-0.197)	(-1.103)				
GFC1xBONCOMP	0.0058	0.0105	0.0010	0.0173				
	(0.866)	(1.066)	(0.091)	(0.920)				
GFC2					0.1628	-0.1769	-0.2709	-0.2511
					(1.565)	(-0.943)	(-1.532)	(-0.780)
GFC2xBONCOMP					-0.0110	0.0116	0.0181	0.0165
					(-1.633)	(0.961)	(1.582)	(0.792)
Size	0.0080	0.0007	-0.0056	0.0038	0.0116**	0.0051	-0.0049	0.0105
	(1.490)	(0.076)	(-0.497)	(0.213)	(2.073)	(0.577)	(-0.426)	(0.614)
MTB	-0.0104	-0.0457***	-0.0521***	-0.1105***	0.0017	-0.0440***	-0.0633***	-0.1063***
	(-1.342)	(-3.880)	(-3.788)	(-4.733)	(0.223)	(-3.036)	(-4.385)	(-3.906)
Lev	0.0225	0.0929	0.1189	0.2227	-0.0035	-0.0038	0.0281	0.0159
	(0.527)	(1.380)	(1.619)	(1.616)	(-0.081)	(-0.051)	(0.369)	(0.112)
ROA	-0.3481***	-0.1518***	0.1884**	-0.3209***	-0.3731***	-0.2078***	0.1509	-0.4510***
	(-6.631)	(-2.617)	(2.524)	(-2.913)	(-6.471)	(-2.743)	(1.492)	(-3.062)
Loss	0.0503***	0.0366	-0.0113	0.0713	0.0346**	-0.0005	-0.0231	0.0038
	(3.035)	(1.479)	(-0.398)	(1.543)	(2.340)	(-0.019)	(-0.934)	(0.091)
Age	-0.0056	-0.0001	0.0105	0.0038	-0.0019	0.0017	0.0031	0.0033
	(-0.920)	(-0.006)	(0.838)	(0.144)	(-0.330)	(0.134)	(0.256)	(0.130)
CEO_age	0.0005	0.0007	-0.0003	0.0010	0.0003	0.0015	0.0004	0.0020
	(0.751)	(0.425)	(-0.226)	(0.336)	(0.396)	(0.897)	(0.223)	(0.616)
CEO_tenure	0.0003	-0.0018	-0.0018	-0.0031	0.0003	-0.0015	-0.0013	-0.0025
	(0.436)	(-0.925)	(-0.902)	(-0.797)	(0.498)	(-0.806)	(-0.804)	(-0.682)
CEO_gender	0.0314	0.1133	0.0344	0.1781	0.0465	0.1829**	0.1192	0.3460**
	(0.955)	(1.284)	(0.345)	(0.948)	(1.463)	(2.078)	(1.162)	(1.987)
Constant	0.2766**	-0.1968	-0.1809	-0.1721	-0.0566	-0.3506	-0.1754	-0.6658
	(2.227)	(-0.776)	(-0.683)	(-0.339)	(-0.436)	(-1.426)	(-0.703)	(-1.479)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	917	913	918	927	773	764	772	779
R^2	0.319	0.104	0.094	0.126	0.339	0.117	0.123	0.150

Notes: Appendix 8 presents the regression results for the real earnings management models, where the independent variable is total compensation (TOTCOMP). Model 1 to 4 examines the difference between the GFC and pre-GFC period and model 5 to 8 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix 9. Bonus Compensation and Accruals-based Earnings Management including Ownership Concentration as control variable

Variables	(1) Modified Jones	(2) Kothari	(3) Modified Jones	(4) Kothari	(5) Modified Jones	(6) Kothari
BONCOMP	-0.0321	-0.0279	-0.0896***	-0.0785**	-0.0091	-0.0029
	(-1.650)	(-1.570)	(-2.743)	(-2.230)	(-0.379)	(-0.136)
GFC1			-0.0218***	-0.0211***		
			(-2.719)	(-2.666)		
GFC1xBONCOMP			0.0644*	0.0616*		
			(1.882)	(1.686)		
GFC2					0.0077	0.0087
					(1.098)	(1.281)
GFC2xBONCOMP					-0.0214	-0.0321
					(-0.766)	(-1.179)
OWNCON	0.0122	0.0088	0.0239	0.0149	0.0217	0.0158
	(0.879)	(0.613)	(1.418)	(0.974)	(1.407)	(0.947)
Size	-0.0028**	-0.0022*	-0.0029*	-0.0024	-0.0035**	-0.0025*
	(-2.046)	(-1.702)	(-1.684)	(-1.441)	(-2.398)	(-1.853)
MTB	0.0008	0.0043	-0.0047	-0.0001	0.0016	0.0050
	(0.275)	(1.481)	(-1.250)	(-0.039)	(0.507)	(1.384)
Lev	-0.0170	-0.0182	-0.0057	-0.0115	-0.0118	-0.0127
	(-0.855)	(-0.930)	(-0.212)	(-0.447)	(-0.713)	(-0.655)
ROA	0.0132	-0.0138	-0.0149	-0.0965**	0.0426	0.0189
	(0.494)	(-0.479)	(-0.407)	(-2.554)	(1.481)	(0.547)
Loss	0.0154	0.0173	0.0060	-0.0013	0.0252**	0.0282**
	(1.300)	(1.551)	(0.331)	(-0.085)	(2.165)	(2.441)
Age	-0.0025	-0.0039*	0.0006	0.0001	-0.0024	-0.0048*
	(-1.041)	(-1.673)	(0.189)	(0.043)	(-0.890)	(-1.827)
CEO_age	0.0001	0.0000	0.0004	0.0003	0.0002	0.0002
	(0.159)	(0.115)	(0.543)	(0.394)	(0.528)	(0.557)
CEO_tenure	0.0000	-0.0001	0.0002	0.0003	0.0000	-0.0001
	(0.092)	(-0.158)	(0.380)	(0.560)	(0.002)	(-0.251)
CEO_gender	0.0293**	0.0115	0.0531***	0.0086	0.0160	0.0090
	(2.222)	(1.558)	(4.140)	(0.691)	(1.219)	(0.733)
Constant	0.0204	0.0281	-0.0103	0.0257	0.0227	0.0194
	(0.684)	(1.022)	(-0.217)	(0.567)	(0.913)	(0.728)
Industry FE	YES	YES	YES	YES	YES	YES
Observations	586	581	326	323	411	409
R^2	0.144	0.189	0.184	0.249	0.182	0.224

Notes: Appendix 9 presents the regression results for the accruals-based earnings management models, where the independent variable is bonus compensation (BONCOMP). Model 1 and 2 examines the entire sample period (2005-2012), model 3 and 4 examines the difference between the GFC and pre-GFC period and model 5 and 6 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix 10. Total Compensation and Accruals-based Earnings Management including Ownership Concentration as control variable

Variables	(1) Modified Jones	(2) Kothari	(3) Modified Jones	(4) Kothari	(5) Modified Jones	(6) Kothari
TOTCOMP	-0.0086*	-0.0084*	-0.0201***	-0.0191***	0.0007	0.0013
	(-1.744)	(-1.738)	(-3.159)	(-2.868)	(0.134)	(0.261)
GFC1			-0.1512*	-0.1690*		
			(-1.771)	(-1.980)		
GFC1xTOTCOMP			0.0091*	0.0103*		
			(1.676)	(1.885)		
GFC2					-0.0762	-0.0203
					(-0.719)	(-0.224)
GFC2xTOTCOMP					0.0053	0.0016
					(0.784)	(0.274)
OWNCON	0.0111	0.0075	0.0220	0.0130	0.0236	0.0175
	(0.767)	(0.507)	(1.277)	(0.802)	(1.529)	(1.062)
Size	-0.0008	-0.0002	0.0015	0.0017	-0.0048**	-0.0035*
	(-0.412)	(-0.091)	(0.552)	(0.612)	(-2.550)	(-1.832)
MTB	0.0012	0.0048	-0.0033	0.0013	0.0008	0.0044
	(0.385)	(1.599)	(-0.798)	(0.393)	(0.254)	(1.263)
Lev	-0.0196	-0.0212	-0.0173	-0.0226	-0.0076	-0.0098
	(-1.067)	(-1.175)	(-0.686)	(-0.979)	(-0.442)	(-0.480)
ROA	0.0101	-0.0165	-0.0207	-0.1016**	0.0391	0.0154
	(0.371)	(-0.567)	(-0.534)	(-2.612)	(1.370)	(0.461)
Loss	0.0183	0.0201*	0.0134	0.0055	0.0254**	0.0283**
	(1.492)	(1.740)	(0.736)	(0.349)	(2.041)	(2.344)
Age	-0.0021	-0.0035	-0.0001	-0.0004	-0.0019	-0.0043*
	(-0.907)	(-1.575)	(-0.027)	(-0.149)	(-0.708)	(-1.707)
CEO_age	0.0001	0.0001	0.0005	0.0004	0.0001	0.0002
	(0.174)	(0.136)	(0.691)	(0.550)	(0.404)	(0.494)
CEO_tenure	0.0001	-0.0001	0.0001	0.0002	-0.0000	-0.0002
	(0.106)	(-0.114)	(0.180)	(0.443)	(-0.042)	(-0.280)
CEO_gender	0.0364***	0.0180**	0.0713***	0.0272*	0.0203*	0.0114
	(2.771)	(2.308)	(4.592)	(1.771)	(1.795)	(1.035)
Constant	0.1203*	0.1246*	0.2209***	0.2475***	0.0181	0.0053
	(1.815)	(1.944)	(2.692)	(2.870)	(0.255)	(0.083)
Industry FE	YES	YES	YES	YES	YES	YES
Observations	586	581	326	323	411	409
R^2	0.143	0.189	0.190	0.259	0.181	0.221

Notes: Appendix 10 presents the regression results for the accruals-based earnings management models, where the independent variable is total compensation (TOTCOMP). Model 1 and 2 examines the entire sample period (2005-2012), model 3 and 4 examines the difference between the GFC and pre-GFC period and model 5 and 6 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix 11. Bonus Compensation and Real Earnings Management including Ownership Concentration as control variable

Variables	(1) CFO	(2) PROD	(3) DISEXP	(4) REM	(5) CFO	(6) PROD	(7) DISEXP	(8) REM	(9) CFO	(10) PROD	(11) DISEXP	(12) REM
BONCOMP	-0.0055	0.1636**	0.0237	0.1786	-0.0276	0.1061	-0.0800	0.0132	-0.0028	0.2252**	0.1441*	0.3693*
	(-0.172)	(2.296)	(0.400)	(1.347)	(-0.497)	(1.134)	(-0.829)	(0.078)	(-0.065)	(2.060)	(1.965)	(1.956)
GFC1					-0.0414**	-0.0374	-0.0312	-0.1000*				
					(-2.538)	(-1.312)	(-0.980)	(-1.868)				
GFC1xBONCOMP					0.0845	0.0865	0.0495	0.1782				
					(1.360)	(0.719)	(0.383)	(0.825)				
GFC2									-0.0146	0.0081	0.0381	0.0369
									(-1.304)	(0.275)	(1.296)	(0.661)
GFC2xBONCOMP									0.0323	0.0501	-0.0571	-0.0045
									(0.635)	(0.389)	(-0.497)	(-0.019)
OWNCON	0.0070	0.0195	-0.0300	-0.0066	-0.0040	-0.0708	-0.1295*	-0.2090**	0.0189	0.0271	-0.0139	0.0291
	(0.297)	(0.401)	(-0.644)	(-0.068)	(-0.084)	(-1.414)	(-1.957)	(-2.046)	(0.674)	(0.471)	(-0.241)	(0.249)
Size	0.0027	0.0045	0.0012	0.0075	-0.0005	0.0096	0.0102	0.0184	0.0040	-0.0019	-0.0084	-0.0074
	(0.603)	(0.606)	(0.148)	(0.522)	(-0.131)	(1.213)	(1.223)	(1.156)	(0.690)	(-0.237)	(-0.879)	(-0.482)
MTB	-0.0113	-0.0352**	-0.0374***	-0.0845***	-0.0162	-0.0350**	-0.0402***	-0.0889***	-0.0103	-0.0394**	-0.0425***	-0.0924***
	(-1.160)	(-2.311)	(-2.960)	(-3.032)	(-1.311)	(-2.335)	(-2.739)	(-3.324)	(-0.931)	(-2.092)	(-2.811)	(-2.724)
Lev	0.0774	0.0319	-0.0211	0.0796	0.0791	0.0447	0.0432	0.1462	0.0730	0.0165	-0.0114	0.0681
	(1.540)	(0.415)	(-0.248)	(0.527)	(1.338)	(0.548)	(0.421)	(0.901)	(1.353)	(0.180)	(-0.118)	(0.381)
ROA	-0.3151***	-0.2238**	0.1882**	-0.3598**	-0.3492***	-0.1159	0.2486**	-0.2148	-0.3127***	-0.2930***	0.1230	-0.4941**
	(-5.855)	(-2.528)	(2.278)	(-2.050)	(-5.197)	(-1.309)	(2.406)	(-1.161)	(-5.132)	(-2.666)	(1.380)	(-2.338)
Loss	0.0412**	0.0066	0.0104	0.0522	0.0424*	0.0412	0.0495	0.1249	0.0453**	-0.0030	-0.0116	0.0235
	(2.562)	(0.220)	(0.400)	(1.046)	(1.950)	(0.941)	(1.346)	(1.641)	(2.355)	(-0.091)	(-0.404)	(0.418)
Age	-0.0068	-0.0093	0.0003	-0.0154	-0.0049	-0.0165	0.0006	-0.0214	-0.0029	0.0045	0.0133	0.0148
	(-0.792)	(-0.586)	(0.019)	(-0.496)	(-0.508)	(-0.955)	(0.032)	(-0.631)	(-0.360)	(0.265)	(0.985)	(0.469)
CEO_age	0.0016*	0.0023	0.0004	0.0046	0.0015	0.0000	-0.0006	0.0014	0.0020**	0.0038*	0.0013	0.0073*
	(1.734)	(1.106)	(0.179)	(1.123)	(1.278)	(0.010)	(-0.216)	(0.268)	(2.041)	(1.798)	(0.661)	(1.770)
CEO_tenure	0.0013	0.0020	0.0007	0.0041	0.0014	0.0040	0.0026	0.0080	0.0013	0.0023	0.0005	0.0040
	(1.206)	(0.706)	(0.327)	(0.762)	(1.357)	(1.260)	(0.814)	(1.222)	(1.043)	(0.731)	(0.168)	(0.674)
CEO_gender	-0.0571	0.1329	0.1640	0.2414	-0.1643***	-0.1734***	-0.0624	-0.3984***	-0.0053	0.3323***	0.3237***	0.6508***
	(-0.919)	(0.726)	(1.160)	(0.632)	(-6.124)	(-3.686)	(-1.274)	(-4.397)	(-0.208)	(5.512)	(6.445)	(5.689)
Constant	-0.0178	-0.2835	-0.1869	-0.4945	0.1429**	0.1329	0.0281	0.2702	-0.1188*	-0.5619***	-0.3847***	-1.0657***
	(-0.212)	(-1.303)	(-1.037)	(-1.114)	(2.485)	(0.857)	(0.165)	(0.884)	(-1.725)	(-3.696)	(-2.947)	(-3.918)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	589	580	588	591	329	324	328	331	413	407	412	413
R^2	0.275	0.092	0.073	0.101	0.297	0.099	0.120	0.130	0.296	0.154	0.119	0.170

Notes: Appendix 11 presents the regression results for the real earnings management models, where the independent variable is bonus compensation (BONCOMP). Model 1 to 4 examines the entire sample period (2005-2012), model 5 to 8 examines the difference between the GFC and pre-GFC period and model 9 to 12 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix 12. Total Compensation and Real Earnings Management including Ownership Concentration as control variable

Variables	(1) CFO	(2) PROD	(3) DISEXP	(4) REM	(5) CFO	(6) PROD	(7) DISEXP	(8) REM	(9) CFO	(10) PROD	(11) DISEXP	(12) REM
TOTCOMP	-0.0171*	0.0009	0.0218	0.0066	-0.0126	0.0250	0.0291	0.0430	-0.0170	-0.0037	0.0278	0.0080
	(-1.760)	(0.047)	(1.094)	(0.172)	(-1.031)	(1.205)	(1.248)	(1.065)	(-1.527)	(-0.140)	(1.191)	(0.168)
GFC1					-0.0266	0.0627	-0.0189	0.0581				
					(-0.169)	(0.213)	(-0.077)	(0.116)				
GFC1xTOTCOMP					-0.0000	-0.0056	-0.0006	-0.0087				
					(-0.002)	(-0.295)	(-0.039)	(-0.270)				
GFC2									0.1918	-0.0625	-0.2762	-0.0997
									(1.356)	(-0.180)	(-0.802)	(-0.159)
GFC2xTOTCOMP									-0.0131	0.0045	0.0196	0.0080
									(-1.443)	(0.206)	(0.899)	(0.203)
OWNCON	0.0031	0.0157	-0.0255	-0.0094	-0.0167	-0.0843	-0.1131*	-0.2160**	0.0116	0.0199	-0.0058	0.0230
	(0.130)	(0.329)	(-0.546)	(-0.097)	(-0.366)	(-1.644)	(-1.749)	(-2.058)	(0.408)	(0.356)	(-0.102)	(0.202)
Size	0.0084	0.0089	-0.0055	0.0104	0.0041	0.0052	-0.0009	0.0071	0.0112	0.0065	-0.0156	0.0010
	(1.350)	(0.942)	(-0.491)	(0.561)	(0.720)	(0.557)	(-0.073)	(0.354)	(1.391)	(0.583)	(-1.141)	(0.045)
MTB	-0.0091	-0.0310**	-0.0398***	-0.0806***	-0.0132	-0.0340**	-0.0469***	-0.0921***	-0.0074	-0.0313*	-0.0426***	-0.0814**
	(-0.982)	(-2.017)	(-3.213)	(-2.899)	(-1.083)	(-2.307)	(-3.327)	(-3.624)	(-0.729)	(-1.659)	(-3.001)	(-2.428)
Lev	0.0628	0.0068	-0.0051	0.0565	0.0648	0.0488	0.0807	0.1758	0.0559	-0.0264	-0.0084	0.0102
	(1.248)	(0.084)	(-0.064)	(0.372)	(1.066)	(0.613)	(0.845)	(1.132)	(1.048)	(-0.263)	(-0.088)	(0.054)
ROA	-0.3128***	-0.1983**	0.1885**	-0.3322*	-0.3424***	-0.0912	0.2370**	-0.2000	-0.3056***	-0.2495**	0.1359	-0.4341**
	(-5.924)	(-2.320)	(2.347)	(-1.950)	(-5.231)	(-1.074)	(2.359)	(-1.125)	(-5.230)	(-2.351)	(1.562)	(-2.096)
Loss	0.0467***	0.0053	0.0038	0.0491	0.0454**	0.0287	0.0449	0.1085	0.0504**	-0.0018	-0.0182	0.0225
	(2.677)	(0.177)	(0.145)	(1.000)	(2.010)	(0.653)	(1.253)	(1.467)	(2.438)	(-0.056)	(-0.598)	(0.395)
Age	-0.0067	-0.0114	-0.0000	-0.0178	-0.0057	-0.0174	0.0008	-0.0226	-0.0033	-0.0019	0.0105	0.0056
	(-0.785)	(-0.719)	(-0.003)	(-0.577)	(-0.577)	(-1.012)	(0.041)	(-0.666)	(-0.402)	(-0.110)	(0.789)	(0.171)
CEO_age	0.0017*	0.0025	0.0003	0.0047	0.0015	-0.0001	-0.0007	0.0014	0.0020**	0.0040*	0.0014	0.0076*
	(1.852)	(1.147)	(0.153)	(1.158)	(1.341)	(-0.018)	(-0.247)	(0.260)	(2.150)	(1.799)	(0.670)	(1.787)
CEO_tenure	0.0014	0.0023	0.0006	0.0044	0.0014	0.0041	0.0024	0.0079	0.0015	0.0023	0.0002	0.0040
	(1.370)	(0.818)	(0.260)	(0.816)	(1.381)	(1.301)	(0.766)	(1.220)	(1.235)	(0.727)	(0.062)	(0.668)
CEO_gender	-0.0496	0.1136	0.1528	0.2178	-0.1490***	-0.1921***	-0.1163**	-0.4571***	-0.0091	0.2688***	0.2920***	0.5511***
	(-0.904)	(0.699)	(1.031)	(0.603)	(-4.517)	(-3.389)	(-2.019)	(-4.221)	(-0.360)	(4.147)	(5.572)	(4.466)
Constant	0.1829	-0.2886	-0.4410	-0.5653	0.2745*	-0.1729	-0.2809	-0.2266	0.0783	-0.4671	-0.6798**	-1.0826
	(1.521)	(-0.896)	(-1.420)	(-0.875)	(1.924)	(-0.640)	(-0.830)	(-0.409)	(0.622)	(-1.194)	(-2.109)	(-1.558)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	589	580	588	591	329	324	328	331	413	407	412	413
R^2	0.281	0.075	0.076	0.095	0.297	0.088	0.125	0.130	0.306	0.117	0.117	0.146

Notes: Appendix 12 presents the regression results for the real earnings management models, where the independent variable is total compensation (TOTCOMP). Model 1 to 4 examines the entire sample period (2005-2012), model 5 to 8 examines the difference between the GFC and pre-GFC period and model 9 to 12 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix 13. Bonus Compensation and Accruals-based Earnings Management including CEO Ownership as control variable

Variables	(1) Modified Jones	(2) Kothari	(3) Modified Jones	(4) Kothari	(5) Modified Jones	(6) Kothari
BONCOMP	-0.0281*	-0.0255*	-0.0563**	-0.0486**	-0.0342	-0.0264
	(-1.845)	(-1.772)	(-2.329)	(-2.031)	(-1.491)	(-1.318)
GFC1			-0.0206***	-0.0178***		
			(-3.104)	(-2.966)		
GFC1xBONCOMP			0.0686**	0.0541**		
			(2.361)	(2.089)		
GFC2					-0.0027	-0.0002
					(-0.411)	(-0.030)
GFC2xBONCOMP					0.0380	0.0170
					(1.220)	(0.658)
CEO_Ownership	-0.0151	-0.0143	0.0178	0.0294	-0.0339	-0.0449*
	(-0.501)	(-0.464)	(0.525)	(0.754)	(-1.104)	(-1.722)
Size	-0.0011	-0.0009	-0.0008	-0.0008	-0.0014	-0.0008
	(-0.717)	(-0.706)	(-0.432)	(-0.473)	(-0.891)	(-0.541)
MTB	0.0083*	0.0106***	0.0043	0.0071**	0.0087*	0.0112***
	(1.913)	(3.287)	(1.035)	(2.335)	(1.659)	(2.836)
Lev	-0.0613***	-0.0488***	-0.0701***	-0.0611***	-0.0488**	-0.0322*
	(-2.656)	(-2.704)	(-2.895)	(-3.062)	(-2.233)	(-1.764)
ROA	-0.0880**	-0.0807***	-0.0842**	-0.1005***	-0.0694	-0.0592
	(-1.989)	(-2.630)	(-2.207)	(-3.894)	(-1.301)	(-1.522)
Loss	0.0123	0.0131	0.0103	0.0071	0.0148	0.0180
	(1.058)	(1.384)	(0.842)	(0.694)	(1.032)	(1.565)
Age	-0.0044**	-0.0052**	-0.0031	-0.0033	-0.0038	-0.0059**
	(-2.042)	(-2.513)	(-1.327)	(-1.515)	(-1.579)	(-2.537)
CEO_age	0.0005	0.0003	0.0003	0.0002	0.0007*	0.0004
	(1.402)	(0.924)	(0.555)	(0.435)	(1.817)	(1.064)
CEO_tenure	0.0003	0.0002	0.0003	0.0001	0.0004	0.0003
	(0.839)	(0.516)	(0.631)	(0.326)	(0.887)	(0.862)
CEO_gender	0.0062	-0.0045	0.0160	0.0075	0.0002	-0.0119
	(0.288)	(-0.340)	(0.997)	(0.632)	(0.008)	(-0.738)
Constant	-0.0193	0.0902***	0.0164	0.1252***	-0.0269	0.0708*
	(-0.623)	(2.994)	(0.514)	(4.937)	(-0.757)	(1.669)
Industry FE	YES	YES	YES	YES	YES	YES
Observations	1,203	1,200	759	760	755	753
R^2	0.181	0.209	0.176	0.219	0.183	0.221

Notes: Appendix 13 presents the regression results for the accruals-based earnings management models, where the independent variable is bonus compensation (BONCOMP). Model 1 and 2 examines the entire sample period (2005-2012), model 3 and 4 examines the difference between the GFC and pre-GFC period and model 5 and 6 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix 14. Total Compensation and Accruals-based Earnings Management including CEO Ownership as control variable

Variables	(1) Modified Jones	(2) Kothari	(3) Modified Jones	(4) Kothari	(5) Modified Jones	(6) Kothari
TOTCOMP	-0.0072*	-0.0057	-0.0176***	-0.0152***	0.0006	0.0016
	(-1.735)	(-1.498)	(-3.283)	(-3.186)	(0.142)	(0.390)
GFC1			-0.2105***	-0.2088***		
			(-2.902)	(-3.123)		
GFC1xTOTCOMP			0.0132***	0.0132***		
			(2.803)	(3.031)		
GFC2					-0.0708	-0.0481
					(-1.117)	(-0.841)
GFC2xTOTCOMP					0.0049	0.0034
					(1.200)	(0.902)
CEO_Ownership	-0.0229	-0.0193	-0.0051	0.0125	-0.0242	-0.0354
	(-0.756)	(-0.641)	(-0.153)	(0.337)	(-0.748)	(-1.293)
Size	0.0006	0.0003	0.0029	0.0021	-0.0030	-0.0025
	(0.286)	(0.154)	(1.158)	(0.950)	(-1.518)	(-1.362)
MTB	0.0086*	0.0107***	0.0056	0.0080**	0.0076	0.0101***
	(1.942)	(3.265)	(1.297)	(2.526)	(1.474)	(2.615)
Lev	-0.0630***	-0.0498***	-0.0789***	-0.0687***	-0.0455**	-0.0291
	(-2.765)	(-2.803)	(-3.303)	(-3.576)	(-2.096)	(-1.566)
ROA	-0.0911**	-0.0835***	-0.0855**	-0.1023***	-0.0707	-0.0612
	(-2.061)	(-2.739)	(-2.287)	(-4.058)	(-1.317)	(-1.581)
Loss	0.0132	0.0138	0.0131	0.0094	0.0144	0.0174
	(1.134)	(1.452)	(1.060)	(0.908)	(1.003)	(1.512)
Age	-0.0044**	-0.0051**	-0.0036	-0.0037*	-0.0034	-0.0054**
	(-2.017)	(-2.469)	(-1.554)	(-1.675)	(-1.371)	(-2.298)
CEO_age	0.0005	0.0003	0.0004	0.0003	0.0007*	0.0004
	(1.470)	(0.988)	(0.706)	(0.564)	(1.779)	(1.059)
CEO_tenure	0.0003	0.0002	0.0003	0.0001	0.0003	0.0003
	(0.830)	(0.488)	(0.673)	(0.382)	(0.696)	(0.655)
CEO_gender	0.0066	-0.0043	0.0205	0.0111	-0.0012	-0.0131
	(0.305)	(-0.325)	(1.029)	(0.825)	(-0.047)	(-0.800)
Constant	0.0679	0.1596***	0.2368***	0.3170***	-0.0283	0.0562
	(1.087)	(2.703)	(2.989)	(4.707)	(-0.449)	(0.813)
Industry FE	YES	YES	YES	YES	YES	YES
Observations	1,203	1,200	759	760	755	753
R^2	0.181	0.208	0.185	0.228	0.181	0.219

Notes: Appendix 14 presents the regression results for the accruals-based earnings management models, where the independent variable is total compensation (TOTCOMP). Model 1 and 2 examines the entire sample period (2005-2012), model 3 and 4 examines the difference between the GFC and pre-GFC period and model 5 and 6 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix 15. Bonus Compensation and Real Earnings Management including CEO Ownership as control variable

Variables	(1) CFO	(2) PROD	(3) DISEXP	(4) REM	(5) CFO	(6) PROD	(7) DISEXP	(8) REM	(9) CFO	(10) PROD	(11) DISEXP	(12) REM
BONCOMP	-0.0149	0.1124*	-0.0079	0.1002	-0.0299	0.0571	-0.0860	-0.0493	-0.0249	0.1018	0.0336	0.1347
	(-0.532)	(1.892)	(-0.156)	(0.872)	(-0.608)	(0.657)	(-0.949)	(-0.280)	(-0.644)	(1.182)	(0.499)	(0.862)
GFC1					-0.0262**	-0.0461**	-0.0364*	-0.1056***				
					(-2.556)	(-2.536)	(-1.701)	(-2.989)				
GFC1xBONCOMP					0.0395	0.1123	0.0959	0.2278				
					(0.856)	(1.263)	(0.935)	(1.273)				
GFC2									-0.0062	-0.0225	-0.0120	-0.0352
									(-0.636)	(-1.177)	(-0.594)	(-0.984)
GFC2xBONCOMP									0.0123	0.0761	0.0146	0.0715
									(0.284)	(0.831)	(0.160)	(0.428)
CEO_Ownership	0.0373	-0.0180	-0.1435	-0.1123	0.0667	0.0031	-0.0711	-0.0048	0.0163	0.0111	-0.1489	-0.1078
	(0.753)	(-0.146)	(-1.220)	(-0.477)	(1.141)	(0.018)	(-0.438)	(-0.015)	(0.321)	(0.087)	(-1.135)	(-0.441)
Size	0.0060	0.0046	0.0005	0.0113	0.0029	0.0062	0.0050	0.0140	0.0080*	0.0059	0.0003	0.0138
	(1.623)	(0.736)	(0.068)	(0.901)	(0.877)	(0.940)	(0.646)	(1.055)	(1.849)	(0.849)	(0.034)	(0.992)
MTB	-0.0072	-0.0439***	-0.0519***	-0.1032***	-0.0163*	-0.0445***	-0.0462***	-0.1075***	0.0006	-0.0468***	-0.0634***	-0.1101***
	(-1.025)	(-3.724)	(-3.872)	(-4.481)	(-1.959)	(-3.929)	(-2.962)	(-4.676)	(0.079)	(-3.114)	(-4.225)	(-3.842)
Lev	0.0120	0.0556	0.0761	0.1343	0.0158	0.0818	0.1196	0.2068	-0.0015	0.0108	0.0280	0.0327
	(0.303)	(0.853)	(1.131)	(1.039)	(0.386)	(1.192)	(1.584)	(1.462)	(-0.035)	(0.141)	(0.364)	(0.227)
ROA	-0.3585***	-0.2293***	0.1801**	-0.4364***	-0.3565***	-0.2143***	0.1754**	-0.4168***	-0.3666***	-0.2322***	0.1461	-0.4748***
	(-6.895)	(-3.734)	(2.191)	(-3.673)	(-7.311)	(-3.994)	(2.404)	(-3.797)	(-6.072)	(-2.957)	(1.415)	(-3.111)
Loss	0.0426***	0.0122	-0.0114	0.0349	0.0417**	0.0237	-0.0092	0.0529	0.0359**	-0.0018	-0.0150	0.0126
	(3.252)	(0.577)	(-0.478)	(0.882)	(2.495)	(0.839)	(-0.276)	(0.921)	(2.371)	(-0.071)	(-0.585)	(0.286)
Age	-0.0040	0.0039	0.0076	0.0071	-0.0049	0.0003	0.0108	0.0057	-0.0030	0.0035	0.0018	0.0030
	(-0.669)	(0.304)	(0.639)	(0.278)	(-0.801)	(0.024)	(0.813)	(0.212)	(-0.508)	(0.265)	(0.145)	(0.114)
CEO_age	0.0004	0.0011	-0.0006	0.0008	0.0008	0.0007	-0.0009	0.0010	0.0002	0.0014	0.0005	0.0019
	(0.670)	(0.715)	(-0.451)	(0.290)	(1.125)	(0.372)	(-0.520)	(0.299)	(0.211)	(0.840)	(0.330)	(0.580)
CEO_tenure	0.0002	-0.0022	-0.0009	-0.0029	0.0001	-0.0020	-0.0012	-0.0031	0.0003	-0.0017	-0.0006	-0.0021
	(0.220)	(-1.089)	(-0.492)	(-0.744)	(0.075)	(-0.911)	(-0.553)	(-0.725)	(0.364)	(-0.799)	(-0.336)	(-0.511)
CEO_gender	0.0410	0.1548*	0.0899	0.2839*	0.0076	0.0970	0.0518	0.1551	0.0474	0.1863**	0.1216	0.3527*
	(1.346)	(1.956)	(1.077)	(1.827)	(0.132)	(0.889)	(0.445)	(0.662)	(1.419)	(2.027)	(1.191)	(1.972)
Constant	-0.0643	-0.0799	0.0429	-0.2153	0.0826	0.0297	0.0797	0.1771	-0.1226	-0.2385*	-0.0885	-0.4653*
	(-0.815)	(-0.730)	(0.389)	(-0.891)	(1.241)	(0.218)	(0.539)	(0.627)	(-1.472)	(-1.856)	(-0.676)	(-1.805)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,209	1,196	1,207	1,219	766	760	765	772	758	749	757	764
R^2	0.316	0.116	0.097	0.132	0.334	0.108	0.094	0.129	0.338	0.128	0.124	0.155

Notes: Appendix 15 presents the regression results for the real earnings management models, where the independent variable is bonus compensation (BONCOMP). Model 1 to 4 examines the entire sample period (2005-2012), model 5 to 8 examines the difference between the GFC and pre-GFC period and model 9 to 12 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix 16. Total Compensation and Real Earnings Management including CEO Ownership as control variable

Variables	(1) CFO	(2) PROD	(3) DISEXP	(4) REM	(5) CFO	(6) PROD	(7) DISEXP	(8) REM	(9) CFO	(10) PROD	(11) DISEXP	(12) REM
TOTCOMP	-0.0131	0.0190	0.0160	0.0257	-0.0146	0.0284	0.0218	0.0360	-0.0123	0.0081	0.0079	0.0099
	(-1.559)	(1.261)	(0.952)	(0.897)	(-1.509)	(1.603)	(1.019)	(0.997)	(-1.414)	(0.463)	(0.444)	(0.316)
GFC1					-0.0526	-0.3525**	-0.2468	-0.6503**				
					(-0.458)	(-2.155)	(-1.186)	(-2.033)				
GFC1xTOTCOMP					0.0022	0.0213**	0.0147	0.0381*				
					(0.290)	(1.998)	(1.087)	(1.825)				
GFC2									0.1465	-0.4308**	-0.5201**	-0.7734**
									(1.348)	(-2.432)	(-2.547)	(-2.345)
GFC2xTOTCOMP									-0.0099	0.0275**	0.0336**	0.0492**
									(-1.407)	(2.421)	(2.564)	(2.326)
CEO_Ownership	0.0156	-0.0071	-0.1095	-0.0859	0.0419	0.0458	-0.0060	0.0765	-0.0054	0.0101	-0.1204	-0.0978
	(0.316)	(-0.055)	(-0.915)	(-0.354)	(0.733)	(0.262)	(-0.036)	(0.228)	(-0.105)	(0.078)	(-0.876)	(-0.393)
Size	0.0101*	0.0014	-0.0053	0.0053	0.0073	-0.0037	-0.0053	-0.0020	0.0128**	0.0039	-0.0054	0.0096
	(1.867)	(0.173)	(-0.496)	(0.334)	(1.349)	(-0.411)	(-0.448)	(-0.107)	(2.183)	(0.436)	(-0.457)	(0.550)
MTB	-0.0057	-0.0436***	-0.0545***	-0.1043***	-0.0146*	-0.0469***	-0.0509***	-0.1130***	0.0020	-0.0451***	-0.0647***	-0.1084***
	(-0.860)	(-3.707)	(-4.189)	(-4.585)	(-1.880)	(-4.190)	(-3.418)	(-4.983)	(0.263)	(-3.048)	(-4.382)	(-3.889)
Lev	0.0050	0.0561	0.0872	0.1405	0.0082	0.0916	0.1382*	0.2277	-0.0060	0.0045	0.0310	0.0258
	(0.126)	(0.854)	(1.275)	(1.078)	(0.197)	(1.333)	(1.788)	(1.580)	(-0.140)	(0.059)	(0.397)	(0.178)
ROA	-0.3603***	-0.2168***	0.1791**	-0.4248***	-0.3559***	-0.2022***	0.1681**	-0.4128***	-0.3690***	-0.2137***	0.1517	-0.4533***
	(-7.046)	(-3.589)	(2.178)	(-3.614)	(-7.465)	(-3.720)	(2.299)	(-3.700)	(-6.236)	(-2.769)	(1.488)	(-3.023)
Loss	0.0447***	0.0101	-0.0142	0.0317	0.0451***	0.0161	-0.0157	0.0413	0.0377**	-0.0021	-0.0165	0.0109
	(3.361)	(0.483)	(-0.601)	(0.806)	(2.687)	(0.573)	(-0.472)	(0.719)	(2.436)	(-0.085)	(-0.645)	(0.249)
Age	-0.0044	0.0034	0.0084	0.0069	-0.0055	0.0006	0.0122	0.0067	-0.0033	0.0019	0.0023	0.0014
	(-0.725)	(0.259)	(0.690)	(0.269)	(-0.897)	(0.041)	(0.898)	(0.246)	(-0.568)	(0.142)	(0.183)	(0.053)
CEO_age	0.0004	0.0010	-0.0006	0.0008	0.0009	0.0006	-0.0008	0.0010	0.0002	0.0013	0.0005	0.0018
	(0.692)	(0.657)	(-0.460)	(0.269)	(1.204)	(0.333)	(-0.477)	(0.316)	(0.217)	(0.794)	(0.287)	(0.534)
CEO_tenure	0.0002	-0.0021	-0.0010	-0.0029	0.0001	-0.0020	-0.0014	-0.0032	0.0004	-0.0016	-0.0007	-0.0019
	(0.337)	(-1.055)	(-0.570)	(-0.745)	(0.108)	(-0.896)	(-0.619)	(-0.742)	(0.468)	(-0.736)	(-0.348)	(-0.462)
CEO_gender	0.0432	0.1552**	0.0861	0.2825*	0.0127	0.0868	0.0379	0.1363	0.0465	0.1927**	0.1272	0.3637**
	(1.440)	(2.041)	(1.027)	(1.848)	(0.238)	(0.808)	(0.342)	(0.590)	(1.414)	(2.205)	(1.268)	(2.102)
Constant	0.0905	-0.3130	-0.1520	-0.5253	0.2569*	-0.2877	-0.1659	-0.2168	0.0166	-0.3098	-0.1550	-0.5490
	(0.721)	(-1.408)	(-0.653)	(-1.173)	(1.927)	(-1.057)	(-0.567)	(-0.393)	(0.135)	(-1.218)	(-0.629)	(-1.165)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,209	1,196	1,207	1,219	766	760	765	772	758	749	757	764
R^2	0.319	0.113	0.099	0.132	0.337	0.110	0.097	0.131	0.343	0.121	0.130	0.155

Notes: Appendix 16 presents the regression results for the real earnings management models, where the independent variable is total compensation (TOTCOMP). Model 1 to 4 examines the entire sample period (2005-2012), model 5 to 8 examines the difference between the GFC and pre-GFC period and model 9 to 12 examines the difference between the GFC and post-GFC period. For definitions of the independent and control variables, see section 3.4 and Table 3.2. Robust t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1