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MASTER THESIS

DOES THE PREFERENCE FOR ACCRUAL-BASED EARNINGS MANAGEMENT AS OPPOSED TO REAL EARNINGS MANAGEMENT CHANGE DURING CEO TENURE?

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ABSTRACT

This study sheds light on the preference among CEOs to use Accrual-based Earnings Management and Real Earnings Management to manipulate earnings during their time as CEO. Working capital accruals and production costs are used as indicators to detect accrual-based earnings management and real earnings management. Previous research suggests a change in preference for Accrual-based Earnings Management and Real Earnings Management between the first three years of a CEOs tenure as compared to the following years.

In this thesis, I utilize three different models to study the preference of CEOs' earnings management during their tenure years. This study found that the preference for Accrual-based Earnings Management is lower during the early years of tenure, whilst there is no demonstrable difference in preference for Real Earnings Management during these years. Moreover, the relative preference ratio of Accrual-based Earnings Management versus Real Earnings Management is lower during the early years as compared to the ratio during the later years of a CEO tenure.

Key words: C*EO tenure, Accrual-based Earnings Management, Real Earnings Management, Discretionary Accruals, Abnormal Production Costs.*

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INTRODUCTION

Behavior of people does change, including the behavior of CEOs. Their behavior in earnings management has been extensively investigated in the hope of finding conclusions and a way to predict it. Several studies show that CEOs overstate expenses and losses of their firm in their early years as compared to their final year of tenure (Strong & Meyer, 1987; Pourciau, 1993). It seems that CEOs engage in earnings management all the time, whether it is during their early, mid or late years of tenure. Graham et al. (2005) and Ali and Zhang (2015) described the opportunities and reasons for executives to manage financial reporting outcomes. Examples of these reasons are annual bonus payments based on reported earnings, attract loan capital or career extension. CEOs have two strategies to influence earnings. They can take accounting actions or real economic actions when reporting the firm's earnings. The fact that CEOs engage in managing earnings is undeniable, but in what way? Do they use both methods at the same time or separately? What is the relationship between accounting actions and real economic actions during the tenure? I intend to answer the following research question:

"Does the preference for Accrual-based Earnings Management as opposed to Real Earnings Management change during CEO tenure?"

In my research, I first focus on Accrual-based Earnings Management (AEM) during the early years and late years of CEO tenure. The capacity of newly appointed CEOs is being judged by analysts and stakeholders based on the reported earnings (Fama, 1980; Gibbons & Murphy, 1992). To show their ability as CEO and to extend their tenure at the firm CEOs use earnings management as a tool to increase these earnings (Holmstrom, 1982). However, the CEO does not want to evaporate cash since that could harm their investment decisions in the late years of tenure. Therefore, it is expected that CEOs have preference for Accrual-based Earnings Management during their early years of tenure..

Secondly, I will focus on the use of Real Earning Management (REM) during the early and late years. After the early years of tenure, the horizon problem might occur which indicates that the earnings overstatement increase by making real activities decisions since the continuity of the firm is not the responsibility of the CEO after his resignation (Wells, 2002). The importance of cash to invest in the future is not the case anymore. Therefore, I assume that the use of REM is higher during the late years.

Thirdly, I calculate the relative preference between AEM and REM of CEOs as a ratio and assume that the preference for higher during the early years. One earnings management strategy is preferred over the other if its costs are lower. It is up to the CEO to choose either a

short-term focus or a long-term focus on desired earnings by making value-maximizing investment decisions. By using ratios I will show the interaction between the two earnings management methods over time.

I utilize three models to measure earnings management during the tenure years of a CEO. The discretionary working capital accruals are used as an indicator for accounting manipulation (1), whilst the abnormal production costs are used as an indicator of real earnings management (2). In previous research, both methods (1 and 2) were used in a two-step approach. Following Chen et al. (2018) I converted both models into a one-step approach. In the end, I calculate the ratio of AEMvsREM (3) as the discretionary working capital accruals divided by the abnormal production costs. I use a fairly new method of Accrual Duration to estimate these accruals. Also, the absolute values of Working Capital Accruals and Production Costs are used. When a CEO used discretionary accruals to manipulate earnings, the accounting methods force him to reverse these accruals later in the time, since they must be undone.

For the sample period 1992-2018, the level of working capital accruals is lower during the early years of CEO tenure indicating that the preference for Accrual-based Earnings Management is lower during these early years, whilst there is no difference in the level of production costs during both tenure periods indicating that there is no clear preference for Real Earnings Management in any of the tenure periods. Altogether, this results in a ratio between the two earnings management methods that are lower during the early years of CEO tenure. Moreover, the regressions with absolute working capital accruals and absolute production costs as dependent variables provide both no statistical difference between the early years of CEO tenure and the late years. However, the ratio with the absolute working capital accruals divided by the absolute production costs is significantly lower during the early years of CEO tenure as compared to the late years of tenure. The early years of CEO tenure are equal to the change year of a CEO and the two following years.

Evidence of this thesis contradicts literature on earnings management during the early years of CEO tenure and career concerns (Ali & Zhang, 2015; Strong & Meyer, 1987; Graham, Harvey, & Rajgopal, 2005; Holmstrom, 1982). Ali and Zhang (2015) found for a sample period of 1992-2010 that accrual overstatements are higher during the first four years of CEO tenure and that abnormal expenses are lower during these years. They suggested that these overstatements arise since CEOs want to show their capacity by reporting preferred earnings. According to my results, it is more likely that CEOs during their early years of tenure use a lower level of working capital accruals as a tool to manipulate earnings.

However, I use data from 1992 to 2018, so 8 years of data is from after 2010. Perhaps the early years CEOs behavior changed and, therefore, used a lower level of discretionary accruals to manipulate earnings.

This thesis contributes to the existing literature by examining a new perspective on earnings management during CEO tenure. The ratios AEMvsREM during the early and late years of CEO tenure are analyzed, indicating the preference of CEOs for using accrual-based earnings management to real earnings management. Firstly, these ratios are important since they give a quick overview of how the CEO (and the company) is engaged to manipulate earnings. For instance, the current ratio provides insights into the liquidity of a firm (the relationship of current assets to current liabilities). This ratio provides the proportion of discretionary working capital accruals over abnormal production costs over time. Most of the time, a high current ratio is considered better than a low ratio. In this case, a low ratio on AEMvsREM is considered better since the misuse of accrual earnings management could result in fraud (which is forbidden) and real earnings management is just bad for a company's continuity. Secondly, the ratio can help to evaluate a CEO since it provides insights into the two tenure periods of a CEO and his preference for both earnings management methods during these periods. Thirdly, it could help to forecast the behavior of CEOs in the future since they have used it for years. In the end, the model to test the ratios of AEMvsREM is new and provides consistent and reliable results. In this thesis, it was mathematically justified to use the model in this way to conclude.

The structure of this thesis is as follows. Part II covers the literature review and hypotheses development related to accrual-based earnings management, real earnings management, and CEO tenure. Part III consists of the data collection and the methodology. Part IV elaborates on the empirical results and, additionally, provides analysis of the results. Finally, part V presents a discussion on the outcomes resulting from this study.

II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT
2.1 Earnings management
Earnings management is using financial reports and transactions to manipulate earnings not for strategic reasons, but solely to change a firm's earnings to mislead the firm's stakeholders about the underlying economic performance of the firm or to influence contractual outcomes (Healy & Wahlen, 1999; Mohanram, 2003).

According to Mohanram, there are several reasons and ways to manage a firm's earnings.

Firstly, Mohanram (2003) states that earnings management is related to the performance of a firm concerning some benchmark. Therefore, small earnings' manipulations arise when executives try to meet analysts' forecasts (Burgstahler & Dichev, 1997).

Secondly, when firms are missing their earnings' targets, executives could use incentives to make the firm's earnings look even worse than they are by making adjustments. For example, executives can reduce income by taking a large one-time charge, a so called "big earnings bath" (Mohanram, 2003). Any improvements in the following years will then look more credible.

Thirdly, when firms are above their earnings' target, executives might reduce earnings to keep some earnings as a reserve in order to meet expectations in the future. In this case, the executives are creating a "cookie jar", which is useful when earnings are disappointing in the following years (Mohanram, 2003).

A fourth, and most important, argument considers the private interests of the executive. Ali and Zhang (2015) provide evidence that CEOs manage earnings due to career concerns since it identifies the executives as 'low ability CEO' when earnings do not meet investor or analysts' forecast. The tenure of CEOs is split into the early years and late years. By separating the tenure periods I can compare the way of earnings management in these periods and see if the behavior of CEOs concerning the manipulation of earnings is different.

2.1.1 Accrual-based Earnings Management

To obtain a certain level of earnings, executives can alter the level of accruals. Accruals are the difference between net income and cash flows. Accrual accounting demonstrates the real performance of the company by matching revenues and costs to the period where it should be recognized following the accounting matching principle, regardless of the cash in- and outflows. Managers must choose from acceptable accounting methods for reporting economic transactions. Reported income can be manipulated when executives use accruals for events that require discretion in accounting standards. For example, a firm first used a straight-line depreciation and switched to a depreciation method based on produced units to adjust the firms' costs that year since they had a poor production. The change in depreciation is in favor of the firm and could result in better earnings results. So, earnings management through accruals has been applied, since the manager changed the accounting methods and, therefore, can manipulate firm's earnings.

2.1.2 Real Earnings Management

According to Roychowdhury (2006), real earnings manipulation can be defined as a departure from normal operational practices. Real earnings management involves management attempts to alter reported earnings by adjusting the timing and scale of the business activities. It directly influences operational cash flows or cash flows from financing activities. Previous studies showed that deviations from operating and investing activities and deviations from financing activities are methods of real earnings management (Xu, Taylor, & Dugan, 2007). Real activities manipulation can reduce a firm's value because actions taken in the current period to increase earnings can harm cash flows in future periods. Therefore, managers who engage in earnings management might be short-term tenure oriented instead of long-term tenure oriented. That implies that these executives are willing to change the economic value of the company to meet financial reporting goals or to report desired accounting numbers. Here is an example of an operational decision (real earnings manipulation): a manager gives a short-term discount to stimulate the sales directly and achieve financial earnings targets.

2.2 Earnings Management during the early years of CEO tenure

Results of Pourciau (1993) and Wells (2002) show that newly appointed CEOs blame their predecessors for poor performance in their early years. Wells (2002) described that income can be deferred to subsequent periods which amplify the positive impact on executives in the future. Strong and Meyer (1987) provide evidence that by cleaning up the balance sheet and by reducing the firms' equity, firms (executives) can boost their future profits (compensation). Cleaning the balance sheet could result in earnings baths. This could be described as taking huge expenses/losses and discretionary write-offs, which are in favor of the newly appointed CEOs, since they take credit for the resulting higher reported earnings in the subsequent years (Pourciau, 1993).

The overstatements in the early years of the service of the CEOs are also associated with career concerns (Ali & Zhang, 2015; Strong & Meyer, 1987; Graham, Harvey, & Rajgopal, 2005; Holmstrom, 1982). To meet analysts' and investors' forecasts, newly appointed CEOs might manipulate the firm's earnings (Kasznik, 1999). To take away the doubts of investors and analysts, a CEO might manage earnings to reduce reports of poor performance during the early years of their tenure. Otherwise, their capacity could be rated as low and could result in dismissal as a consequence. Dismissal could impact their whole career (Holmstrom, 1982). CEOs benefit by earning a 'high ability' rating as CEO since reappointments and (financial) compensation are aligned by this rating (Fama, 1980). The

market information about the past performance of the newly appointed CEOs is not always readily available. The market relies on the current performance even if it requires a high capacity from the CEO during his early years at a firm (Ali & Zhang, 2015; Fama, 1980).

2.3 Earnings management during the late years of CEO tenure
There are three main motives why experienced CEOs engage in managing earnings. The first motive is called the 'Horizon problem'. Ali and Zhang (2015) and Wells (2002) describe that CEOs overstate earnings during their final years as CEO to stimulate their final years' pay. CEOs are driven by their annual bonuses based on reported earnings. This results in fewer investments during the final years of their tenure to stimulate the earnings. The CEOs are less long-term oriented when they face the final year of their tenure as they have no benefit from increasing firm's value.

The second motive is the 'Cover-up problem'. When CEOs resign voluntarily or when CEOs are aware of the expiration date of their tenure, they might want to reinforce their reputation as a CEO (Murphy & Zimmerman, 1993). These CEOs use incentives to stimulate firm's earnings and they make income-increasing accounting decisions. This way they cover up bad performance of previous years during these later years of their tenure as CEO.

Thirdly, the leaving CEO could make it harder for the new CEO to meet or achieve the previously established performance (Ali & Zhang, 2015). The leaving CEO could make income-increasing accounting decisions that would show their ability as a CEO. This could result in financial aftermaths for the new CEO since the new CEO wants to take away the uncertainties of investors and analysts of their capacity.

2.4 Formulation of the hypotheses of AEM and REM, and the ratio AEMvsREM during CEO tenure
As said earlier, most executives prefer earnings management by real actions as opposed to accounting manipulations. However, there are arguments why CEOs have a preference for accrual-based earnings management instead of manipulating real activities.

Firstly, let's look at the use of accrual-based earnings management during the early years of CEO tenure. CEOs have strong incentives to report good performance during their early CEO service to take away the uncertainties of investors and analysts of their capacity. Also, when CEOs are long-term oriented, they do not want to 'overmanipulate' real activities in the early years, because it will evaporate cash in the continuation of their tenure. Accrual-based earnings management does not consume cash and is less costly than the manipulation of

real business activities. Therefore, accruals manipulation may be a more preferable means of earnings management than the manipulation of real business activities (Xu, Taylor, & Dugan, 2007). However, the passage of the Sarbanes-Oxley Act resulted in a decline of accruals earnings management (Ewert & Wagenhofer, 2005). According to Dechow et al. (1996), as firms that aggressively manage earnings through accruals have higher risks of regulatory scrutiny and shareholder lawsuits. Therefore, the following hypothesis is stated since I expect the use of accrual-based earnings management to change during tenure:

H1: There is no difference in preference for AEM to manipulate earnings during the early years and later years of CEO tenure.

H1a: The preference for AEM to manipulate earnings during the early years of CEO tenure is higher as compared to the later years.

Secondly, let's look at the correlation between CEO tenure and real earnings management. Since CEOs would show their ability as an executive to extend their tenure they might engage in Real Earnings Management. This is a result of the scrutiny of auditors since they constrain the use of earnings management through accruals. CEOs could not get fined for not investing in research and development, advertisement and maintenance. Evidence from Roychowdhury (2006) shows that executives prefer real earnings management over accrual-based earnings management since accrual-based earnings management is likely to draw more attention from auditors or regulators compared to real decisions about pricing and production. When CEOs approach their final year of service or when they are close to voluntary resignation they may want to increase their compensation. During the early years, CEOs are more concerned about the length of their tenure, whereas leaving CEOs do not have these concerns. They care less about burning cash as being a disadvantage to the firm since the continuity of the firm is not their business anymore. Therefore, I propose the following hypothesis since I expect the use of real earnings management to change during tenure:

H2: There is no difference in preference for REM to manipulate earnings during the early years as compared to the later years of CEO tenure.

H2a: The preference for REM to manipulate earnings during the early years of CEO tenure is lower as compared to the later years.

Considering all of the above, changes in earnings management during the tenure of CEOs are expected. Zang (2012) provides evidence that an earnings management strategy is preferred over the other strategy if the strategy's costs are relatively lower due to more constraints. Ewert and Wagenhofer (2005) provide evidence that accounting regulations restrict a firm's ability to manage accruals as well as induce real earnings management. In

other words, firms use both: real earnings management and accrual-based earnings management as substitutes. In the end, the key is the manager's trade-off between the short-term goal to deliver desired earnings and the long-term objective of making value-maximizing investment decisions. Previous literature provides mixed insights implying that both types of earnings management can be used at the same time during the early and later years of CEO tenure. The preferences for real activities manipulation and accrual manipulation could change during the tenure of the CEO. Taken this and the expected changes of accrual-based earnings management and real earnings management into account, it might be obvious that the ratio between AEMvsREM during the early years of executive tenure and the later years is different between the tenure periods of CEOs. Since I expect the use of AEM to be higher during the early years and the use of REM to be lower during the early years, the ratio AEMvsREM is expected to be higher in the early years.

Hypothesis H3 can be formulated as follows:

H3: There is no difference between the ratio of AEMvsREM during the early years and later years of CEO tenure.

H3a: The ratio of AEMvsREM during the early years of CEO tenure is higher as compared to the later years.

III. METHODOLOGY

3.1 Data collection and sample selection

To test whether CEOs engage in earnings management during their tenure, I start with the population of the COMPUSTAT Executive Compensation – annual compensation database from the years 1992-2018. From this database, I can obtain data about the departure day of a CEO, the starting day of a new CEO, the CEO's experience (tenure), the CEO's age and the percentage of stock owned by a CEO. Variables concerning Accrual-based Earnings Management and Real Earnings Management are obtained from COMPUSTAT. I use complete cases from COMPUSTAT to estimate discretionary accruals and the abnormal level of production costs per firm-year.

Consistent with prior research (Chen, 2009), financial firms (SIC codes between 6000 and 6999), regulated industries (SIC codes between 4400 and 5000), and public administrative institutions (SIC codes >9000) are eliminated from the sample. These firms are excluded, since it is common for these firms to have high leverage compared to other non-financial firms. If these non-financial firms do have high leverage it is more likely to indicate

financial distress. This is not the case at financial firms, according to Fama and French (1980). According to Burgstahler and Dichev (1997, p. 101), firms from regulated industries, banks, and other financial institutions should be deleted since conflicting incentives arise for regulated firms to report lower earnings or decreases whenever there are economic benefits from reporting lower earnings. Financial institutions and bank's incentives arise to avoid earnings decreases or losses since they may be linked to regulatory oversight.

Considering table III.1, the sample consists of 31,979 firm-year observations, representing 5573 CEOs and 2476 firms. 21,950 firm-year observations show complete data to estimate the abnormal production costs (real earnings management), whereas 12,160 firm-year observations are complete to estimate discretionary accruals (accrual-based earnings management). The final sample to estimate the ratio AEMvsREM contains 12,097 CEOs and firms.

Table III.1: Overview of data collection, merging, and final samples

	Observations
Total observations of Executives executed from EXECUCOMP from 1992 - 2018	298770
Board members who never became CEO	-250441
Total observations of CEOs executed from EXECUCOMP from 1992 - 2018	48329
CEOs from firms from regulated industries, financial institutions, and public administrative institutions	-12972
Total observations of CEOs from 1992 - 2018	35357
Total firm-years from COMPUSTAT 1982 - 2018	438345
Total firm-years EXECUCOMP and COMPUSTAT merged 1992 - 2018	31979
Total firm-years in which the variables of Productions Costs are present in the merged sample to estimate the preference for REM during the early and later CEO tenure years.	21950
Total firm-years in which the variables of Working Capital Accruals are present in the merged sample to estimate the preference for AEM during the early and later CEO tenure years.	12160
Total firm-years in which the variables of Production Costs and Working Capital Accruals are present in the merged sample to estimate the ratio of AEMvsREM during the early and later CEO tenure years.	12097

3.2 Early years and late years of CEO tenure

I construct the variable *EarlyYears$_{it}$* as an indicator variable. This variable equals one for the years that correspond to the first three years of CEOs' service and is zero otherwise. This is similar to Ali and Zhang (2015) who also used three years as the cutoff point. They used three years as a cutoff in their analysis since they found a median value of six for the number of

years as CEO when leaving the office. The early years variable in this research is three since the median value for my sample period from 1992-2018 is five (the number is rounded since complete years are necessary). Thus, the CEO change year and the two following years are used as early years. As a matter of course, the years after the early years of CEO service indicates the later years of CEO service.

3.3 Accrual-based Earnings Management Model

To proxy for accrual-based earnings management, I use discretionary accruals. Previous literature on accrual-based earnings management established several ways to measure this way of earnings management. However, fairly new research of Dichev and Owens (2017) on Accrual Duration provides insights that accrual duration is more credible in understanding the discretion of accruals. Accrual estimates are unavoidably less precise over longer horizons what results in more discretion in longer-horizon accruals. The commonly used models estimating discretionary accruals are criticized since these models are considered inadequate and misleading. The traditional accrual models are likely to incorrectly classify non-discretionary accruals as discretionary accruals. This might result in a Type 1 error (reject a true null hypothesis). According to McNichols and Stubben (2018), discretionary accrual models often produce biased results. The method of Accrual Duration is distinctive from other approaches of estimating discretionary accruals since these writers focus on the duration of the discretionary and non-discretionary accruals. Because of that, they reduced potential biases in the discretionary accruals. To estimate discretionary accruals, Dichev and Owens (2017) used the length of time between an accrual and its associated cash flow. There is a difference between zero-duration accruals and positive duration accruals. The zero-duration accruals are non-discretionary since the timing and magnitude of the associated cash flow are at the same time as the timing and the magnitude of the concurrent accrual. These non-discretionary accruals are difficult to manipulate due to the fixed relation with the cash flow and, therefore, irrelevant for this research. The positive duration accruals shift the recognition of the associated cash flow into some other time period(s), which involves using forward-looking estimates. These positive duration accruals have some discretion. This discretion could decrease the quality of earnings since the estimates are less precise over longer horizons (Dichev & Owens, 2017).

The first step according to Dichev and Owens (2017) is to split the working capital accruals into the discretionary and non-discretionary accruals. As been said earlier, discretionary accruals have more discretion than non-discretionary accruals and are, therefore,

easily subject to manipulation. For example, the change in accounts receivables is subject to managerial discretion through the provision for bad debts. To determine the provision a managerial decision is necessary. If a CEO decides to decrease the balance sheet item bad debts this results in an earnings increase via accruals. However, the change in accounts receivables and the provision could be higher or lower. This accrual has no fixed duration and has, therefore, discretion. Although earnings management is not perfectly measurable, the discretionary working capital accruals are notable and earnings management is expected. This is the main reason why non-cash working capital accruals are used. These accruals have a wide scope for managerial discretion. The Working capital accruals are also used since the findings of Larson et al. (2018) provided evidence that this is the most common approach to estimate the accrual specifications. Earlier research focused on current accruals rather than total accruals since current accruals are established on the association between changes in current accounts (e.g. accounts receivables, inventories and accrued expenses such as accounts payable, Income tax payables) and revenues on the income statement (Darjezi, Khansalar, & Holt, 2015). Larson et al. (2018) show that working capital accruals appear to contain important information about the earnings quality of firms and can help to predict future returns. Moreover, working capital accruals rather than total accruals are used because working capital accruals are especially important in helping the market resolve problems inherent in cash flows from operations (Dechow, 1994).

Normally, I would use the residuals of the following regression as measures of discretionary accruals to use it as a dependent variable in a second regression:

$$DiscretionaryAccruals_{it} = \beta 0 + \beta 1 OpCashFlow + \varepsilon_{it} \tag{1}$$

However, using these residuals in the second step as dependent variable results in biases, according to Chen, Hribar, and Melessa (2018). They provide evidence that the typical implementation of this procedure generates biased coefficients and standard errors that can lead to incorrect conclusions. To avoid these potential biases of the aforementioned two-step approach I will use the one-step approach, combined in the following model:

$$\begin{aligned} WorkingCapitalAccruals_{it} = \ &\beta 0 + \beta 1 EarlyYears_{it} + \beta 2 OpCashFlow_{it} + \beta 3 FirmSize_{it} + \\ &\beta 4 Profitability_{it} + \beta 5 Leverage_{it} + \beta 6 AssetsGrowth_{it} + \\ &\beta 7 EmployeeGrowth_{it} + \beta 8 Big4_{it} + \beta 9 Auditor\_Tenure_{it} + \\ &\beta 10 Age_{it} + \beta 11 Market\text{-}to\text{-}book_{it} + \beta 12 CEO\_Ownership_{it} + \\ &\beta 13 YearFixedEffects_{it} + \varepsilon \end{aligned} \tag{2}$$

The main variables are *WorkingCapitalAccruals$_{it}$*, *EarlyYears$_{it}$*, and *OpCashFlow$_{it}$*. The variable of interest is *EarlyYears$_{it}$*. *WorkingCapitalAccruals$_{it}$* are the working capital accruals

of a firm in year t scaled by average total assets. The *WorkingCapitalAccruals$_{it}$* are computed from cash flow statements as the sum of changes in non-cash working capital accounts (accounts receivable, inventory, accounts payable, taxes payable, and other current assets) scaled by average total assets, whereas *OpCashFlow$_{it}$* is the operating cash flow scaled by average total assets. The outcome of the regression is consistent with the hypothesis. Earnings could be positively or negatively manipulated, depending on the earnings purposes.

Additionally, some control variables are included in the model to avoid potential correlation problems between the tenure of a CEO and accrual-based earnings management over time. The control variables are based on previous literature. *β3FirmSize$_{it}$*: Dechow and Dichev (2002) found that larger firms have more stable operations and hence report smaller amounts of discretionary accruals. Moreover, according to Richardson et al. (2002), larger firms have more incentives to manipulate earnings. Therefore, the predicted sign of *FirmSize$_{it}$* is positive. *FirmSize$_{it}$* is measured as the logarithm of total assets at the beginning of the year. *β4Profitability$_{it}$*: Dechow, Sloan, and Sweeney (1995) provide evidence that accrual-based earnings management is associated with performance. Therefore, the predicted sign of this variable is positive. *Profitability$_{it}$* is measured as Net Income scaled by total assets at the beginning of the year. *β5Leverage$_{it}$*: Evidence on the relationship between leverage and earnings management is mixed. On the one hand, firms, which are subjected to more risk, and in consequence have higher leverage will be predisposed to manage earnings more compared to less risky firms (Kim & Yi, 2006). On the other hand, Dechow and Skinner (2000) provide evidence that firms with bigger leverage are less likely to report small increases in earnings. This means more leveraged firms may imply fewer earnings management. Therefore, the predicted sign of this variable is uncertain. *Leverage$_{it}$* is measured as Non-equity liabilities scaled by total assets at the beginning of the year. *β6AssetsGrowth$_{it}$ and β7EmployeeGrowth$_{it}$*: According to Ali and Zhang (2015), firms disinvest early in the CEO's tenure and increase investment subsequently. This results in the growth of assets and employees during the tenure of the CEO. Moreover, this suggests that the incentive to disinvest in the early years of CEOs would lower the accruals in these years. The predicted sign of these variables is, therefore, positive. The variables are measured as the change of total assets (employees) during the year scaled by total assets (employees) at the beginning of the year. *β8Age$_{it}$*: What is been said earlier, CEOs might overstate a firm's earnings due to career concerns. To show their ability as an executive, newly appointed CEOs could manipulate the firm's earnings (Ali & Zhang, 2015). The age of CEOs is aligned with this occurrence, since older, more experienced CEO's have fewer uncertainties about their capability. Therefore, the predicted sign of *Age$_{it}$* is mixed.

The age of the CEO is measured at the beginning of the year. $\beta 9 Market\text{-}to\text{-}Book_{it}$: Research of Francis et al. (2005) showed that the market to book ratio has a positive effect on earnings overstatements. Therefore, the expected sign of *Market-to-book$_{it}$* during the early years as well as later years is positive. The market to book ratio is calculated as the market value of equity divided by the book value of equity at the beginning of year t. $\beta 10 CEO\_Ownership_{it}$: According to Cheng and Warfield (2005), executives are encouraged to focusing on short-term stock prices since they are pleased with stock-based compensation and other equity incentives. Their paper provides evidence of the relationship between equity incentives and earnings management. Therefore, the expected sign of *CEO_Ownership$_{it}$* of stock during the early years as well as later years is positive. *CEO_Ownership$_{it}$* is measured as the percentage of outstanding stocks of the firm that is owned by the CEO at the beginning of the year. $\beta 11 Big4_{it}$: It is likely that auditors from a Big 4 audit firm (Deloitte, PwC, KPMG, and EY) constrain Earnings Management through accruals (accounting method). The literature describes that these auditors are more experienced, that they have more resources to provide earnings management and that these firms have a higher risk of wasting their reputation (Francis, Maydew, & Sparks, 1999; Becker, Defond, Jiambalvo, & Subramanyam, 1998; Zang, 2012). The predicted sign is, therefore, negative. The variable *Big4$_{it}$* equals 1 if the firm is followed by a top-four audit firm and 0 otherwise. $\beta 12 Auditor\_Tenure_{it}$: Audit quality increases relative to accrual accounting when the length of the relationship with the client increases (Myers, Myers, & Omer, 2003). Therefore, the predicted sign between earnings management using accruals and auditor tenure is negative, since the quality of earnings numbers increases when auditor tenure increases. *Auditor_Tenure$_{it}$* equals the number of years an audit firm is connected continuously to a firm. Lastly, calendar-year fixed effects are also included in this model.

The control variables $\beta 11 Big4$ and $\beta 12 Auditor\_Tenure$ are related to earnings management through accruals since accounting manipulations are forbidden and influencing a firm's real activities is not. Therefore, they are only added in the regressions concerning Accrual-based Earnings Management and the ratio AEMvsREM, and not in the regression concerning Real Earnings Management. Also, I take the absolute values of the working capital accruals. When a CEO used discretionary accruals to increase earnings, the accounting methods force him to reverse these accruals since they must be undone.

It is unlikely that a CEO in two or more consecutive years have independent observations for accrual-based earnings management since it is likely that CEOs act the same during these years. Earnings management is correlated over time. Thus, I use clustered

standard errors of regression (2) per CEO per firm during the early and late years of CEO tenure.

3.4 Real Earnings Management Model

To represent earnings management through real activities I estimate the level of the production costs. Production costs could have a normal and abnormal value. The abnormal level of these production costs is interesting in this research. The normal value of production costs is the expected value, whilst the abnormal value is the difference between the actual and the expected value. Production costs are abnormal if overproduction takes place. This means that the company is producing more products than is necessary so that they can spread costs over more products. Overhead costs per product decrease in that way which directly influences the cost of goods sold. Ultimately, the decrease in the cost of goods sold will increase reported earnings. The downside of this method is the increased inventory since a lot of produced products will not be sold. It requires managerial discretion to increase a firms' production in such way. This abnormal level of production costs is not automatically the measurement of earnings management. However, the abnormal level of production cost is notable and, therefore, earnings management is expected. To estimate the abnormal level of this variable I use the following single-step model (Ali & Zhang, 2015; Roychowdhury, 2006):

$$
\begin{aligned}
\text{ProductionCosts}_{it} = \quad & \beta 0 + \beta 1 \text{EarlyYears}_{it} + \beta 2(\ 1 \ / \ A_{it-1}) + \beta 3(\ S_{it} \ / \ A_{it-1} \ )+ \beta 4(\ \Delta S_{it} \ / \ A_{it-1}) + \\
& \beta 5(\ \Delta S_{it-1} \ / \ A_{it-1}) + \beta 6 \text{FirmSize}_{it} + \beta 7 \text{Profitability}_{it} + \beta 8 \text{Leverage}_{it} + \\
& \beta 9 \text{AssetsGrowth}_{it} + \beta 10 \text{EmployeeGrowth}_{it} + \beta 11 \text{Age}_{it} + \beta 12 \text{Market-to-} \\
& \text{book}_{it} + \beta 13 \text{CEO\_Ownership}_{it} + \beta 14 \text{YearFixedEffects}_{it} + \varepsilon \qquad (3)
\end{aligned}
$$

The main variables are *ProductionCosts$_{it}$, EarlyYears$_{it}$, 1 / A$_{it-1}$, S$_{it}$ / A$_{it-1}$, ΔS$_{it}$ / A$_{it-1}$, and ΔS$_{it-1}$ / A$_{it-1}$.*The variable of interest is *EarlyYears$_{it}$*. *ProductionCosts$_{it}$* is the production costs of firm i in year t and is calculated as the sum of the cost of goods sold and the change in inventory divided by total assets at the beginning of year t. *β2(1 / A$_{it-1}$)* is 1 divided by a firms total assets at year t-1. *β3(S$_{it}$ / A$_{it-1}$)* is the sales of firm i in year t divided by the total assets at t-1. *β4(ΔS$_{it}$ / A$_{it-1}$)* is the sales from t-1 to t divided by total assets at year t-1. *β5(ΔS$_{it-1}$ / A$_{it-1}$)* is the change in sales from year t-2 to t-1 divided by the total assets at year t-1. Regression (3) has the same control variables as regression (2) except for variable *Big4$_{it}$* and *Auditor_Tenure$_{it}$*. Also, the absolute values of *ProductionCosts* are used. The absolute values refer to the magnitude of the variables, without regard to its sign. The outcome of the

regression is consistent with the hypothesis. Earnings could be positively or negatively manipulated, depending on the earnings purposes.

The same as accrual-based earnings management, it is unlikely that a CEO in two or more consecutive years have independent observations for real earnings management since it is likely that CEOs act the same during these years. So, the standard errors of regression (3) are clustered per CEO per firm during the early and late years of the CEO tenure.

3.5 AEMvsREM Model

To represent the ratio of AEMvsREM (earnings management by using discretionary accruals and abnormal production costs) I use the following model:

$$
\begin{aligned}
\text{WCAccruals}_{it} / \text{ProductionCosts}_{it} = \ & \beta 0 + \beta 1 \text{EarlyYears}_{it} + \beta 2 (1/\text{Pred\_ProductionCosts}_{it}) + \\
& \beta 3 \text{OpCashFlow}_{it} + \beta 4 (1/A_{it\text{-}1}) + \beta 5 (S_{it}/A_{it\text{-}1}) + \\
& \beta 6 (\Delta S_{it}/A_{it\text{-}1}) + \beta 7 (\Delta S_{it\text{-}1}/A_{it\text{-}1}) + \beta 8 \text{FirmSize}_{it} + \\
& \beta 9 \text{Profitability}_{it} + \beta 10 \text{Leverage}_{it} + \beta 11 \text{AssetsGrowth}_{it} + \\
& \beta 12 \text{EmployeeGrowth}_{it} + \beta 13 \text{Age}_{it} + \beta 14 \text{Market-to-} \\
& \text{book}_{it} + \beta 15 \text{CEO\_Ownership}_{it} + \beta 16 \text{YearFixedEffects}_{it} \\
& + \varepsilon \qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad (4)
\end{aligned}
$$

The ratio during the early and late years of CEO tenure is estimated by dividing the *WorkingCapitalAccruals* of firm i in year t by the *ProductionCosts* of firm i in year t. Thus, the working capital accruals of a firm in year t scaled by average total assets divided by the production costs of firm i in year t which are calculated as the sum of the cost of goods sold and the change in inventory divided by total assets at the beginning of year t. The working capital accruals and the production costs are both divided by total assets so they are scaled in the same way. Therefore, I suspect no scaling problems concerning this ratio calculation. I also regress the ratio AEMvsREM with the absolute values of working capital accruals and absolute production costs to test the consequence and consistency of them. The same main variables and control variables are used as in regression (2) and (3).

The addition of coefficient β2 is notable. To estimate the *ratio AEMvsREM*, I divided the dependent variable of regression (2) by the dependent variable of regression (3) (i.e. the left side of regression (2) by the left side of regression (3). The *WorkingCapitalAccruals* divided by the *ProductionCosts*). This is the left side of regression (4). I wanted to calculate the right side of regression (4) as the fraction of the right side of regression (2) and the right side of regression (3). So I wanted to divide the independent variables of regression (2) by the

independent variables of regression (3), which is the outcome of the coefficients β1 - β13 in regression (2) divided by the outcome of the coefficients β1 - β16 of regression (3). This is where some problems arise. The model has inaccuracies since it is not possible to break apart all the different fractions. In math it is impossible to separate all the variables in the denominator (the independent variables of regression (3)). And problems could arise when dividing all the different independent variables of regression (2) and (3) since they are all slightly differently scaled and differently sized.

To obtain reliable results, I added coefficient *β2(1 / Pred_ ProductionCosts$_{it}$)* which is 1 divided by the predicted values of the *ProductionCosts* in regression (3). By using coefficient β2 it is possible to leave the other variables from regression (2) and (3) without a fraction. Therefore, the mathematical problems with the denominator are in this case limited. I am aware that this addition is robust. However, I assume that the addition is useful to approximate the ratio results since the inverse coefficient partially reduces the influence of the fraction problems.

The standard errors of regression (4) are also clustered per CEO per firm during the early and late years of the CEO tenure. The coefficients of variable *EarlyYears$_{it}$* in regression (2), (3) and (4) show the preference for AEM and REM, and the ratio AEMvsREM during the tenure years as CEO.

IV. RESULTS
4.1 Descriptive statistics
Table IV.1 shows the descriptive statistics of the variables used in this study. The variables of interest in this research are the early and late years of CEO tenure. To eliminate outliers, I use winsorized values for variables at 1% and 99% level. Negative Market-to-book values are eliminated since these values can distort the value figure in the equations.

The results of table IV.1 show that CEOs in their early years have a maximum of 3 years when analyzing *Tenure*, whereas CEOs have a maximum of 61 in the late years. Some of the CEOs in their early and late years have full ownership of stock, although the average of stock owned by a CEO is 1,66% in the early years and 3,90% in the late years. The average age of a CEO is 53 for the early years and 56 for the late years.

I analyze the variables *FirmSize, Profitability*, and *Leverage* as a representation of firm's performance. Positive means are expected since this indicates that these firms are financially healthy. The average profitability for the total sample is around 0.8% during the

early years of a CEO, whilst it is 4.89% during the late years. This suggests two things. On the one hand, CEOs might report lower earnings than the actual ones and blame his predecessor for the bad performance. Any improvements in the following years will then look more credible. Thus, this can be an earnings 'bath'. On the other hand, CEOs are less experienced during these early years and when time passes they learn on the job and their capability increases. Therefore, CEOs can increase earnings through experience gained in the early years.

The descriptive analysis shows that the mean of *WorkingCapitalAccruals* is positive 0,0181 during the early years of CEO tenure and 0,0213 during the late years. On the one hand, this looks like usual business since the accruals of healthy companies should be positive otherwise their assets are completely written off and bankruptcy is expected. On the other hand, positive working capital accruals could be an indicator of earnings stimulations. CEOs could have used the discretion of these accruals to report more favorable earnings. The descriptive analysis shows that the mean of *ProductionCosts* is positive at 1,0140 during the early years and positive 0,8694 during the late years. The *ratio AEMvsREM* provides a positive mean of 0,0167 during the early years and 0,0531 during the late years. This is expected and consistent concerning the positive means of *WorkingCapitalAccruals* and *ProductionCosts.* As mentioned before, these positive values could suggest that CEOs are manipulating earnings upwards using both earnings management methods during their tenure.

The difference between the mean of the *ProductionCosts* and the mean of *absolute ProductionCosts* during the early and late years of CEO tenure is small indicating that the estimations of the *ProductionCost* are, in general, positive. The *absolute WorkingCapitalAccruals* and *absolute ProductionCosts* directly influence the *Ratio with absolute AEMvsREM* since the mean of *AEMvsREM* and *absolute AEMvsREM* during the early years increase from 0,0167 to 0,1575, whilst the mean during the late years increase from 0.0531 to 0.1510.

Table IV.1: Descriptive statistics

	Observations (n)		Mean		Minimum		Maximum	
	EarlyYears	LateYears	EarlyYears	LateYears	EarlyYears	LateYears	EarlyYears	LateYears
Tenure	9582	25441	1.1905	9.8504	0.0000	3.0000	2.0000	61.0000
CEO_Ownership	5068	19026	1.6636	3.9022	0.0000	0.0000	79.4700	100.0000
Age	9520	25395	53.1151	56.6803	24.0000	27.0000	85.0000	96.0000
Big4	9582	25441	0.3510	0.3623	0.0000	0.0000	1.0000	1.0000
Auditor_Tenure	9582	25441	10.9803	11.7449	1.0000	1.0000	36.0000	36.0000
FirmSize	9487	25349	7.0399	7.0119	3.2231	3.2231	11.1389	11.1389
Profitability	9472	25329	0.0082	0.0489	-77.4617	-10.6248	36.0580	5.2577
Leverage	9303	24764	0.3459	0.2687	0.0119	0.0000	435.6897	78.0000
AssetsGrowth	9485	25341	0.6868	0.1765	-0.8490	-0.9943	4447.6040	63.8902
EmployerGrowth	9165	24927	0.1212	0.1034	-1.0000	-1.0000	279.1250	63.0588
Market-to-book	8648	24314	711.1620	671.2014	0.0013	0.0015	13351.0100	13351.0100
WorkingCapitalAccruals	5021	13865	0.0181	0.0213	-0.7093	-3.2542	0.9669	1.2196
Absolute WorkingCapitalAccruals	5021	13865	0.0491	0.0469	0.0000	0.0000	0.9669	3.2542
ProductionCosts	9380	25066	1.0140	0.8694	-0.0896	-0.1375	684.3448	24.1709
Absolute ProductionCosts	9380	25066	1.0140	0.8696	0.0000	0.0000	684.3448	24.1709
Ratio AEM/REM	5013	13843	0.0167	0.0531	-68.9783	-47.2568	88.9057	144.7533
Ratio with absolute AEM/REM	5013	13843	0.1575	0.1510	0.0000	0.0000	88.9057	144.7533

This table provides an overview of statistics of dependent and independent variables. The variable Tenure is added to provide extra information about the CEOs in the sample.

4.2 Correlation matrix

Table IV.2 provides an overview of the correlation between the set of regressors. The number of stars represents the level of significance compared to a null hypothesis where the correlation is assumed to be zero.

The examination of the correlation matrix shows a positive and significant (0,0921) relationship between the *Ratio AEMvsREM* and *WorkingCapitalAccruals*. This indicates that a change in the working capital accruals has a positive impact on the ratio AEMvsREM. The coefficient of *Ratio AEMvsREM* on the *ProductionCosts* is negative and insignificant (-0,0016).

WorkingCapitalAccruals are negatively and significantly correlated (-0,0171) to variable *EarlyYears*, while the correlation between *WorkingCapitalAccruals* and *Tenure* is positive and significant (0,0138). This suggests that the preference for accrual-based earnings management during tenure might differ. On the other hand, the coefficient of *ProductionCosts* during the early years of CEO tenure is positive and significant (0,0131), while the correlation coefficient is negative concerning the whole CEO tenure (-0,0069).

The variable *absolute WorkingCapitalAccruals* is positive and significantly correlated to variable *EarlyYears* (0,0139). This is contradicting compared to the variable of *WorkingCapitalAccruals* and *EarlyYears* since that correlation is negative. The correlation of

the *absolute WorkingCapitalAccruals* and *Tenure* is also positive. Notable is the correlation between the *ProductionCosts* and the *absolute ProductionCosts* since they are perfectly correlated (1.000). As been mentioned earlier, this indicates that the production costs of the firms are positive, in general.

The ratio with absolute working capital accruals and production costs is positively and significantly correlated to the absolute working capital accruals, whilst it is negatively correlated to the absolute production costs.

According to the correlation matrix, working capital accruals are positively correlated to the variable *Big4*, which indicates that if a big 4 audit firm audited the firm the working capital accruals go up. However, when the tenure of an audit firm increases, the working capital accruals go down. This is observed from the negative correlation coefficient -0,0777.

Table IV.2: Correlations matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1) EarlyYears	1.0000																	
(2) Tenure	-0,5204**	1.0000																
(3) CEO_Ownership	-0,1260***	0,3685***	1.0000															
(4) Age	-0,2077**	0,4149***	0,1133***	1.0000														
(5) Big4	-0,0105**	0,0275***	0,0410***	0,0100*	1.0000													
(6) Auditor_Tenure	-0,0444**	0,0292***	-0,1466***	0,1343***	0,0165***	1.0000												
(7) FirmSize	0.0076	-0,0651***	-0,2118***	0,1738***	-0,0383**	0,3695***	1.0000											
(8) Profitability	-0,0276**	0,0218***	0,0170***	0,0234**	0,0017	0,0260***	0,0462***	1.0000										
(9) Leverage	0,0136**	-0,0078	0,0019	-0,0149***	-0,0011	-0,0163***	-0,0292***	-0,5427**	1.0000									
(10) AssetsGrowth	0,0095*	-0,0064	-0,0001	-0,0111*	-0,0031	-0,0109**	-0,0193***	-0,5724**	0,9496***	1.0000								
(11) EmployerGrowth	0.0045	-0.0031	0,0284***	-0,0235**	-0,0003	-0,0336**	-0,0498**	0,0025	0,0061	0,0055	1.0000							
(12) Market-to-book	0,0093*	-0,0377**	-0,0459**	0,0206***	-0,0160***	0,1487***	0,4080***	0,0899**	0,1119***	0,0626***	0,0005	1.0000						
(13) Working Capital Accruals	-0,0171**	0,0138*	0,0316***	-0,0626**	0,0165**	-0,0777**	-0,1298**	0,0270**	-0,0324**	0,0040	0,0641***	-0,0037	1.0000					
(14) Abs. Working Capital Accruals	0,0139*	0,0067	0,0649***	-0,1007***	0,0190***	-0,1340**	-0,2773**	-0,0498**	0,0788***	0,0004	0,0349**	-0,0414**	0,0278***	1.0000				
(15) Production Costs	0,0108**	-0,0069	0,0098	-0,0073	0,0071	-0,0181**	-0,0334**	-0,4033**	0,9009**	0,7897***	0,0085	-0,0751**	0,0382**	0,0412***	1.0000			
(16) Abs. ProductionCosts	0,0105**	-0,0072	0,0098	-0,0073	0,0071	-0,0181**	-0,0334**	-0,4033**	0,9009**	0,7897***	0,0084	-0,0751**	0,0382**	0,0412***	1.0000***	1.0000		
(17) AEMvsREM	-0.0080	-0,0023	-0,0058	-0,0069	-0,0003	-0,0089	-0,0169**	0,0010	0,0003	-0,0001	0,0044	-0,0016	0,0921***	0,0094	-0,0016	-0,0016	1.0000	
(18) Abs. AEMvsREM	0,0078	-0,0112	-0,0125	-0,0189***	-0,0033	-0,0158**	-0,0400**	-0,0089	0,0010	-0,0007	-0,0022	0,0030	-0,0097	0,0787***	-0,0076	-0,0076	0,7460***	1.0000

This correlation matrix presents the associations between the variables used in the regressions in this study. *, **, *** indicate statistical significance at 0,1, 0,05, and 0,01 levels respectively.

4.3 Regression analyses
4.3.1 Accrual-based Earnings Management
Column (1) in Table IV.3 shows the results of *WorkingCapitalAccruals*, defined as the sum of changes in non-cash working capital accounts receivable, inventory, accounts payable, taxes payable, and other current assets, scaled by average total assets. As can be seen, the R^2 shows a value of 0,1875, which implies that approximately 19% of the working capital accruals can be explained by the variables included. The F-value in the regression tested if all of the regression coefficients are equal to zero. The value is 20,91 (Prob>F of 0,0000) so it implies that not all the regression parameters are zero and that the regression equation does have validity in fitting the data.

The coefficient of *EarlyYears* is negative and significant at the 0,01 level. This indicates that CEOs during their early years of tenure, on average, use a significantly lower level of working capital accruals as compared to CEOs during their late years of tenure. Thus, if a CEO is in his early years of tenure the level of working capital accruals are on average 0.0064 lower (as a fraction of total assets) compared to a CEO who is in his late years of tenure. As mentioned earlier, the change in working capital accruals contains managerial discretion. Thus, this outcome suspects that CEOs in their early years are less engaged in manipulating earnings by discretionary accruals.

I expected a positive coefficient of *EarlyYears* since Ali and Zhang (2015) provides a positive and significant coefficient on accrual-based earnings management and a CEO's service during the early years. Also, because accruals management does not consume cash and is less costly than manipulation of real business activities, accruals manipulation may be a more preferable means of earnings management than manipulation of real business activities during these early years of CEOs' service.

The coefficient of *OpCashFlow* is negative and significant at the 0,01 level. This is expected since a positive change in the operating cash flow statement result in a negative change in the working capital accruals. For instance, if an invoice is paid, the accounts receivables will decrease, whilst the bank account will increase at the same time, and vice versa. This is basically how their relationship works. If one increases, the other decreases. Both variables are estimated as a fraction of total assets. Thus, an increase of 1 (as a fraction of total assets) in *OpCashFlow* provides a decrease of 0.2478 (as a fraction of total assets) in *WorkingCapitalAccruals*.

Table IV.3: Early years of CEO tenure, Accrual-based Earnings Management, Real Earnings Management, and ratio AEMvsREM Regressions

	(1) WorkingCapitalAccruals	(2) ProductionCosts	(3) WorkingCapitalAccruals/Prod. Costs
Intercept	0,0520***	-0,6534***	0,6720**
	(0,0071)	(0,0441)	(0,3137)
EarlyYearsit	-0,0064***	0,0033	-0,0734**
	(0,0021)	(0,0059)	(0,0307)
1 /Pred_ProductionCostsit			-0,0003
			(0,0003)
1 / Ait-1		-0,2150	-5,0578
		(1,3267)	(3,2321)
Sit / Ait-1		0,8864***	-0,0250
		(0,0139)	(0,0266)
ΔSit / Ait-1		0,0681***	0,0913*
		(0,0192)	(0,0478)
ΔSit-1 / Ait-1		0,0049	-0,0168
		(0,0172)	(0,0361)
OpCashFlowit	-0,2478***		-1,3796**
	(0,0392)		(0,6082)
FirmSizeit	-0,0026***	0,0547***	-0,0235*
	(0,0007)	(0,0037)	(0,0131)
Profitabilityit	0,1286***	-0,5507***	0,5077**
	(0,0449)	(0,0848)	(0,2157)
Leverageit	0,0580***	-0,1253**	-0,3713**
	(0,0120)	(0,0530)	(0,1526)
AssetsGrowthit	0,0201***	-0,0780***	0,0542
	(0,0060)	(0,0248)	(0,0444)
EmployerGrowthit	0,0023	0,0060	0,0170
	(0,0016)	(0,0044)	(0,0130)
Big4it	-0,0019		-0,0454
	(0,0017)		(0,0330)
Auditor_Tenureit	-0,0002**		-0,0017
	(0,0001)		(0,0015)
Ageit	-0,0002*	0,0011*	-0,0031*
	(0,0001)	(0,0006)	(0,0019)
Market-to-bookit	8.18e-07	2.55e-05	1.37e-05*
	(7.50e-07)	(2.06e-05)	(7.79e-06)
CEO_Ownershipit	0,0001	-0,0010	-0,0012
	(0,0001)	(0,0009)	(0,0008)
N of observations	12.160	21.950	12.097
N of Std. Err. clusters	2.822	4.370	2.812
R²	0,1875	0,9150	0,0054
F-value	20,91	534,91	3,18
Calendar Year Fixed Effects	Yes	Yes	Yes

Standard errors in parentheses. Panel data often have to deal with within-cluster correlation or heteroscedasticity. As solution, I use clustered standard errors at CEO level. The sample period is from 1992 to 2018. *, **, *** Denote statistical significance at 0,1, 0,05, and 0,01 levels respectively. **WorkingCapitalAccrualsit** is working capital accruals of firm i and year t, measured as the sum of changes in non-cash working capital accounts receivable, inventory, accounts payable, taxes payable, and other current assets, scaled by average total assets (col. 1). **ProductionCostsit** is the production costs of firm i and year t, measured as the sum of cost of goods sold and change in inventory scaled by total assets in year t-1 (col. 2). **AEMvsREM***it* are the **WorkingCapitalAccrualsit** divided by the **ProductionCostsit** (col. 3). **EarlyYearsit** is the years of the CEO tenure that correspond to the first three years of the whole CEO tenure. All variables are defined in Appendix A.

In table IV.3 (Column (1)) the coefficient of *CEO_Ownership*$_{it}$ indicates a positive and insignificant effect on working capital accruals. The coefficient of *Age*$_{it}$ is negative and significant. If the CEO becomes older by one year the level of working capital accruals decreases by 0.0002 (as a fraction of total assets). Moreover, it suggests that, on average, aging CEOs become less engaged in accrual-based earnings management. The coefficient of Market-to-book$_{it}$ is positive and insignificant. This was unexpected since Frankel et al. (2002) found that that firms with a growth perspective have a higher level of working capital accruals. The coefficient of the variable *Leverage*$_{it}$ is also positive and significant. This suggests that firm performance is positively affiliated to a change in working capital accruals. The negative and significant coefficient of *FirmSize*$_{it}$ implies that larger firms have significantly lower working capital accruals. The coefficients of *Big4*$_{it}$ and *Auditor_Tenure* $_{it}$ are negative. This indicates that a firm has a lower level of working capital accruals of 0.0019 (as a fraction of total assets) if a big4 office audits the firm, whilst the level of working capital accruals decreases 0.0002 (as a fraction of total assets) if the relationship with the auditor is extended by one year. This was expected since literature describes that big4 auditors are more experienced since their firms have more resources to provide accrual-based earnings management and these firms have a higher risk of wasting their reputation by reporting incorrect earnings (Becker, Defond, Jiambalvo, & Subramanyam, 1998). The coefficient of *Profitability*$_{it}$ is positive and significant at the 0,01 level, which indicates that firms with better performance have a higher level of working capital accruals compared to less profitable firms. Thus, a change of 1 (as a fraction of total assets) in profitability results in a change of 0.1286 (as a fraction of total assets) in working capital accruals.

Column (1) in Table IV.4 shows also a negative coefficient for *EarlyYears*. However, this coefficient is not significant. The negative coefficient of *EarlyYears* implies that there is no significant difference between the early years of CEO tenure and late years of CEO tenure and the level of absolute working capital accruals. Thus, this suggests that no apparent difference can be observed in accrual-based earnings management between the two tenure periods.

Table IV.4: Early years of CEO tenure, absolute Accrual-based Earnings Management, absolute Real Earnings Management and the ratio absolute AEMvsREM Regressions

	(1) Absolute WorkingCapitalAccruals	(2) Absolute ProductionCosts	(3) Absolute WorkingCapitalAccruals/ Absolute Prod. Costs
Intercept	0,1054***	-0,6537***	0,9476***
	(0,0067)	(0,0440)	(0,3131)
EarlyYearsit	-0,0020	0,0032	-0,0566*
	(0,0018)	(0,0059)	(0,0336)
1 / Pred_ Abs. ProductionCost			-0,0001
			(0,0002)
1 / Ait-1		-0,1922	-2,8925
		(1,3209)	(2,7667)
Sit / Ait-1		0,8864***	-0,1361***
		(0,0139)	(0,0345)
ΔSit / Ait-1		0,0679***	0,1099**
		(0,0192)	(0,0472)
ΔSit-1 / Ait-1		0,0048	-0,0319
		(0,0172)	(0,0353)
OpCashFlowit	-0,0914***		-0,5234
	(0,0264)		(0,5008)
FirmSizeit	-0,0089***	0,0547***	-0,0555***
	(0,0007)	(0,0037)	(0,0145)
Profitabilityit	0,0183	-0,5508***	-0,1432
	(0,0272)	(0,0848)	(0,1509)
Leverageit	0,0906***	-0,1252**	0,1793
	(0,0107)	(0,0530)	(0,1377)
AssetsGrowthit	0,0004	-0,0780***	-0,0547
	(0,0033)	(0,0248)	(0,0363)
EmployerGrowthit	-0,0005	0,0060	-0,0022
	(0,0008)	(0,0044)	(0,0049)
Big4it	-0,0004		-0,0539
	(0,0016)		(0,0380)
Auditor_Tenureit	-0,0002*		-0,0015
	(0,0001)		(0,0017)
Ageit	-0,0003***	0,0011*	-0,0032*
	(0,0001)	(0,0006)	(0,0019)
Market-to-bookit	1,98e-06***	2.5e-05***	2.67e-05***
	(6,60e-07)	(2.06e-06)	(7.41e-06)
CEO_Ownershipit	0,0002	-0,0010	-0,0031***
	(0,0001)	(0,0009)	(0,0010)
N of observations	12,160	21,950	12,097
N of Std. Err. clusters	2,822	4,370	2,812
R²	0.1653	0.9150	0.0062
F-value	45.78	534.64	4.78
Calendar Year Fixed Effects	Yes	Yes	Yes

Standard errors in parentheses. Panel data often have to deal with within-cluster correlation or heteroscedasticity. As solution, I use clustered standard errors at CEO level. The sample period is from 1992 to 2018. *, **, *** Denote statistical significance at 0,1, 0,05, and 0,01 levels respectively. **Absolute WorkingCapitalAccruals**it are the absolute working capital accruals of firm i and year t, measured as the sum of changes in non-cash working capital accounts receivable, inventory, accounts payable, taxes payable, and other current assets, scaled by average total assets (col. 1). **Absolute ProductionCosts**it is the absolute production costs of firm i and year t, measured as the sum of cost of goods sold and change in inventory scaled by total assets in year t-1 (col. 2). **Absolute AEMvsREM**it are the **Absolute WorkingCapitalAccruals**it **divided by the absolute ProductionCosts** (col. 3). **EarlyYears**it is the years of the CEO tenure that correspond to the first three years of the whole CEO tenure. All variables are defined in Appendix A.

4.3.2 Real Earnings Management

Column (2) in Table IV.3 shows the results of *ProductionCosts*, defined as the sum of the cost of goods sold and the change in inventory, divided by total assets at the beginning of year t. As can be seen, the R² shows a value of 0,9150, which implies that more than 91% of the abnormal production costs can be explained by variables included**.** The F-value in the regression tested if all of the regression coefficients are equal to zero. The value is 534,91 (Prob>F of 0,0000), this implies that not all the regression parameters are zero and that the regression equation does have validity in fitting the data.

The coefficient of *EarlyYears* is positive and insignificant. This implies that there is no statistically significant difference between the early years and late years of CEO tenure concerning the level of production costs. As mentioned earlier, the sum of cost of goods sold and the change in inventory have managerial discretion. Thus, production costs are an indicator of real earnings management. This outcome suggests no difference in the level of real earnings management by CEOs during the two tenure periods.

The variable *ProductionCosts* is scaled in the same way as *WorkingCapitalAccruals*, so as a fraction of total assets. In table IV.3 (Column (2)) the coefficient of Age_{it} is positive and significant, indicating that aging CEOs use a higher level of production costs. An increase of one year result in an increase of 0.0011 (as a fraction of total assets) production costs. The coefficient of Market-to-book$_{it}$ is positive and insignificant at the 0.01 level, which was unexpected according to Frankel et al. (2002). The coefficient of the variable $Leverage_{it}$ is negative and significant. This suggests that firm performance is negatively affiliated with the level of production costs. The coefficient of $FirmSize_{it}$ is positive and significant. This implies that larger firms have a higher level of production costs. The coefficient of $Profitability_{it}$ is negative and significant at the 0,01 level. This is remarkable since this indicates that an increase in profit results in a decrease in the production costs. On the one hand, this suggests that firms focus on efficiency, so that they can spread the production costs over more products. On the other hand, since production costs have managerial discretion, this may be an indicator of production flexibility and, thus, an indicator of real earnings management.

Column (2) in Table IV.4 shows also a positive and insignificant coefficient for *EarlyYears*. The coefficient is slightly different compared to the coefficient of *EarlyYears* in column (2) in Table IV.3 since it shows a value of 0.0032 instead of 0.0033. So again, the insignificant positive coefficient of *EarlyYears* implies that there is no significant difference between the early years of CEO tenure and late years of CEO tenure and the level of absolute

production costs. Thus, this suggests that no apparent difference can be observed in real earnings management between the two tenure periods.

4.3.3 Ratio AEMvsREM

Column (3) in Table IV.3 shows the results of *WorkingCapitalAccruals*, defined as the sum of changes in non-cash working capital accounts receivable, inventory, accounts payable, taxes payable, and other current assets, scaled by average total assets divided by the *ProductionCosts*, defined as the sum of the cost of goods sold and the change in inventory, divided by total assets at the beginning of year t. As can be seen, the R^2 shows a value of 0,0054, which implies that more than 0,54% of the *ratio AEMvsREM* can be explained by variables included. The F-value in the regression tested if all of the regression coefficients are equal to zero. The value is 3,18 (Prob>F of 0,0000) so it implies that not all the regression parameters are zero and that the regression equation does have validity in fitting the data.

The coefficient of *EarlyYears* is negative and significant at the 0,05 level. The coefficient of *EarlyYears* implies that there is a significant difference between the early years and late years of CEO tenure and the *ratio of AEMvsREM*. CEOs during their early years of tenure have a lower level of AEMvsREM as compared to the level of AEMvsREM during the late years of tenure, since the change in working capital accruals and production costs of a firm have managerial discretion. This ratio implies the level of accrual-based earnings management over real earnings management during the tenure of a CEO. The result of this negative coefficient of *EarlyYears* provides insights that CEOs are less engaged to manipulate earnings during their early years of CEO tenure as compared to their later years of tenure.

The inverse variable of the predicted values of the *ProductionCosts* (*1/Pred_ProductionCosts*) is insignificant. Moreover, the variable is not omitted to the other variables in this regression. The result of the coefficient *EarlyYears* in this regression with the ratio as the dependent variable is consistent concerning the results of the coefficient of *EarlyYears* in regression (2) and (3). For instance, -1 divided by 2 is -0.5. In this case, *EarlyYears* in regression (2) is negative, whilst *EarlyYears* in regression (3) is positive. In Math, this will result in a negative coefficient of *EarlyYears* in regression (4), which is the case. This implies that, although the model has inaccuracies, the results are reliable and consistent. And, it proves that the scaling of the different variables is not that important.

The results in Column (3) in Table IV.4 shows a negative and significant (at 0.1 level) coefficient for *EarlyYears*. The sign is the same as the coefficient of *EarlyYears* in column (3) of Table IV.3. The negative coefficient of *EarlyYears* implies that there is a significant

difference between the early years of CEO tenure and the late years of tenure, and the ratio of AEMvsREM with the absolute values of working capital accruals divided by the absolute values of the production costs. This ratio implies the level of accrual-based earnings management over real earnings management during the tenure of a CEO. Thus, consistent with the findings in column (3) of Table IV.3, there is a statistical difference between the level of absolute AEMvsREM in early years of tenure as compared to the level of absolute AEMvsREM during the late years of tenure.

The inverse variable *1/Pred_Abs ProductionCosts* in column (3) of Table IV.4 is calculated in the same way as the inverse variable *1/Pred_ProductionCosts* in Table IV.3. In this case, the predicted values of the absolute production costs are used. The coefficient of *1/Pred_Abs ProductionCosts* is insignificant. Again, the variable is not omitted to the other variables in this regression. Thus, although the model has inaccuracies, the results are reliable and consistent.

As mentioned earlier, a negative coefficient of *EarlyYears* was expected since a negative coefficient of *EarlyYears* in regression (2) and a positive coefficient of *EarlyYears* in regression (3) would result in a negative coefficient of *EarlyYears* in regression (4).

4.4 Preference analyses of AEM and REM, and ratio analysis of AEMvsREM

Hypothesis 1a suggests that the preference for accrual-based earnings management during the early years is higher. The significant negative coefficient of *EarlyYears* (-0,0064) in Column (1) Table IV.3 suggests that the level of working capital accruals are lower during the early years of CEO as compared to the late years. Thus, Hypothesis 1a is rejected.

The same sign for *EarlyYears* is observable when analyzing the absolute working capital accruals. The negative coefficient of *EarlyYears* (-0,0020) in Column (1) Table IV.4 suggests that CEOs in their early years of tenure might prefer a lower level of absolute working capital accruals as compared to the late years of tenure. However, this coefficient is insignificant and no statistical difference is observable. In this case, Hypothesis 1 should be accepted.

Hypothesis 2a suggests that the preference for real earnings management is lower during the early years. The positive coefficient of *EarlyYears* (0.0033) in Column (2) Table IV.3 suggests that the level of production costs during the early years of CEO tenure are higher as compared to the late years. However, the coefficient of *EarlyYears* is not significant. Thus, no significant difference between the early years and late years of CEO tenure is observable. Hypothesis 2 is accepted.

The same sign for *EarlyYears* is observable when analyzing the absolute production costs. The positive coefficient of *EarlyYears* (0,0032) in Column (2) Table IV.4 suggests that CEOs in their early years of tenure might prefer a higher level of absolute production costs accruals as compared to the late years of tenure. However, this coefficient is insignificant and no statistical difference is observable. In this case, Hypothesis 2 should be accepted.

Hypothesis 3a suggests that the ratio of accrual-based earnings management as opposed to real earnings management is higher during the early years. However, the negative and significant coefficient of *EarlyYears* (-0,0734) in Column (3) in Table IV.3 showed that the ratio AEMvsREM during the early years is lower as compared to the late tenure years. Thus, the level of working capital accruals over production costs is lower between the tenure periods. Hypothesis 3a is rejected.

The coefficient of *EarlyYears* in column (3) in Table IV.4 is consistent with the conclusion above. The same sign is observable for the ratio AEMvsREM with absolute working capital accruals and absolute production costs. The negative coefficient of *EarlyYears* (-0,0566) shows that the ratio AEMvsREM during the early years is significantly lower as compared to the late tenure years. Hypothesis 3a should, therefore, be rejected.

V. CONCLUSION AND LIMITATIONS

5.1 Summary and implications

This study attempts to provide insights into the use of Real Earnings Management and Accrual-based Earnings Management during the tenure of a CEO. More specifically, this thesis tests both types of earnings management and estimates the ratio of AEMvsREM to provide insights into potential changes in the preferences for Real Earnings Management and Accrual-based Earnings Management over time. The research question is stated as follows:

> **"Does the preference for Accrual-based Earnings Management as opposed to Real Earnings Management change during CEO tenure?"**

In this study, a sample of 31.979 firm-year observations, representing 5.573 CEOs and 2.476 firms is used to provide insights in preferences among the two types of earnings management during the tenure of CEOs.

I have applied three models to measure earnings management during the tenure years of a CEO. The discretionary working capital accruals are used as an indicator for accounting manipulation (Dichev & Owens, 2017), whilst the abnormal production costs are used as an indicator of real earnings management (Roychowdhury, 2006). In previous research, both

methods were used in a two-step approach. Following Chen et al. (2018) I converted both models into a one-step approach. Also, the absolute values of Working Capital Accruals and Production Costs are used. When a CEO used discretionary accruals to manipulate earnings, the accounting methods force him to reverse these accruals later in the time, since they must be undone.

The papers of Graham et al. (2005) and Ali and Zhang (2015) provide insights that executives manage financial reporting outcomes. Ali and Zhang (2015) show that CEOs are more engaged in managing earnings during their first four years as CEO than in their final years. In their research, they focus on Accrual-based Earnings Management and Real Earnings Management. Due to career concerns, CEOs use earnings management as a tool to show their capacity since analysts see higher reported earnings as an indication of CEO's ability. Besides, Graham et al. (2005) is convinced that 80% of the executives are willing to burn 'real' cash to provide desirable accounting performance. However, the research of Graham et al. says nothing about CEO tenure.

The results of this thesis show that the preference for Accrual-based Earnings Management is lower during the early years of CEO tenure as compared to the late years, whilst the preference for Real Earnings Management is indifferent during these tenure periods. This is contradicting the findings in previous literature (Ali & Zhang, 2015; Strong & Meyer, 1987; Graham, Harvey, & Rajgopal, 2005; Holmstrom, 1982). Ali and Zhang (2015) suggests that CEOs manipulate earnings during their early years of the service due to career concerns. They found a higher level of discretionary accruals and a lower level of abnormal expenses during the early years of CEO tenure. According to my results, it is more likely that CEOs during their early years of tenure use a lower level of working capital accruals as a tool to manipulate earnings. However, I use data from 1992 to 2018, whilst Ali and Zhang (2015) used data from 1992 – 2010, so 8 years of the data I used is from after 2010. Perhaps the early years CEOs behavior changed and, therefore, used a lower level of discretionary accruals to manipulate earnings.

Altogether, this results in a ratio between the two earnings management methods that is lower during the early years of CEO tenure. Firstly, the ratio analysis can help to evaluate a CEO since it provides insights into the two tenure periods of a CEO and his preference for both earnings management methods during these periods. Secondly, it can help to predict the behavior of a CEOs in the future based on their previous behavior. I used accrual-based earnings management as the numerator and real earnings management as the denominator. By using them in such way, a low ratio indicates that the use of accrual-based earnings

management over real earnings management is low. Therefore, a ratio analysis on earnings management is valuable since the misuse of accrual-based earnings management could result in fraud which is forbidden by law, whilst real earnings management is not. Thirdly, the model to test the ratios of AEMvsREM is new and provides consistent and reliable results. In this thesis, it was mathematically justified to use the model in this way to conclude.

5.2 Contribution

This research contributes to the current literature regarding the relationship between earnings management during the early and later years of CEO tenure. Given the possibilities for earnings management strategies, and according to the survey of Wells (2002), managers prefer using real actions to manipulate earnings compared to accruals management during their tenure.

Firstly, this thesis adds value to the existing literature on earnings management, as I found evidence that the preference for using the two methods of earnings management changes throughout the years of a CEOs' service.

Secondly, I used a fairly new method of estimating a firm's discretionary accruals. The commonly used models estimating discretionary accruals have been criticized for being inadequate and misleading. Previous methods of estimating discretionary accruals suffer from omitted variables which influence the discretionary accruals. The method I used is different from other more common approaches to estimating discretionary accruals since this method focuses on the duration of accruals.

Thirdly, I used a one-step regression approach. Usually, residuals from a first-step regression are used as a dependent variable when estimating for significance in the second-step regression. However, using this residual in the second-step as the dependent variable might result in biased coefficients and standard errors that can lead to incorrect conclusions. To avoid these potential biases, I used a one-step approach with a set of year indicator variables and their interactions.

Fourthly, Ali and Zhang (2015) use abnormal discretionary expenses (research and development, advertisement costs and selling, general, and administrative expenses) to estimate real earnings management. In this research, I focused on the costs of goods sold and the change in inventory to estimate real earnings management during the early and late years of CEO tenure. Moreover, Ali and Zhang set data to zero when data were not available for selling, general, and administrative expenses, and data for research and development, and advertising. Although this way of producing data is acceptable, I believe that using raw

(available) data is more reliable, therefore, I chose to use them in this research. At last, I used both, positive and negative accruals, and absolute accruals to measure earnings management during the CEO tenure years, where Ali and Zhang only used the positive and negative accruals.

Finally and most importantly, Ali and Zhang (2015) show the use of earnings management in three periods, namely the early years of CEO tenure, the mid-period and the final year of CEO tenure. Whether there is a change in the use and coherence of AEM and REM during the early and later years does not become clear in their research. They only test if earnings management occurs. This study shows that the preference for AEM and REM in the different tenure periods is different. On top of that, I provide insights into the ratio of AEMvsREM during the early years and late years of CEO tenure. It shows that there is a statistical difference in the ratio of AEMvsREM between the early and later years of CEO tenure.

5.3 Limitations and future research

Although this thesis contributes to existing literature, there are also some limitations related to this research. In this research, I included firms which meet or beat earnings' benchmarks and firms who engage in using a 'big earnings bath' strategy of earnings management. Further research should focus on firms that only meet or beat prior years' earnings, even if they are negative. This could improve research on earnings management since it would focus more specifically on firms with earnings around zero profits. Nonetheless, the smaller sample size could result in lower reliability of the obtained results and it would be more difficult to find statistically significant relations.

Moreover, I have only used one way to estimate real earnings management. I focused on influencing and manipulating production costs and the change in inventory. Research can be improved by including discretionary expenses such as research and development, advertising and general costs.

The model to test the ratio of AEMvsREM in the early and late years of CEO tenure should be improved. Although the model provides consistent and, therefore, reliable results, there are inaccuracies. In this thesis, I used a robust model since it could not estimate all the different fractions. I used a linear regression to test the relationship between tenure periods and the earnings management ratio. This model creates issues for providing accurate results since it has mathematical limitations to estimate the ratio.

Finally, I only used working capital accruals to estimate discretionary accruals. Further research could use the method of accrual duration on total accruals to provide more insights into accrual-based earnings management.

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VII. APPENDIX

Appendix A: *Variable description - Complete Model*

Variable	Regression	Measurement	Source
OpCashFlow	1, 3	A firms cash flow from operations in year t, scaled by average total assets	Compustat
WorkingCapitalAccruals	1, 3	A firms non-cash working capital accruals, computed from the cash flow statement as the sum of changes in non-cash working capital accounts (accounts receivables, accounts payable, taxes payables, change in inventory, and other current assets), scaled by average total assets.	Compustat
Big 4	1, 3	Dummy variable. Contains 1 if it is a top-four audit firm, zero otherwise	Compustat
Auditor_Tenure	1, 3	The number of years an audit firm is connected continuously to a firm	Compustat
ProductionCosts	2, 3	A firms production costs calculated as the sum of cost of goods sold and the change in inventory from year t-1 to t divided by total assets at year t-1	Compustat
$1 / A_{it-1}$	2, 3	1 divided by a firms total asset at year t-1	Compustat
S_{it} / A_{it-1}	2, 3	A firms sales in year t divided by total assets at year t-	Compustat
$\Delta S_{it} / A_{it-1}$	2, 3	A firms change in sales from t-1 to t divided by total assets at year t-1	Compustat
$\Delta S_{it-1} / A_{it-1}$	2, 3	A firms change in sales from year t-2 to t-1 divided by total assets at year t-1	Compustat
Ratio: WorkingCapitalAccruals / ProductionCosts	3	A firms non-cash working capital accruals, computed from the cash flow statement as the sum of changes in non-cash working capital accounts (accounts receivables, accounts payable, taxes payables, change in inventory, and other current assets), scaled by average total assets divided by a firms production costs calculated as the sum of cost of goods sold and the change in inventory from year t-1 to t divided by the total assets at year t-1	Compustat
$1 / Pred\_ProductionCosts$	3	1/ the predicted values the production costs of regression (2)	Compustat
EarlyYears	1, 2, 3	The years of the CEO tenure that correspond to the first three years of the whole CEO tenure	Compustat Execucomp
Tenure		The whole tenure of a CEO measured from the date a CEO started till the date a CEO ended his tenure	Compustat Execucomp
CEO_Ownership	1, 2, 3	The percentage of outstanding stocks of the firm that is owned by the CEO at year t-1	Compustat Execucomp
Age	1, 2, 3	The age of the CEO at year t-1	Compustat Execucomp
Firm Size	1, 2, 3	The logarithm of total assets of a firm at year t-1	Compustat
Profitability	1, 2, 3	Net income of a firm in year t scaled by total assets at year t-1	Compustat
Leverage	1, 2, 3	Non-equity liabilities in year t of a firm scaled by total assets at year t-1	Compustat
AssetsGrowth	1, 2, 3	The change of total assets from year t-1 to t of a firm scaled by total assets at year t-1	Compustat
EmployeeGrowth	1, 2, 3	The change of total employees from year t-1 to t of a firm scaled by total employees at year t-1	Compustat
Market-to-book	1, 2, 3	The market value of equity of a firm in year t divided by the book value of equity at year t-1	Compustat
Calendar Year Fixed Effects	1, 2, 3	Any variation in the outcome that happen over time and that is not attributed to other explanatory variables included in this model.	

Model 1: Early years of CEO tenure and accrual-based earnings management
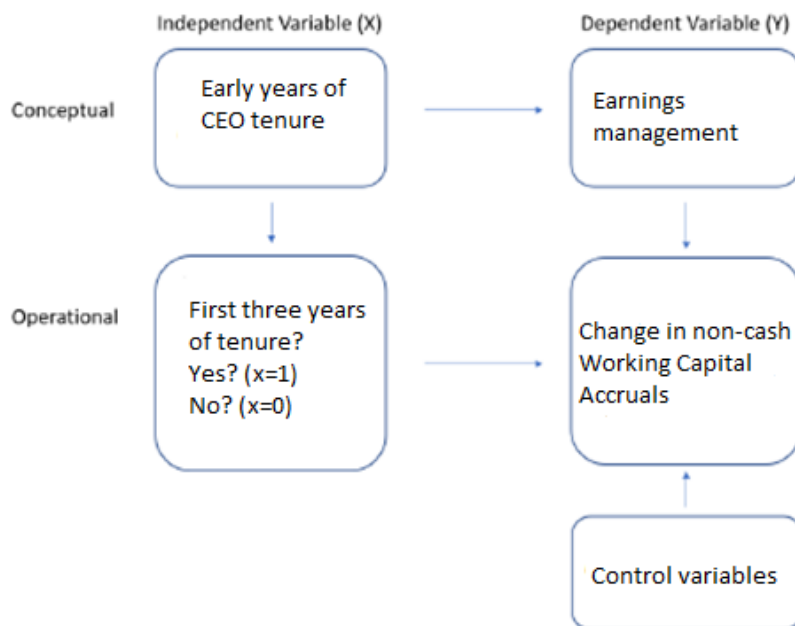
Model 2: Early years of CEO tenure and real earnings management
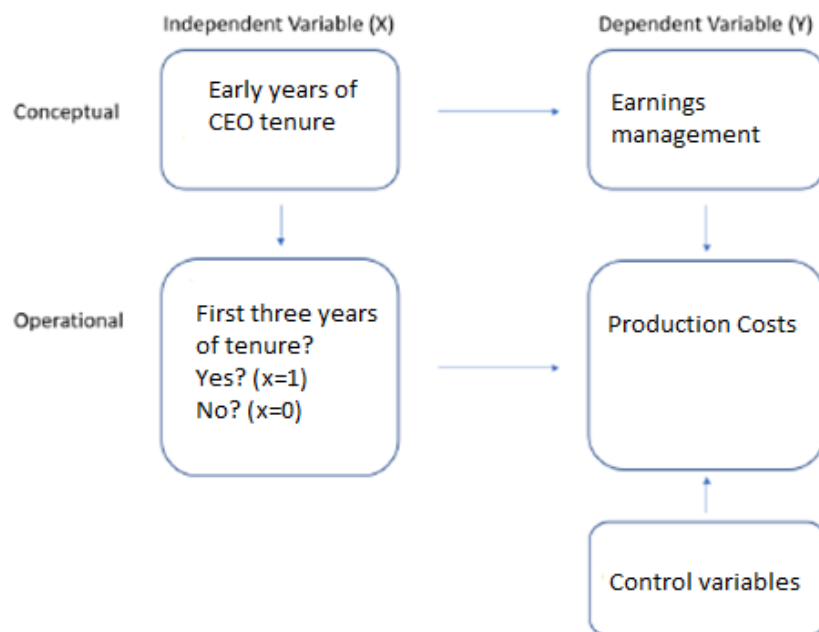
Model 3: Early years of CEO tenure and the ratio of Accrual-based Earnings Management versus Real Earnings Management