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CEO tenure and earnings management

A study on Swedish listed companies

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Abstract:
In this study we investigate the presence of earnings management in connection with CEO successions in Swedish listed companies. We use three accrual-based models to detect earnings management in a sample of companies listed on the Swedish main market in the period 2009-2013. Our results show that CEOs manage earnings in the first two years of service, but we find no corresponding evidence for earnings management in the final year. However, when controlling for earnings management in the early years of CEO service, we find evidence of earnings management in the final year in two of three models. These results are consistent with previous findings in studies on U.S. data, indicating that an omission of this control can lead to a bias against finding evidence of earnings management in the final year of service.

Tutor: Stina Skogsvik
Keywords: *CEO successions, earnings management, tenure, opportunistic behavior.*

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1. Introduction

Over the years, numerous studies have sought to investigate the effects from CEO successions. These studies have shown that changes in top management have implications that extend into stock price developments, financial performance and financial reporting behavior (Warner et al., 1988; Huson et al., 2004; Pourciau, 1993). One area of research that has received considerable attention is earnings management, which occurs when managers use discretion in financial reporting, allowing them to "choose reporting methods and estimates that do not accurately reflect their firms' underlying economics" (Healy & Wahlen, 1999). The most common approach to measure earnings management in research is to study accruals, which are differences between reported earnings and cash flows that arise from accrual-based accounting. Since it is easier for managers to influence earnings than cash flow, earnings manipulation will lead to a higher value of absolute accruals (DeAngelo, 1988; Murphy & Zimmerman, 1993).

A number of studies on executive changes have found that new CEOs tend to understate earnings in their first year of service by manipulating accruals. This allows them to take credit for the higher reported earnings in subsequent years (DeAngelo, 1988; Pourciau, 1993). These results show that CEOs act opportunistically and make discretionary accounting decisions that affect financial reports. It has also been suggested that voluntary departing CEOs are incentivized to increase earnings in their final year of service since they are less concerned with acting in the best interest of the company and more interested in boosting their pensions and their final year pay (Kalyta, 2009).

However, evidence on earnings management by departing CEOs is mixed and it has been proposed that this is due to a misspecification of the model. A recent study shows that to reduce model misspecification and avoid misleading results when testing for earnings management in the final year, earnings management in the early years of CEO service must be controlled for. Failure to include this control will lead to a bias against finding evidence of earnings management in the final year of service (Ali & Zhang, 2015). While this is an interesting new discovery it has not yet been sufficiently documented in research.

In this study, we use accrual-based models to test for earnings management in the early and final years of CEO service in Swedish listed companies. We then test whether we can reduce misspecification in the model when testing for earnings management in the final year by

controlling for earnings management in the early years of service. Our results show that CEOs manage earnings in their early years of service, but we find no corresponding evidence for earnings management in the final year when testing the variables separately. However, when controlling for the early years in our tests for earnings management in the final year, we find more compelling evidence for earnings management in both periods. In these tests, two of three models show statistically significant results indicating earnings management in the final year. These results are consistent with the findings in previous research and support the notion that it is important to incorporate early years in the model when testing for earnings management in the final year of CEO service.

1.1 Purpose

The purpose of this thesis is to study earnings management in connection with CEO successions in a Swedish setting. We are inspired by Ali & Zhang (2015) and other studies conducted on U.S. data, which have found evidence that earnings management during CEO changes is a common phenomenon that can have a major impact on financial reports. To illustrate the magnitude of these effects, studies have found that the annual overstatement of return on assets (ROA) is 25% in the early years of CEOs' service compared to the average year (Ali & Zhang, 2015). This is a very serious problem as earnings management leads to misleading financial information, which reduces the ability of potential investors and other stakeholders to make well-informed financial decisions. For this reason a more thorough understanding of its effects should be of great interest to users of financial reports. More documentation on earnings management in different contexts is also relevant to legislators and standard setters in evaluating current control mechanisms and regulations. Finally, additional evidence on potential misspecifications in accrual-based models should be of interest to researchers as these models are frequently used for the purpose of detecting earnings management.

1.2 Contribution

Our study contributes to the existing literature in three ways. First, our study increases the understanding of earnings management in relation to CEO successions in a Swedish setting. Since a very limited number of studies have so far been conducted on the Swedish market, there has not been sufficient documentation of this phenomenon. More knowledge on the existence of earnings management in different contexts is beneficial for users of financial reports, standard setters and regulators. Second, we use an updated dataset containing data

after the financial crisis. This allows us to provide more recent evidence on these issues and indicate whether higher scrutiny and new regulations after the crisis appear to have had an impact on opportunistic behavior by CEOs. Finally, we investigate whether it is possible to reduce model misspecification when testing for earnings management in the final year of CEO service by controlling for earnings management in the early years. This contributes to the ongoing discussion about accrual-based models for detecting earnings management.

1.3 Delimitation

We have limited our study to CEO successions in Swedish group companies listed on Nasdaq Stockholm in the period 2009-2013. We have chosen to only study companies listed on the main market since they have to comply with different rules and regulations compared to private companies and companies listed on OTC markets. Since most previous earnings management studies have also focused on listed companies, this choice allows us to compare our results to previous research. We have also excluded banks and insurance companies according to the Global Industry Classification Standard (GICS) from our sample since these companies have a different structure of their financial reports, which makes it difficult to measure accruals (Pourciau, 1993; Kalyta, 2009).

Furthermore, we will only measure earnings management using discretionary accruals models that are based on the Jones model and the Modified Jones model. We have chosen these models since they measure aggregate rather than specific manipulation of accruals and because they are by far the most widely used models for measuring earnings management in research. Furthermore, these models have been shown to yield strong empirical results compared to other similar models (Dechow et al., 1995). However, by using three different models we believe that our results are less subject to some of the flaws that are inherent in individual models (DeAngelo, 1988).

The primary purpose of this study is not to evaluate different incentives behind earnings management in relation to CEO successions, although these incentives are used as a framework in the development of our hypotheses and to a lesser extent in the analysis of our results. Moreover, because we use a cross-sectional approach that estimates discretionary accruals based on industry averages for each year, we will not be able to draw any conclusions regarding differences in earnings management between different years in our chosen time period.

2. Theory and previous research

In this section we will provide an overview of the theoretical background relating to CEO successions and earnings management. We will begin with a review of agency theory, where we identify the principal-agent problems that can give rise to opportunistic behavior by CEOs. We continue by introducing earnings management and the incentives to manage earnings that appear in relation to CEO successions. Finally, we discuss and present methods used by researchers to measure earnings management.

2.1 Agency theory

Agency theory addresses contractual relationships between two parties that cooperate and share risk but have different goals and agendas. This situation arises when one party (the principal) delegates work to another party (the agent) who is responsible for executing the principal's requests. Agency relationships exist in many different settings but are often used in an organizational context to describe the relationship between the shareholders (the principal) and the CEO (the agent). The literature is primarily concerned with finding ways to deal with the problems that appear in such relationships (Eisenhardt, 1989).

Problems arise because the agent has been charged with carrying out actions on behalf of the principal, that the principal is not able to personally observe. To prevent the agent from acting opportunistically the principal can monitor the agent. However, monitoring is costly and therefore the principal faces a trade-off between increased cost for monitoring and losses due to opportunistic agent behavior. These costs are referred to as agency cost and the problem faced by principals is known as the principal-agent problem (Eisenhardt, 1989). One way to reduce agency costs is to align the interests of agents and principals through risk sharing. In organizations, this is usually achieved either by tying the compensation level of CEOs to company performance metrics or by forcing CEOs to invest a significant portion of their wealth in company stocks and options (Grossman et al., 1983).

Depending on the organizational structure in different firms, principal-agent problems can be more or less pronounced. In larger public firms, the owners usually assign responsibility for running the firm to a professional CEO under monitoring by the board of directors. These companies are also subject to other control mechanisms including corporate governance, regulations and stock market rules. However, studies have found that such management controlled companies are still subject to less monitoring, less shareholder influence on CEO

pay and higher conflict of interest compared to companies where the owners retain control of daily operations (Tosi et al., 1989). The phenomenon of CEOs acting opportunistically to influence financial reporting is known as earnings management and has received considerable attention in research.

2.2 Earnings management

"Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers" - Healy & Wahlen (1999)

There are many different definitions of earnings management but the definition by Healy & Wahlen, presented above, is perhaps the most widely adopted definition by researchers in this field. However, other definitions have been suggested that put less emphasis on the malicious intent of managers. For example, Sankar & Subramanyam define earnings management as taking advantage of "the flexibility in the choice of accounting methods to indicate the management decision-making on future cash flows" (Sankar & Subramanyam, 2001). However, the vast majority of definitions stress that managers are responsible for manipulating earnings.

Earnings management can be divided into two broad categories. First, there is real earnings management, which includes activities that affect cash flows. These activities include but are not limited to overproduction, price discounts and elimination of discretionary expenses. Second, there is accruals management where earnings management occurs through changes in estimates and accounting policies (Lo, 2008). Real earnings management is considered to be more common compared to accruals management (Roychowdhury, 2006). One reason that managers would prefer to engage in real earnings management is the lack of transparency in the decision making process. This means that real earnings management is indistinguishable from normal business judgment and therefore more difficult to detect (Lo, 2008). Since accruals management is easier to detect and allows for aggregate measures of earnings management, previous studies have generally favored accrual-based models.

When managers engage in earnings management it is a violation of the objective of financial reporting, which according to IFRS, is to provide its users with information that is useful for making economic decisions. The IFRS specifies that "if financial information is to be useful,

it must be relevant and faithfully represent what it purports to represent" (IFRS, 2015). Financial reports affected by earnings management do not fulfill the requirements for usefulness as they fail to "faithfully represent" company performance. If the usefulness of the report is considered to be impaired by manipulation it can be a violation of Bokföringslagen, a Swedish law that governs financial reporting practices. Violation of this law is a crime that can lead to up to six years in prison (SFS 1962:700, Chapter 11 5§ Brottsbalken). While most cases of earnings management are very unlikely to result in a prison sentence, let alone be discovered, it becomes evident from the law that the penance can be severe depending on the degree of earnings manipulation.

While it is widely agreed that earnings management is a real phenomenon, it has generally been very difficult for researchers to document it. This is partly because researchers have to estimate earnings free from earnings management, which has proved to be difficult empirically (Healy & Wahlen, 1999). Also, earnings management should generally be difficult to detect as managers have little incentive to manipulate earnings if they face a high risk of being exposed (Lo, 2008). As managers are likely to identify new ways to manipulate earnings to avoid detection it is also important that researchers and regulators develop their methods for isolating earnings management.

2.3 Incentives for earnings management

The incentives for earnings management are closely linked to the importance and uses of the information in financial reports. Academic research and surveys conducted by professional organizations show that financial reports are considered to be a key source of information by capital market actors (Hjelström et al., 2014). In the U.S., a number of surveys have found that annual reports are considered to be the most important source of information (CFA Institute, 2013) and similar results have been found in European research (Cascino et al., 2013). Studies have also described widespread earnings fixation among capital market actors (Bushee, 1998), although research on experienced professional analysts in Sweden has shown that cash conversion is often assessed to ascertain the quality of earnings (Hjelström et al., 2014). While evidence on whether or not investors are fooled by earnings management is mixed (Healy & Wahlen, 1999), it is clear that the reliance on earnings for valuation purposes means that the potential benefits associated with earnings management can be substantial in the short run.

One of the most powerful incentives for earnings management from an agency theory perspective is the opportunity to boost executive pay. As mentioned it is very common to have top management compensation tied to firm performance in large listed companies to encourage managers to act in the interests of shareholders. For this purpose firm performance is usually measured in two ways, stock price development and reported earnings (Dechow & Sloan, 1991). The importance of the stock price is normally enhanced by CEO stock option plans (Brickley et al., 1999). The use of two different performance measures is intended to prevent managers from relentlessly pursuing one objective on the expense of other objectives that are of similar importance to shareholders (Dechow & Dichev, 2002). However, since capital market actors rely heavily on earnings in financial reports for valuation purposes, there are still incentives for managers to manipulate earnings.

Researchers have also argued that incentives to manage earnings should be even higher in certain extreme situations where financial information is of particularly great importance. Healy & Wahlen (1999) identified a number of such situations, where evidence of earnings management has been discovered in research. These situations include management buyouts (Perry & Williams, 1994), narrowly meeting earnings benchmarks (Burgstahler & Eames 2006), public offerings (Teoh et al., 1998), debt covenant violations (DeFond & Jiambalvo, 1994), management compensation contracts (Healy, 1985) and regulatory scrutiny (Jones, 1991). While the existence of earnings management is well documented in these situations, other researchers have argued that a certain degree of earnings manipulation might be the norm rather than the exception in financial reports as it to some extent anticipated by capital market actors (Lo, 2008).

2.4 CEO incentives in connection with successions

As mentioned, there are many incentives for CEOs to engage in earnings management and a number of studies have sought to investigate its presence in relation to CEO successions. Murphy and Zimmerman (1993) summarized the three most important incentives for CEOs to engage in earnings management in different stages of their tenure, the *Horizon problem*, the *Big bath hypothesis* and the *Cover up hypothesis.*

Horizon problem. When CEOs are close to the end of their tenure they have the opportunity to boost compensation in the final year of service by inflating earnings. This problem is more pronounced for CEOs who depart voluntarily as they can plan ahead with respect to their

departure (Murphy & Zimmerman, 1993), or if the CEO pension plan depends on firm performance in this period (Kalyta, 2009). However, evidence on the *Horizon problem* is mixed with some researchers failing to find any evidence of earnings management in the final year (Wells, 2002), while others have found that CEOs decrease earnings in their final year (Pourciau, 1993). One explanation for the lack of earnings management in the final year is that many CEOs do not consider their resignation a real possibility and therefore do not consider managing earnings. Other explanations for income decreasing accruals in the final year is that CEOs may be forced to reverse previous positive accruals in their final year or that the CEO turnover is the result of poor performance, which in turn is often associated with negative accruals (Pourciau, 1993).

Big bath hypothesis. "Taking a big bath" in current earnings is a strategy that involves income decreasing activities in one year, which are then reversed to boost income in the following years. Since the results in the change year are often attributed to the outgoing CEO, a big bath in this year allows the new CEO to blame the poor results on his predecessor while taking credit for the increased earnings in the following years. This behavior is expected to be more prevalent if the outgoing CEO was either fired for poor performance or has not taken another position within the company (Murphy & Zimmerman, 1993). Evidence on this hypothesis is relatively consistent although some studies have found that earnings are managed upwards in the first year. One explanation for this could be that CEOs are not always able to take large write downs in their first year and blame the outgoing CEO, for example because the outgoing CEO remains in the board of directors in the company. Another possibility is that the change year is sometimes attributed to the new CEO, which suggests that new CEOs have incentives to increase earnings in order to reduce uncertainty regarding their ability and signal that they are high performers (Ali & Zhang, 2015). That CEOs manage earnings to signal strong performance in the years immediately following the change year due to career concerns is a relatively well-documented phenomenon (Pourciau, 1993; Godfrey et al., 2003; Ali & Zhang, 2015). This is supported by a U.S. survey, which found that 77% of managers were concerned with their external reputation while only 40% were concerned with their bonuses in relation to meeting earnings benchmarks (Graham et al., 2005).

Cover up hypothesis. When CEOs have performed poorly for an extended period of time they face an increased risk of being replaced. In this situation, CEOs may attempt to manage earnings upwards to maximize their stay in office. It is uncertain when poor performing CEOs

would start to manage earnings but since they are aware that it can only be a temporary measure they are likely to start in their final or close to their final year of expected service (Murphy & Zimmerman, 1993). However, some critics have argued that cover up activities should not be studied in relation to successions, since CEOs who successfully increase their time in office could unintentionally be excluded (Smith, 1993). This could explain why studies have failed to find strong evidence for this hypothesis (Pourciau, 1993; Murphy & Zimmerman, 1993). The *Cover up hypothesis* is also closely related to incentives in connection with CEO retirement activities, as there is evidence of a clear connection between the likelihood of someone being offered a board seat after retirement and the performance whilst holding the position of CEO. This indicates that there are even stronger incentives for CEOs to cover up poor performance in their final years to increase their chances of being offered other positions within the companies (Brickley et al., 1999).

In Table 1 we present some of the previous research on earnings management in connection with successions. Most of these studies have been conducted on U.S. data but studies have also been conducted in Australia and Korea. Overall, studies have reached similar conclusions although evidence on earnings management in the final year is mixed.

2.5 To measure earnings management

A number of different methods for detecting earnings management have been used in research, but two kinds of models have been used more extensively than others, accrual-based models and discretionary expenses models. Accrual-based models measure accruals management by estimating the discretionary component of total accruals, known as discretionary accruals. Discretionary expenses models, on the other hand, measure real earnings management by analyzing spending on activities that are non-essential and therefore subject to the judgment of management. While discretionary expenses models have been frequently used, accrual-based models have clearly been dominant in earnings management research. The main benefits of using accrual-based models are that the most frequently used models study aggregate measures of earnings manipulation and that the ability of these models to detect earnings management is well documented in research (Kighir et al. 2014; Healy & Wahlen, 1999). For these reasons we choose to focus exclusively on accrual-based models in our study and in the following section we discuss the developments of these models.

Table 1.

Previous research

					Expected sign			Results			
Author/year	**Data**	**Focus of study**	**Accruals model**	**Statistical test**	**Change year**	**Second year**	**Final year**	**Change year**	**Second year**	**Final year**	**Adjusted R^2**
DeAngelo (1988)	U.S. 1970-1983	CEO successions in proxy contest	Random walk	Signed ranked test	-	n.a.	n.a.	-	n.a.	n.a.	n.a.
Pourciau (1993)	U.S. 1985-1988	Non-routine successions	Random walk	Signed ranked test	-	+	+	-	+*	-	n.a.
Murphy & Zimmerman (1993)	U.S. 1971-1989	CEO successions and performance	Random walk	Regression	-	+	+	-*	+	+	n.a.
Wells (2002)	Australia 1994-2004	Non-routine successions	Modified Jones	Signed ranked test	-	+	+	-	-	-	n.a.
Godfrey et al. (2003)	Australia 1992-1998	CEO successions and impressions management	Random walk	Signed ranked test	-	+	n.a.	-*	+*	n.a.	n.a.
Kalyta (2009)	U.S. 1997-2006	Departing CEOs and pensions	Modified Jones	Regression	n.a.	n.a.	+	n.a.	n.a.	+*	0.29
Choi et al. (2014)	Korea 2001-2010	Forced internal CEO successions	Kothari	Regression	-	n.a.	+	-*	n.a.	+*	0.35
Ali & Zhang (2015)	U.S. 1992-2010	CEO successions and monitoring	McNichols	Regression	n.a.	+	+	+	+*	+*	0.29

*The predicted/obtained direction of earnings management in relation to CEO tenure variables is found under Expected sign/Results. Positive/negative discretionary accruals are indicated with +/-. Variable that were not studied are indicated with n.a. Significant results at the 0.05 level are indicated with *. The CEO tenure variables Change year, Second year and Final year indicate whether the CEO was in the first/second or final year of service. Random walk implies that accruals were expected to be the same as in the previous year, the other models are discussed further in section 3.2.1-3.2.3*

2.6 Development of accrual-based models

Accrual-based methods generally aim to isolate the component of total accruals that results from managers' attempts to manipulate earnings, referred to as discretionary accruals. A model is first used to estimate the non-discretionary component of accruals. The non-discretionary accruals obtained from the models are then subtracted from the observed level of total accruals and the resulting difference is the estimate of discretionary accruals (Dechow et al., 1995). See *Equations 1,2*.

$$Total\ accruals = Net\ income - Cash\ flow\ from\ operations \quad (1)$$

$$Discretionary\ accruals = Total\ accruals - Non\text{-}discretionary\ accruals \quad (2)$$

Healy (1985) presented one of the first models based on total accruals, where it was assumed that total accruals were entirely discretionary. DeAngelo (1988) improved on this model by using a non-discretionary component of total accruals equal to total accruals in the previous year. However, the model did not separate discretionary and non-discretionary accruals in the previous year, implicitly assuming no earnings management in that year. Jones (1991) made a large contribution by controlling for the effect from changes in a company's economic circumstances. In this model non-discretionary accruals were estimated using a regression with the variables lagged total assets, changes in revenue and property plant and equipment, where the parameters for each variable were computed individually for each firm. This model was modified by Dechow et al. (1995), who subtracted the difference in receivables from the difference in revenue in the model based on the assumption that the proportion of total sales relating to credit sales is likely to reflect earnings management. They showed that this correction led to more reliable results and as a result the Modified Jones model has become the most frequently used model for detecting earnings management.

McNichols (2002) developed a model of accruals that combines elements from the Jones model with a cash flow oriented approach to measure earnings quality suggested by Dechow & Dichev (2002). The new model was able to achieve higher explanatory power and reduce misspecification in the Jones model that resulted from residuals being correlated with lagging and leading cash flows (McNichols, 2002). Kothari et al. (2005) also presented a new version of the Jones and Modified Jones models that introduced performance matching on ROA. This approach was shown to reduce misspecification by reducing type I errors, thereby reducing

the risk of incorrectly concluding presence of earnings management. In addition to the most widely used models, the revenue model suggested by Stubben (2010) and a model studying the ratio of absolute accruals to absolute cash flows suggested by Burgstahler et al. (2006) have received some attention in research. However, as the Stubben model is only able to identify revenue manipulation and neither of these models have previously been used in relation to CEO successions, we do not consider them to be as relevant for our study.

3. Method

In this section we will present our hypotheses and empirical predictions based on theory and previous research. We will then introduce our models for estimating the discretionary level of accruals before presenting our main regression model. Finally we discuss our choices relating to different methodological approaches in accrual-based models.

3.1 Hypotheses

In our first hypothesis we will investigate whether there is evidence of earnings management in the early years of CEO service. Most studies find evidence of earnings management in the years immediately following a succession and the most important incentives in this period relate to the *Big bath hypothesis* and other career concerns, see section 2.4. *The Big bath hypothesis* predicts that CEOs will manage earnings in their first year of service if it is possible to blame poor performance on actions by the outgoing CEO. In the following years the unwarranted accruals in the first year will lead to reversals. Other career concerns indicate that CEOs are likely to manage earnings in the first years of their tenure to signal strong performance and reduce uncertainty regarding their performance and skill. Since the incentives to manage earnings are strong and previous research has shown that CEOs will manage earnings more extensively in the early years of CEO service compared to the average year, we propose the following:

H1: Earnings management is greater in the early years of CEO service compared to the average year

In our second hypothesis we will look into earnings management of departing CEOs. Most studies have anticipated earnings manipulation based on incentives in the *Horizon problem* and the *Cover up hypothesis*. The former theory anticipates that CEOs will boost results in order to maximize final year pay, while the latter predicts that CEOs who are about to lose their jobs will manage earnings to increase their chances to stay in office. Despite the strong

incentives, prior studies of earnings management in the final year have yielded inconclusive results. This is potentially the result of failing to consider other incentives that can cancel out the predicted effects, such as reversal of previous accruals management activities. However, we believe that the incentives to manage earnings are higher compared to the average year and we therefore propose the following:

H2: Earnings management is greater in the final year of CEO service compared to the average year

In our third hypothesis we will reintroduce the early years in the tests and investigate whether its inclusion will lead to stronger results for earnings management in the final year. A study conducted by Ali & Zhang (2015) on a large sample of U.S. firms has suggested that failing to control for the early years leads to a bias, which reduces the likelihood of finding evidence of earnings management in the final year. This could potentially explain the mixed results in previous research regarding earnings management in this period. Despite a limited understanding of the effects from including the early years variable in tests for earnings management in the final year, we believe that the recent findings strongly indicate that this approach could reduce misspecification. We therefore propose the following:

H3: Earnings management is greater in the final year of CEO service compared to the average year when controlling for early years

3.2 Models and variables

We will test our research hypotheses using three models that estimate discretionary accruals, which serves as a proxy for earnings management. Whilst some previous studies focusing on earnings management in relation to CEO tenure have chosen to use both accrual-based models and discretionary expenses models (Ali & Zhang, 2015; Murphy & Zimmerman, 1993), we have made the decision to disregard the latter and only use discretionary accruals models. In the paragraphs below we will discuss our chosen models.

3.2.1 Modified Jones model (1995)

Our first model, the Modified Jones model, was proposed by Dechow et al. (1995) and is an adjusted version of the original Jones model. While the model suggested by Jones (1991) had many merits and was the first model to account for changes in economic conditions, it also had some weaknesses. The Modified Jones model, see *Equation 3,* addresses one of the

weaknesses, namely the assumption that revenue is entirely non-discretionary. Since earnings management activities are likely to include revenue manipulation, for example through changes in revenue recognition policies or biased estimates of future or current sales, this flaw leads to underestimation of discretionary accruals. By adjusting for changes in receivables, the Modified Jones model relaxes this assumption and assumes that differences in credit sales is a result of earnings management. This has been shown to improve accuracy and lead to a more powerful test of earnings management (Dechow et al., 1995). We have chosen this model because it has proven to yield strong results compared other models and because it is the most commonly used model for detecting earnings management.

$$Accr_{it}/A_{it-1} = \lambda_0 + \lambda_1 (1/A_{it-1}) + \lambda_2 (\Delta Rev_{it} - \Delta Rec_{it})/A_{it-1} + \lambda_3 PPE_{it}/A_{it-1} + \varepsilon_{it} \quad (3)$$

$Accr_{it}$ is the accruals of firm i in year t, calculated as net income before extraordinary items minus cash flow from operations. A_{it-1} is the total asset of firm i at the beginning of year t. ΔRev_{it} is the change in revenue in year t. ΔRec_{it} is the change in receivables in year t. PPE_{it} is the gross property, plant, and equipment at the beginning of year t.

3.2.2 McNichols model (2002)

Our second model was proposed by McNichols (2002), see *Equation 4*. This model combines elements from the Jones model (Jones, 1991), with a cash flow oriented model for measuring earnings quality suggested by Dechow & Dichev (2002). The result is a model that reduces misspecifications associated with the previous models, namely that the residuals in the Jones model are highly correlated with lagged, current and future cash flows, and that the residuals in the model by Dechow & Dichev (2002) are highly correlated with the change in sales. As a result, the McNichols model has a significantly higher explanatory power compared to both the Jones model and the Modified Jones model (McNichols, 2002). We have chosen the McNichols model because of its high explanatory power and because it has been used in recent studies in our field.

$$Accr_{it}/A_{it-1} = \lambda_0 + \lambda_1 CFO_{it-1}/A_{it-2} + \lambda_2 CFO_{it}/A_{it-1} + \lambda_3 CFO_{it+1}/A_{it} + \lambda_4 \Delta Rev_{it}/A_{it-1} + \lambda_5 PPE_{it}/A_{it-1} + \varepsilon_{it} \quad (4)$$

$Accr_{it}$ is the accruals of firm i in year t, calculated as net income before extraordinary items minus cash flow from operations. A_{it-1} is the total asset of firm i at the beginning of year t.

CFO_{it} is the cash flow from operations in year t. ΔRev_{it} is the change in revenue in year t. PPE_{it} is the gross property, plant, and equipment at the beginning of year t.

3.2.3 Kothari model (2005)

Our third model was proposed by Kothari et al. (2005) and is also a modification of the Jones model, see *Equation 5*. The original Kothari model entails performance matching on ROA in response to findings that accruals are correlated with performance (Dechow et al., 1998). Performance matching on ROA has been found to provide the best estimates of discretionary accruals in a number of simulated conditions and lead to fewer type I errors. However, it has also been shown that the Kothari model performs worse than the Modified Jones model in certain conditions and that it leads to a higher rate of type II errors and lower explanatory power (Kothari et al., 2005). Despite these problems, the Kothari model has received considerable recognition and been widely used in earnings management research (Hazarika et al., 2012; Choi et al., 2014) etc. Since the relationship between performance and accruals is not linear, performance matching is the preferred method when using this model. However, it is also possible to include ROA as a variable in the Jones model and reach similar results (Kothari et al., 2005). This is the method that we intend to use in our tests with the Kothari model.

$$Accr_{it}/A_{it-1} = \lambda_0 + \lambda_1 (1/A_{it-1}) + \lambda_2 \Delta Rev_{it}/A_{it-1} + \lambda_3 PPE_{it}/A_{it-1} + \lambda_4 ROA_{it} + \varepsilon_{it} \quad (5)$$

$Accr_{it}$ is the accruals of firm i in year t, calculated as net income before extraordinary items minus cash flow from operations. A_{it-1} is the total asset of firm i at the beginning of year t. ΔRev_{it} is the change in revenue in year t. PPE_{it} is the gross property, plant, and equipment at the beginning of year t. ROA_{it} is the return on assets in year t.

3.3 Main regression model

We will test our empirical predictions using the regression model presented in *Equation 6*.

$$\begin{aligned} AbsDisAccr_{it} = {} & \lambda_0 + \lambda_1 Early\ years_{it} + \lambda_2 Final\ year_{it} + \lambda_3 LnMVEquity_{it} \\ & + \lambda_4 MarketBookRatio_{it} + \lambda_5 Leverage_{it} + \lambda_6 ROA_{it} + \lambda_7 Loss_{it} \\ & + \lambda_8 CFO_{it} + \lambda_9 Lagged\ NOA_{it} + \lambda_{10} TotalAssetGrowth_{it} + \varepsilon_{it} \end{aligned} \quad (6)$$

$AbsDisAccr_{it}$ is the absolute value of discretionary accruals of firm i in year t. The coefficient λ_0 represents the average level of absolute discretionary accruals in the sample while λ_1 and λ_2

indicate how absolute discretionary accruals are affected by the research variables *Early years* and *Final year* respectively. The remaining λ_i coefficients indicate how each control variable affects the level of absolute discretionary accruals and the ε_{it} is the residual from the regression model for firm i in year t. When selecting control variables for our study we first evaluated variables used in previous earnings management studies and limited ourselves to variables that had previously shown to be significant. This was done in order to avoid the inclusion of redundant variables. In a second step we excluded variables due to lack of data. All variables that were included in our main regression model will now be discussed in more detail.

Early years is a research dummy variable that indicates whether the CEO is in the first two years of service in year t. If the CEO is in the first two years of service the value is 1, if not 0. Previous research has found a positive correlation to earnings management, consistent with the theory that positive accruals are released in the early years of CEO service to signal that the CEO is high-performing (Pourciau, 1993). We therefore expect this variable to be associated with higher absolute discretionary accruals.

Final year is a research dummy variable that indicates whether the CEO is in the final year of service in year t. If the CEO is in the final year of service the value is 1, if not 0. Most previous studies have found a positive correlation to earnings management, consistent with the *Cover up hypothesis* and the *Horizon problem*, which indicate that CEOs have incentives to overstate earnings in their final year (Kalyta, 2009; Ali & Zhang, 2015; Choi et al., 2014). However, other studies have found indications of weak relationships in line with arguments that CEOs either do not believe they will resign or that several years of managing earnings upwards forces them to take a bath that offsets overstatements in the period (Pourciau, 1993; Wells, 2002). Despite the mixed evidence, we consider the arguments for a positive correlation to be stronger. We therefore expect this variable to be associated with higher absolute discretionary accruals.

LnMVEquity is the natural logarithm of the market value of equity at the beginning of year t. Previous research has found a negative correlation with earnings management, consistent with the theory that larger firms report less aggressively due to higher political costs (Watts & Zimmerman, 1986; Ali & Zhang, 2015). We therefore expect this variable to be associated with lower absolute discretionary accruals.

MarketBookRatio is the market value of equity divided by the book value of equity at the beginning of year t. Previous research has found a positive correlation to earnings management, consistent with the theory that companies with high growth potential are more reluctant to fail earnings targets (Frankel et al., 2002). We therefore expect this variable to be associated with higher absolute discretionary accruals.

Leverage is the total debt divided by the total assets at the beginning of year t. Previous research has found a positive correlation to earnings management, consistent with the theory that high leverage, which is often associated with financial distress, leads to contractual renegotiations that incentivizes managers to reduce earnings in order to convince lenders that actions are being taken to improve the financial situation (DeAngelo et al., 1994). We therefore expect this variable to be associated with higher absolute discretionary accruals.

ROA is the net income before extraordinary items in year t divided by the total assets at the beginning of year t[1]. Previous research has found a positive correlation to discretionary accruals, consistent with the theory that accruals tend to be higher for firms that display unusually high profitability (Kothari et al., 2005). We therefore expect this variable to be associated with higher absolute discretionary accruals.

Loss is a dummy variable that indicates whether the company has experienced negative net income in year t. If the company has negative net income the value 1, if not 0. Previous research has found a positive correlation to discretionary accruals, consistent with the theory that unexpected losses can lead to additional negative accruals such as restructuring costs (Dechow & Dichev, 2002). We therefore expect this variable to be associated with higher absolute discretionary accruals.

CFO is the cash flow from operations in year t scaled by total assets at the beginning of year t. Previous research has found a negative correlation to earnings management, consistent with the theory that high cash flows is an indication of strong performance, which reduces the need for discretionary accruals to boost income. If not included separately, this effect is not fully captured by the model (Dechow et al., 1995). We therefore expect this variable to be associated with lower absolute discretionary accruals.

[1] In the proper definition of ROA the denominator is net income plus net of tax interest expense. This definition is preferable since it facilitates comparisons between firms with different leverage. However, we choose to only use net income to be consistent with previous research and to avoid problems with estimating tax rates.

Lagged NOA is the net operating assets at the beginning of year t scaled by sales at the beginning of year t. Net operating assets is defined as shareholders' equity less cash and marketable securities, plus total debt. Previous research has found a negative correlation to earnings management, consistent with the hypothesis that inflated NOA due to earnings overstatement in previous years, limits managers' ability to further overstate earnings (Barton & Simko, 2002). We therefore expect this variable to be associated with lower absolute discretionary accruals.

TotalAssetGrowth is the change in total assets during year t, scaled by the total assets at the beginning of year t. Previous research has found a positive relationship to discretionary accruals, consistent with the theory that growth in accruals is closely linked to growth in total assets. Furthermore, as investments tend to decline in the early years of CEO service, implying lower growth in total assets, an omission of this variable can bias against finding evidence of earnings management in the early years (Zhang, 2007). We therefore expect this variable to be associated with higher absolute discretionary accruals.

3.4 Definition of CEO succession variables

In this study we have defined two main research variables based on previous research and underlying incentives for earnings management. *Early years* is the first two years (change year and second year) of CEO tenure and *Final year* is the last year of CEO tenure. Since previous studies have primarily found evidence of earnings management in these three years of service, we believe that the chosen variables will be able to capture the majority of earnings management in relation to successions (Pourciau, 1993; Ali & Zhang, 2015; Choi et al., 2014). Another consideration in the definition of CEO succession variables concerns whether the year of CEO change should be attributed to the outgoing or the incoming CEO. Murphy and Zimmerman (1993) argue that the departing CEO has more responsibility for the results in the change year, while Pourciau (1993) argues that the incoming CEO has more influence since financial reports are prepared and presented at the end of the year. In our study we have chosen to attribute the change year to the incoming CEO, as a part of the *Early years*, in line with the method and reasoning of Pourciau (1993). Hence, the *Final year* represents the last year that the outgoing CEO is assumed to be in complete control of financial reports.

3.5 Time series and cross-sectionality

Two main research designs have been used in previous earnings management studies, the time-series approach and the cross-sectional approach. In the time-series approach, the parameters in accrual-based models are estimated in a pre-event window for each company. The pre-event window used by Jones (1991) was fourteen-years, which imposes large requirements on data and potentially leads to survivorship bias. Due to high data requirements and weaker parameter estimates (Subramanyam, 1996), this approach has become less popular in recent years. Instead, the cross-sectional approach, that uses data for all available firms in an industry at a specific point in time, is more frequently used. The two approaches also make different assumptions regarding operating cycles of firms, which has to be taken into account when choosing method. The time-series approach is based on the assumption that the operating cycle does not change over the chosen time period, while the cross-sectional approach is based on the assumption that firms in the same industry share similar operating cycles (Bartov et al., 2001). As we believe that the latter assumption is more likely to hold, we will use the cross-sectional approach in our study.

3.6 Absolute and non-absolute discretionary accruals

Earnings management tests can either be conducted using absolute or non-absolute discretionary accruals. The choice between these two methods has an impact on the conclusions that can be drawn from the tests. When using absolute values of discretionary accruals the models will capture attempts to manage earnings in both directions, but no inferences can be drawn regarding the direction of such activities. On the other hand, when using non-absolute values of discretionary accruals, it is possible to draw conclusions regarding the direction of earnings management but if it occurs in different directions the effects can offset and may not be detected in the model. The choice of method should therefore reflect the anticipated direction of earnings management in the research variables and the purpose of the study. We have chosen to use absolute values of discretionary accruals in our study for two main reasons. First, we are more concerned with determining the presence rather than the direction of earnings management. This is because we want to contribute to the understanding of the prevalence of this phenomenon rather than evaluate the incentives to manage earnings. Second, we recognize that there is uncertainty regarding the expected direction of earnings management in certain years in relation to CEO successions. Hence, using absolute values will allow us to capture earnings management even if there are incentives to manage earnings in different directions in the same period.

3.7 Balance sheet approach and cash flow approach

There are two different methods to obtain data on cash flow from operations that is needed to calculate total accruals in our models, either indirectly via the balance sheet or directly via the cash flow statement. The balance sheet approach has been criticized for leading to measurement errors in the presence of non-operating events such as reclassifications, acquisitions and discontinued operations. These errors lead to bias towards incorrectly finding evidence of earnings management (Hribar & Collins, 2000). In response to these findings we follow the cash flow approach, and obtain this data directly from the cash flow statement.

4. Empirical data

In this section we will begin by outlining our method for selecting the sample used in our empirical tests. We will then discuss our data collection and our choice of time period before motivating our choice of industry classification standard. We will end this section with descriptive statistics and Pearson correlations for the variables in our main regression models.

4.1 Sample selection

We have selected one sample of Swedish listed firms that was used for two main purposes, testing our main empirical predictions and estimating non-discretionary accruals. We chose to limit our sample to companies that were listed on Nasdaq Stockholm sometime in the period 2007-2014 because all necessary data was available for this period. This preliminary sample was obtained after adjusting the Nasdaq Stockholm stock exchange list. The adjustments consisted of removing companies that were listed after 2014 and adding back companies that were delisted after 2007 (Nasdaq, 2016). This left us with 361 companies, which would make up the foundation of our sample. In the next step we eliminated companies that failed to fulfill any of the following requirements, see Table 2.

First, we required that companies be Swedish group companies. We therefore excluded all subsidiaries and non-Swedish group companies. Subsidiaries were excluded because their reporting can be strongly affected by transactions with their parent companies and foreign group companies were excluded because they may be subject to different standards and regulations compared to Swedish companies. This reduced our sample by 17 companies.

Second, we required that companies be non-financials. We therefore excluded all companies that belonged to either *Bank* or *Insurance* according to GICS (codes 4010, 4030). These

companies were excluded because their financial reports do not distinguish between operational and non-operational items. As a result, they do not allow for meaningful calculations of accruals. This reduced our sample by 20 companies.

Third, we required that the companies must have been listed on OMX Stockholm for a minimum of four consecutive years in our chosen time period. We therefore excluded companies that had not been listed for four years between 2007 and 2014. These companies were excluded because our models require one year of leading data and two years of lagging data to calculate the level of discretionary accruals in each year. This reduced our sample by 67 companies.

Fourth, we required that companies have all the data needed to compute accruals and data for all control variables for the years that they are included in the sample[1]. We therefore excluded companies that did not have this data for years in the time period, in which they would otherwise be included in the sample. This reduced our sample by 97 firms.

Finally, we required that companies be part of a GICS industry with enough observations to be able to estimate non-discretionary accruals using a cross-sectional approach. We therefore excluded companies that belonged to an industry with less than 10 yearly observations, which is a guideline used in previous research (Ali & Zhang, 2015; Kothari et al., 2005). We made one exception and include the GICS sector *Materials* despite having slightly fewer than 10 observations per year. Since the number of observations is close to the guideline we do not

Table 2.

Sample selection

Criteria	**Adjustments**	**# of companies**
*Within delimitation**		*361*
Not a Swedish group company	*17*	*344*
Unable to use industry	*20*	*324*
Listed on OMX Stockholm for four years	*67*	*257*
Data unavailable	*97*	*160*
Too few industry observations	*10*	*150*
Total	**211**	**150**

**Companies listed on Nasdaq Stockholm sometime during 2007-2014*

[1] The data requirements for the sample that was used to estimate the level of non-discretionary accruals did not require data for the test and control variables. However, since none of the companies in this sample lacked any of this data there were no differences between the samples.

expect this to affect our results. This reduced our sample with 10 firms. Our final sample consisted of 150 firms from six different GICS sectors and a total of 682 firm-year observations, see Table 3. See Appendix A for data on all sectors.

Table 3.

Descriptive statistics - Firm observations per industry and year

Sector code	Industry	2009	2010	2011	2012	2013	Total
15	*Materials*	*8*	*8*	*8*	*8*	*7*	**39**
20	*Industrials*	*55*	*55*	*54*	*54*	*52*	**270**
25	*Consumer discretionary*	*13*	*15*	*16*	*19*	*19*	**82**
35	*Healthcare*	*17*	*15*	*15*	*16*	*16*	**79**
40	*Financials*	*14*	*14*	*13*	*13*	*13*	**67**
45	*Information technology*	*29*	*29*	*28*	*29*	*30*	**145**
	Total	**136**	**136**	**134**	**139**	**137**	**682**

There are 120 CEO successions in this sample in the period 2009-2013, see Appendix B. Successions are mainly concentrated to two sectors, *Industrials* and *Information technology*, see Appendix C. These sectors account for 60% of CEO changes, which reflects the distribution of firms on the Swedish stock market. We also find that about 20% of the companies in our sample change CEO more than once in this time period, see Appendix D.

4.2 Data collection and time period

We collected data for the period 2007-2014 using Retriever Business and Thomson Reuters Datastream. Retriever Business was used to obtain financial information and CEO succession data, while Thomson Reuters Datastream was used to obtain stock price data and data on cash flow from operations. We have chosen the time period 2007-2014 for two reasons. First, Retriever Business only offers CEO succession data back to 2007, which means that we cannot study the effects from CEO successions prior to this period. Second, at the time of our data collection, financial data from annual reports were not yet available for the year 2015. However, there are two additional constraints that limit the time period for our main tests to 2009-2013. First, we have to exclude the last year with available financial information because our models require one year of leading data. Second, we have to exclude the first two years of CEO succession data since Retriever Business does not provide data on CEO tenure. As a result we cannot determine whether CEOs are in their first two years of service, our definition of *Early years*, in this time period. Since we cannot specify the *Early years* research variable we cannot include this time period in our tests.

4.3 Industry classification

When using a cross-sectional approach, the non-discretionary portion of total accruals is estimated based on the accruals for companies in the same industry in each year (DeFond and Jiambalvo, 1994). There are a number of industry classification standards that can be used for this purpose. The most common standard in research on the U.S. market is the Standard Industry Classification (SIC) (DeFond and Jiambalvo, 1994; Ali & Zhang, 2015; Kothari et al., 2005) etc. However, a recent study comparing different industry classification standards has shown that the GICS industry classification results in significantly better estimates of discretionary accruals compared to other standards such as SIC or Fama French (Hrazdil & Scott, 2011). In response to these findings we have chosen to create reference groups for our sample of Swedish listed firms based on GICS sectors.

4.4 Descriptive statistics

Descriptive statistics for the variables in our main regression models are presented in Table 4. The results are similar to previous research with a few exceptions. First, *Leverage* has a lower mean compared to previous studies, indicating that the listed firms in our sample have lower debt-to-equity ratios. Second, *CFO* displays a higher standard deviation (STD) compared to previous research, indicating more volatile cash flows. Finally, *Lagged NOA* has a higher mean and higher STD compared to previous research. This is attributable to two extreme observations associated with the same company.

Table 4.

Descriptive statistics for variables in the main regression model

	Mean	**STD**	**Median**	**Q1**	**Q3**
AbsDiscAccr (Modified Jones)	0.0465	0.0559	0.0276	0.0128	0.0583
AbsDiscAccr (McNichols)	0.0400	0.0493	0.0251	0.0106	0.0516
AbsDiscAccr (Kothari)	0.0399	0.0393	0.0284	0.0116	0.0544
Early years	0.2918	0.4549	0.0000	0.0000	1.0000
Final year	0.1085	0.3112	0.0000	0.0000	0.0000
LnMVEquity	7.4453	1.9406	7.1481	6.0438	8.8254
MarketBookRatio	2.3464	3.9013	1.4652	0.9500	2.6612
Leverage	0.1113	0.1763	0.0079	0.0000	0.1551
ROA	0.0450	0.1809	0.0632	0.0186	0.1154
Loss	0.2170	0.4125	0.0000	0.0000	0.0000
CFO	0.0669	0.2027	0.0712	0.0240	0.1175
Lagged NOA	3.5807	38.9886	0.4447	0.2673	0.9521
TotalAssetGrowth	0.0719	0.4501	0.0170	-0.0609	0.0970

4.5 Pearson correlations

Pearson correlations between dependent variables and control variables in our regression models are presented in Table 5. We expect our dependent variables and control variables to be correlated, indicating that the control variables contribute to the explanatory value of the model. Furthermore, we expect the dependent variables to be highly correlated as they reflect discretionary accruals but have been calculated using slightly different assumptions. Finally, we do not generally expect strong correlations between the control variables, as this would indicate multicollinearity. Overall, the results are in line with our expectations. Most of our control variables are correlated to all three dependent variables in our models, with the exception of *Lagged NOA, MarketBookRatio* and *TotalAssetGrowth*. *Lagged NOA* is the only of these variables that is not significantly correlated to any of the dependent variables. This indicates that these variables are likely to contribute less to the explanatory power in our regressions but does not necessarily mean that they should be excluded from the models. The dependent variables exhibit high correlations between each other in line with expectations. However, we also observe high correlations between some of our control variables, indicating the presence of multicollinearity. The implications of these results will be discussed in more detail in section 6.2.3.

5. Results

In this section we will present results from the tests of our main hypotheses.

5.1 Earnings management in the early years

In the test of our first hypothesis we investigate whether earnings management is greater in the early years of CEO service. The regression results using the Modified Jones model (1), the McNichols model (2) and the Kothari model (3) are presented in Table 6, Panel A. The *Early years* coefficient is positive and significant at the 0.01 level in all three models. This indicates that earnings management is greater in the early years of CEO service compared to the average year and we can reject the null hypothesis. The adjusted R^2 is 0.14 for the Modified Jones model, 0.17 for the McNichols model and 0.12 for the Kothari model. Many of the control variables are significant in the test of our first hypothesis. The coefficients for *LnMVEquity, MarketBookRatio, Leverage* and *Loss* are significant with the same signs in all three models. *ROA* is significant in two of three models and *TotalAssetGrowth* is significant in one model. *CFO* and *Lagged NOA* are not significant in any of the three models in the tests of our tests.

5.2 Earnings management in the final year

In the test of our second hypothesis we investigate whether earnings management is greater in the final year of CEO service. The regression results using the Modified Jones model (1), the McNichols model (2) and the Kothari model (3) are presented in Table 6, Panel B. The *Final year* coefficient is positive but not significant in the Modified Jones and McNichols models, while it is positive and significant at the 0.1 level in the Kothari model[1]. This indicates that earnings management is not greater in the final year of CEO service compared to the average year and we do not reject the null hypothesis. The adjusted R^2 is 0.12 for the Modified Jones model, 0.16 for the McNichols model and 0.11 for the Kothari model. This is slightly lower than in the tests of our first hypothesis. Many of the control variables are significant in the test of our second hypothesis. The coefficients for *LnMVEquity*, *MarketBookRatio*, *Leverage* and *Loss* are significant with the same signs in all three models. *ROA* is significant in two of three models and *TotalAssetGrowth* is significant in one model. *CFO* and *Lagged NOA* are not significant in any of the three models in the tests of our tests.

5.3 Earnings management in the final year controlling for early years

In the test of our third hypothesis we reintroduced the *Early years* variable to investigate whether earnings management is greater in the final year of CEO service when controlling for the early years. The regression results using the Modified Jones model (1), the McNichols model (2) and the Kothari model (3) are presented in Table 6, Panel C. The *Early years* coefficient is positive and significant at the 0.01 level in all three models. The *Final year* coefficient is positive in all models and significant at the 0.01 level in the Kothari model and at the 0.05 level in the Modified Jones model. The *Final year* t-statistic has increased in all three models compared to the tests of our second hypothesis. This indicates that earnings management could be greater in the final year of CEO service compared to the average year when controlling for the early years. However, since the *Final year* coefficient is not significant in all models we do not reject the null hypothesis. The adjusted R^2 is 0.14 for the Modified Jones model, 0.17 for the McNichols model and 0.12 for the Kothari model. This is the same explanatory value as in the test of the first hypothesis. Many of the control variables are significant in the test of our third hypothesis. The coefficients for *LnMVEquity*, *MarketBookRatio*, *Leverage* and *Loss* are significant with the same signs in all three models. *ROA* is significant in two of three models and *TotalAssetGrowth* is significant in one model. *CFO* and *Lagged NOA* are not significant in any of the three models in the tests of our tests.

[1] It should be noted that the *Final year* coefficient is close to being significant on the 0.05 level in the Kothari model.

Table 5.

Pearson Correlations

	McNichols	*Modified Jones*	*Kothari*	*LnMVEquity*	*MarketBookRatio*	*Leverage*	*ROA*	*Loss*	*CFO*	*Lagged NOA*
Modified Jones	0.771***	1								
Kothari	0.487***	0.666***	1							
LnMVEquity	-0.232***	-0.237***	-0.204**	1						
MarketBookRatio	0.106***	0.058	0.131***	0.084*	1					
Leverage	-0.158***	-0.099***	-0.158***	0.063*	0.063*	1				
ROA	-0.316***	-0.307***	-0.153***	0.331***	-0.097**	0.001	1			
Loss	0.304***	0.287***	0.233**	-0.337***	0.101***	-0.030	-0.647***	1		
CFO	-0.173***	-0.189***	-0.128***	0.192***	-0.001	0.094**	0.654***	-0.400***	1	
Lagged NOA	-0.050	-0.046	-0.061	-0.011	-0.015	0.216***	-0.019	0.037	-0.002	1
TotalAssetGrowth	-0.091**	-0.051	0.052	0.059	0.290***	0.046	0.123***	-0.102***	0.054	0.001

Table 6.

Panel A: Early years of CEO service and earnings management

Dependent variable = *Absolute Discretionary Accruals*

	(1) Modified Jones Model				**(2) McNichols Model**				**(3) Kothari Model**			
	Coefficients	***STD***	***t Stat***	***P-value***	***Coefficients***	***STD***	***t Stat***	***P-value***	***Coefficients***	***STD***	***t Stat***	***P-value***
Intercept	0.0677***	0.0092	7.40	0.0000	0.0600***	0.0079	7.59	0.0000	0.0533***	0.0065	8.20	0.0000
Early years	0.0148***	0.0046	3.24	0.0006	0.0126***	0.0039	3.21	0.0007	0.0100***	0.0032	3.08	0.0011
LnMVEquity	-0.0034***	0.0011	-2.98	0.0030	-0.0031***	0.0010	-3.15	0.0017	-0.0027***	0.0008	-3.36	0.0008
MarketBookRatio	0.0010*	0.0005	1.84	0.0657	0.0014***	0.0004	3.17	0.0016	0.0015***	0.0004	3.92	0.0001
Leverage	-0.0246**	0.0117	-2.10	0.0364	-0.0405***	0.0101	-3.99	0.0001	-0.0300***	0.0083	-3.60	0.0003
ROA	-0.0595***	0.0180	-3.31	0.0010	-0.0568***	0.0155	-3.65	0.0003	0.0130	0.0128	1.01	0.3110
Loss	0.0120*	0.0066	1.83	0.0674	0.0119**	0.0057	2.11	0.0355	0.0156***	0.0047	3.35	0.0009
CFO	0.0047	0.0132	0.35	0.7237	0.0137	0.0114	1.20	0.2288	-0.0104	0.0094	-1.11	0.2671
Lagged NOA	0.0000	0.0001	-0.85	0.3937	0.0000	0.0000	-0.58	0.5645	0.0000	0.0000	-0.84	0.4010
TotalAssetGrowth	-0.0023	0.0047	-0.49	0.6219	-0.0077*	0.0041	-1.88	0.0601	0.0040	0.0033	1.19	0.2352
Adjusted R^2		0.14				0.17				0.12		

****, **, * indicate significance at 0.01, 0.05, 0.1 levels respectively (1-tailed for Early years and Final year, 2-tailed for other variables, number of observations 682*

Panel B: Final year of CEO service and earnings management

Dependent variable =*Absolute Discretionary Accruals*

	(1) Modified Jones Model				(2) McNichols Model				(3) Kothari Model			
	Coefficients	***STD***	***t Stat***	***P-value***	***Coefficients***	***STD***	***t Stat***	***P-value***	***Coefficients***	***STD***	***t Stat***	***P-value***
Intercept	0.0731***	0.0090	8.08	0.0000	0.0645***	0.0079	8.18	0.0000	0.0566***	0.0064	8.83	0.0000
Final year	0.0038	0.0033	1.17	0.1215	0.0018	0.0056	0.31	0.3770	0.0076*	0.0046	1.65	0.0502
LnMVEquity	-0.0037***	0.0011	-3.25	0.0012	-0.0032***	0.0010	-3.31	0.0010	-0.0029***	0.0008	-3.61	0.0003
MarketBookRatio	0.0009*	0.0005	1.65	0.0998	0.0014***	0.0005	3.02	0.0026	0.0014***	0.0004	3.72	0.0002
Leverage	-0.0267**	0.0118	-2.21	0.0274	-0.0418***	0.0102	-4.09	0.0000	-0.0310***	0.0084	-3.70	0.0002
ROA	-0.0576***	0.0182	-3.15	0.0017	-0.0566***	0.0158	-3.59	0.0004	0.0151	0.0129	1.17	0.2425
Loss	0.0161**	0.0065	2.46	0.0141	0.0152***	0.0056	2.69	0.0073	0.0186***	0.0046	4.00	0.0001
CFO	0.0039	0.0133	0.29	0.7712	0.0136	0.0115	1.18	0.2384	-0.0112	0.0094	-1.19	0.2346
Lagged NOA	-0.0001	0.0001	-1.07	0.2866	0.0000	0.0000	-0.73	0.4663	0.0000	0.0000	-1.08	0.2797
TotalAssetGrowth	-0.0027	0.0047	-0.58	0.5617	-0.0081**	0.0041	-1.99	0.0474	0.0037	0.0033	1.11	0.2692
Adjusted R^2		0.12				0.16				0.11		

Panel C: Early years and final year of CEO service and earnings management

Dependent variable = *Absolute Discretionary Accruals*

	(1) Modified Jones Model				(2) McNichols Model				(3) Kothari Model			
	Coefficients	***STD***	***t Stat***	***P-value***	***Coefficients***	***STD***	***t Stat***	***P-value***	***Coefficients***	***STD***	***t Stat***	***P-value***
Intercept	0.0650***	0.0092	7.03	0.0000	0.0586***	0.0080	7.32	0.0000	0.0509***	0.0066	7.77	0.0000
Early years	0.0169***	0.0047	3.61	0.0002	0.0137***	0.0040	3.38	0.0004	0.0119***	0.0033	3.57	0.0002
Final year	0.0066**	0.0033	1.98	0.0239	0.0063	0.0057	1.09	0.1377	0.0115***	0.0047	2.44	0.0075
LnMVEquity	-0.0033***	0.0011	-2.93	0.0035	-0.0030***	0.0010	-3.11	0.0020	-0.0026***	0.0008	-3.29	0.0010
MarketBookRatio	0.0010*	0.0005	1.85	0.0647	0.0014***	0.0004	3.19	0.0015	0.0015***	0.0004	3.94	0.0001
Leverage	-0.0244**	0.0117	-2.09	0.0374	-0.0404***	0.0101	-3.98	0.0001	-0.0298***	0.0083	-3.59	0.0004
ROA	-0.0555***	0.0181	-3.07	0.0022	-0.0548***	0.0156	-3.50	0.0005	0.0165	0.0128	1.29	0.1985
Loss	0.0126*	0.0066	1.92	0.0555	0.0122**	0.0057	2.15	0.0318	0.0161***	0.0047	3.46	0.0006
CFO	0.0032	0.0132	0.24	0.8097	0.0130	0.0114	1.14	0.2552	-0.0117	0.0093	-1.25	0.2110
Lagged NOA	-0.0001	0.0001	-0.98	0.3290	0.0000	0.0000	-0.64	0.5207	0.0000	0.0000	-0.99	0.3209
TotalAssetGrowth	-0.0021	0.0047	-0.44	0.6578	-0.0076*	0.0041	-1.86	0.0632	0.0042	0.0033	1.26	0.2099
Adjusted R^2		0.14				0.17				0.12		

****, **, * indicate significance at 0.01, 0.05, 0.1 levels respectively (1-tailed for Early years and Final year, 2-tailed for other variables), number of observations 682*

6. Analysis and discussion

In this section we will begin by analyzing the results from our main empirical tests. We will then conduct additional tests and sensitivity analysis, which are followed by robustness checks. We will end this section by discussing our research method.

6.1 Analysis of empirical tests

We will now analyze the results for the research variables and control variables used in our main empirical tests.

6.1.1 Analysis of research variables

Hypothesis 1. Our first hypothesis tested for earnings management in the early years of CEO service. The research dummy variable *Early years* was used to indicate whether the CEO was in the first two years of taking office. The test results from all three models proved that our hypothesis was correct and that earnings management is greater during the early years with a confidence level of 0.01. These findings are consistent with the predictions from the *Big bath hypothesis* and other career concerns, which indicate larger incentives to manage earnings in this period. The findings are also in line with previous research that has found evidence of earnings management in the first years of CEO service (Pourciau, 1993; Ali & Zhang, 2015; Godfrey et al., 2003; Murphy & Zimmerman, 1993). That CEOs manage earnings in their early years has two major implications for the reliability of financial reporting in Sweden.

First, the presence of earnings management means that the quality of earnings is reduced, which has implications on the usefulness of financial reports. Dechow et al. (2010) consider earnings quality to be higher if it provides more information about financial performance that is relevant to decision makers in making a specific decision. This definition is very similar to the definition of usefulness in financial reports according to IFRS, see section 2.2. They continue by providing an overview of the nine consequences of earnings quality found in research, including findings that lower earnings quality is associated with higher cost of equity capital (Dechow et al., 1996), higher cost of debt capital (Francis et al., 2005) and lower investment efficiency (McNichols & Stubben, 2008). It can be concluded that earnings management not only decreases the usefulness of financial reports but that it also has other serious consequences for businesses.

Second, one of the key motives for managers to engage in earnings management, especially in the first years of service, is that their ability is assessed during this period (Ali & Zhang, 2015). However, this assessment becomes more difficult if CEOs are able to manage earnings so that targets are consistently reached. This problem would be even more pronounced if less competent CEOs were more likely to manage earnings, but recent findings indicate that there is no difference between more and less competent CEOs in this respect (Ali & Zhang, 2015). While both competent and less competent CEOs may engage in earnings management, these results suggest that when evaluating the skills of a new CEO, consideration should also be taken to other factors than reported earnings.

Hypothesis 2. Our second hypothesis tested for earnings management in the final year of CEO service. The research dummy variable *Final year* was used to indicate whether the CEO was in the last year before leaving office. The test results from all three models indicated that the null hypothesis was correct and that earnings management is not greater during the final year. These findings are not consistent with the *Horizon problem* or the *Cover up hypothesis*, which predict that there should be evidence of earnings management in this period. However, these results are not very surprising considering that previous studies have also shown mixed results regarding the presence of earnings management during the final year of CEO service when tested separately (Pourciau, 1993; Kalyta, 2009; Ali & Zhang, 2015). As mentioned in section 2.4, there are a number of explanations as to why this could be the case, including that opportunities to manage earnings upwards are exhausted due to previous earnings management activities (Pourciau, 1993). Before further discussing the implications of these findings we will analyze the results from the tests of our third hypothesis, which provides another perspective on earnings management in the final year.

Hypothesis 3. Our third hypothesis tested for earnings management in the final year of CEO service when controlling for the early years. The test results from all three models show that the significance level for the *Final year* coefficient increases drastically to the point that it becomes significant at the 0.01 level in the Kothari model and at the 0.05 level in the Modified Jones model. The *Early years* t-statistic also increases compared to the test of the first hypothesis and this coefficient is now significant at the 0.001 level in all three models. This further reinforces our conclusions regarding earnings management in the early years. Moreover, it implies that new CEOs manage earnings by 1.4% of lagged total assets on average in each of their first two years of service. Even if we do not reject the null hypothesis

in the test of hypothesis three it is evident that we find strong indications of earnings management in the final year when controlling for the early years. These results are more consistent with the *Horizon problem* and the *Cover up hypothesis* and with the results of Ali & Zhang (2015). Moreover, this leads to the same implications regarding earnings quality as discussed in the analysis of the results from the first hypothesis. It also suggests that CEOs who are in their final year of tenure should not be evaluated for other positions within the company based on their performance in a short time period before their resignation, since this could increase the incentives to manage earnings in this period.

Our findings also strongly indicate that there is a bias against finding evidence of earnings management in the final year of CEO service if the *Early years* variable is not included in the model. This is in line with the results by Ali & Zhang (2015) and has implications for researchers who aim to study earnings management in relation to successions. While the result of the effect is evident there are a number of possible explanations. The most likely explanation is that our two research variables interact with each other to some extent and that including both in the same regression reduces misspecification. This would not be surprising since earnings management by outgoing CEOs should affect the opportunities for the new CEO to engage in similar practices.

An important point regarding the interpretation of our results is that we are not able to draw any strong conclusions regarding the incentives for earnings management presented in section 2.4, because we have used absolute values of discretionary accruals. However, we are able to make some indicative inferences regarding these theories based on whether there is evidence of earnings management in the *Early years* or *Final year*. In section 6.2.2 we will use non-absolute values of discretionary accruals instead of absolute values, which will allow us to investigate these incentives in more detail.

6.1.2 Analysis of control variables

The control variables that were used in our main regression models showed both expected and unexpected results. We will now discuss the results for each of these variables.

LnMVEquity has a negative coefficient significant at the 0.01 level for the three models in all tests. These results are consistent with our predictions and the theory that larger firms report less aggressively due to higher political costs (Ali & Zhang, 2015).

MarketBookRatio has a positive coefficient significant at the 0.01 level in the McNichols and Kothari models and at the 0.1 level in the Modified Jones model in all tests. These results are consistent with our predictions and the theory that companies with high growth potential are more reluctant to fail earnings targets (Frankel et al., 2002).

Leverage has a negative coefficient significant at the 0.01 level in the McNichols and Kothari models and at the 0.05 level in the Modified Jones model in all tests. These results are not consistent with our predictions and the theory that high leverage, often associated with financial distress, leads to contractual renegotiations that incentivizes managers to reduce earnings in order to convince lenders that actions are being taken to improve the financial situation (DeAngelo et al., 1994). A possible explanation for these results is that lenders scrutinize levered firms more, providing less opportunity to engage in opportunistic behavior.

ROA has a negative coefficient significant at the 0.01 level in the Modified Jones and McNichols models in all tests. These results are not consistent with our predictions and the theory that discretionary accruals tend to be higher for firms that display unusually high profitability (Kothari et al., 2005). A possible explanation for these results is that firms with high performance have fewer incentives to manage earnings, while firms with very low ROA might display higher discretionary accruals if they are subject to liquidity-related transactions (Butler et al., 2004). In the Kothari model, the coefficient is positive but not significant. The difference in results can be explained by the inclusion of *ROA* in the in the Kothari model, which means that non-discretionary accruals should already reflect accruals relating to ROA.

Loss has a positive coefficient in all tests but the significance level varies. In the Kothari model it is significant at the 0.01 level in all tests, in the McNichols model at the 0.01 level in one test and at the 0.05 level in the other two tests and in the Modified Jones model the at the 0.05 level in one test and at the 0.1 level in the other two tests. These results are fairly consistent with our predictions and the theory that unexpected losses can lead to additional negative accruals such as restructuring costs (Dechow & Dichev, 2002). A possible reason for the mixed results could be that other variables that measure performance, such as *ROA* and *CFO*, capture some of the effects on accruals that are associated with losses. This explanation is also supported by the high Pearson correlations between these variables, see section 4.5. We will investigate whether multicollinearity is an issue in our tests in section 6.2.3.

CFO has a positive coefficient in the Modified Jones and McNichols models but a negative coefficient in all tests with the Kothari model. However, it is not significant in any of the tests. These results are not consistent with the theory that high cash flows reduces the need to boost income as it is an indicator of strong performance (Dechow et al., 1995). A possible reason for the mixed results is that the effect is partly captured by other performance measuring variables in the model, see section 6.2.3.

Lagged NOA has a very small coefficient that is not significant in any of the tests. These results are not consistent with the theory that inflated NOA, due to earnings overstatement in previous years, limits managers ability to further overstate earnings (Barton & Simko, 2002). A possible explanation for the discrepancy between our predictions and our results is that the inflation of NOA due to earnings management is too small in comparison with changes in sales. Hence, the variable might mainly reflect changes in the denominator instead of the intended effects. Another explanation is that extreme observations distort the findings. We will test our models after removing extreme observations in section 6.3.1.

TotalAssetGrowth has a negative coefficient significant at the 0.05 level in one of the tests and at the 0.1 level in the remaining two tests using the McNichols model. The coefficient was negative in the Modified Jones model and positive in the Kothari model but the results in the two latter models were not significant. These findings are not consistent with the theory that growth in accruals is closely linked to growth in total assets (Zhang, 2007). A possible explanation for the negative coefficients found in the McNichols and Modified Jones models is that managers may be less concerned with managing earnings if the company is growing.

6.1.3 Explanatory power

The explanatory power is lower in the tests of our three models compared to previous research. The results are fairly similar for each model in the tests of the three hypotheses, with the McNichols model consistently exhibiting the highest adjusted R^2 (0.16-0.17), Modified Jones the second highest (0.12-0.14) and Kothari the lowest (0.11-0.12). There are two main reasons for the low observed explanatory power. First, we use absolute rather than non-absolute values, which generally leads to lower explanatory power in these tests. Second, some other studies have eliminated extreme observations, thereby improving the explanatory power. We will conduct tests using non-absolute values of discretionary accruals in section 6.2.2 and tests after removing extreme observations in section 6.3.1.

6.2 Sensitivity analysis and additional tests

We will now conduct two additional tests. In the first test we will assess our definition of *Early years* by testing for earnings management in the third year of CEO service. In the second test we will test non-absolute values of discretionary accruals using our main research models to see if we can find evidence for earnings overstatement or understatement in relation to CEO successions. We will then test for multicollinearity and heteroscedasticity.

6.2.1 Definition of early years

Previous studies have tested for earnings management in different time periods in the early years of CEO service. Some researchers have only studied the first year (Choi et al., 2014), while others have studied the first two years (Pourciau, 1993) or even first three years of service (Ali & Zhang, 2015). We have defined *Early years* as the first two years of CEO service in our main tests as this is the period in which most researchers have found significant evidence of earnings management. However, since different definitions and time periods have been used in the past we chose to conduct a sensitivity test where we include the first three years of CEO tenure as separate dummy variables, *Change year*, *Second year* and *Third year*. As we cannot conclude if the CEO is in the third year of service prior to 2010 due to limited data on CEO tenure, we only conduct this test for data in the period 2010-2013. The reasoning behind this limitation is similar to the reasoning in section 4.2. Since only one year is excluded compared to our previous tests we believe the results to be largely representable for the whole period. The results of these tests are presented in Appendix E.

We find that the research variable coefficients in the Modified Jones and McNichols model are positive for all three years but only significant for the *Change year* variable and the *Second year* variable. The corresponding coefficients for the Kothari model are positive but only significant for the *Change year* variable. These findings indicate that CEOs manage earnings primarily in the first two years of their service, supporting our original definition of *Early years*. While this supports the hypothesis that CEOs manage earnings in their first two years of service to reduce uncertainty about their skills, it does not fit as well with the *Big bath hypothesis* that predicts higher manipulation in the first year and a period of large reversals. These results indicate that career concerns might be a more important motive for CEOs to manage earnings. The control variables coefficients are similar to the test of our first hypothesis, see Table 6, Panel A.

6.2.2 Non-absolute discretionary accruals

As mentioned in section 3.6, accrual-based models for detecting earnings management can either use absolute or non-absolute values of discretionary accruals as dependent variables. Absolute values are used to test for the existence of earnings management while non-absolute values are used to identify overstatement or understatement of earnings. In the test of our three main hypotheses we have used absolute values of discretionary accruals but in order to evaluate the incentives behind earnings management we will now test our third hypothesis using non-absolute values. We include the *Change year* and the *Second year* as separate variables since the *Big bath hypothesis* predicts that earnings should be understated in the first year and overstated in the second year. The results of these tests are presented in Appendix F.

We find that both research variables and control variables exhibit major differences in comparison to the results in the test of our third hypothesis, see Table 6, Panel C. Using non-absolute values of discretionary accruals as our dependent variable, we do not find any evidence of significant overstatement or understatement in the first two years or in the final year of service. The *Change year* coefficient is slightly negative in the tests of the Modified Jones and Kothari models, which is consistent with the *Big bath hypothesis*. However, in the McNichols model the coefficient for the *Change year* is slightly positive, which is not in line with the *Big bath hypothesis*. Instead this indicates that CEOs boost company earnings even when the results may be partially accredited to their predecessors. The *Second year* coefficient is negative in all three models, which is not in line our predictions. We expected the *Second year* coefficient to be positive to reflect reversals of big baths in the first year and manipulation to signal high performance. The *Final year* coefficient is positive, in line with the *Horizon problem* and the *Cover up hypothesis.* However, the t-statistics are too small to provide any evidence for either of these theories. Many of the control variables that have shown to be significant in our test for earnings management are not significant when using non-absolute values of discretionary accruals.

6.2.3 Multicollinearity

Multicollinearity exists when independent variables in a multiple regression model are highly correlated. This leads to problems when interpreting results from statistical tests as the explained variance can be randomly distributed between intercorrelated variables (Farrar & Glauber, 1967). We test for multicollinearity by examining *Tolerance* levels and *Variance Inflation Factors* (VIF) for the variables in our main regression model. The *Tolerance* level is

defined as the proportion of the explained variance in the dependent variable that is not related to other independent variables. The *VIF* is the reciprocal of the *Tolerance* and a *VIF* over the cut-off points of 4 or 10 indicate issues with multicollinearity (O'Brien, 2007). The results of these tests are presented in Appendix G. We find that all our variables exhibit *VIF* below both the higher and the lower cut-off point in our three regression models. This suggests that our models are not subject to substantial multicollinearity issues. A few variables exhibit *VIF* that are not close to 1, these are *ROA* (2.71), *Loss* (1.85) and *CFO* (1.81). This is not unexpected as these variables all measure financial performance and was shown to be highly correlated to each other in section 4.5. We note that this could have an effect on the interpretation of the results for these control variables but that our main hypotheses are not affected.

6.2.4 Heteroscedasticity

Heteroscedasticity exists when variables in a regression model exhibit different variances, which violates an assumption in ordinary least squares (OLS) regressions. This does not affect the estimation of coefficients but can lead to incorrect conclusions about their significance due to the biased estimates of standard errors (Cohen et al., 2002). In our models independent variables are scaled by lagged total assets, which reduces but does not completely eliminate heteroscedasticity (Kmenta, 1986). Since heteroscedasticity can still constitute a problem in our regression models we conduct a test proposed by White (1980), which unlike other similar tests does not require that errors follow a normal distribution. In the White test the squared residuals from the original regression model are used as dependent variables in a regression and the original independent variables, as well as their squares and cross products, are used as independent variables. The resulting R^2 is then multiplied with the sample size and tested against a chi-square distribution where the degrees of freedom is equal to the number of estimated parameters. The results from our tests are presented in Appendix H. We find that the significance level in the test for heteroscedasticity is very high, between 0.96 and 0.99, in all three models. Hence, we do not reject the null hypothesis and conclude that the coefficients in our regression models are not biased by underestimated standard errors.

6.3 Robustness tests

In this section we will present a robustness test in which we remove extreme observations in all our non-dummy variables in the test of our third hypothesis.

6.3.1 Removed extreme observations

A number of previous earnings management studies have excluded extreme observations from their test samples to prevent their results from being biased by outliers (Dechow & Dichev, 2002; Kothari et al., 2005). To explore if our results are robust to excluding extreme observations we test our third hypothesis with a sample excluding the 1% and 99% percentile observations for all variables that can take on other values than only 0 and 1. The results from these tests are presented in Appendix I. We find that the results are similar to the results in our previous tests with all coefficients taking the same signs and with only slight deviations in significance levels. However, the explanatory power increases significantly in two of three models in this robustness check. In the McNichols model the adjusted R2 increases from 0.17 to 0.21 and in the Modified Jones model it increases from 0.14 to 0.20. This is expected as outliers tend to deviate more from the model predictions and can partly explain why the observed explanatory power of our tests is lower compared to other studies that have excluded outliers.

6.4 Research method discussion

In this section we will begin by addressing criticism of accrual-based models for detecting earnings management. We will then discuss validity, reliability and comparability.

6.4.1 Criticism of accrual-based models

The use of accrual-based models to estimate earnings management has been criticized in research. A major problem is that it is difficult to determine if accruals reflect management discretion (McNichols, 2000). Models have become increasingly sophisticated to cope with this problem, but as discretion is unobservable by nature, this problem can never be fully eliminated. As models are flawed, the power of empirical test will be reduced and affected by bias (Young, 1999). To provide a more precise estimate of management discretion, some authors have suggested focusing on a single component of earnings (McNichols, 2000; Bernard & Skinner, 1996). However, this approach means that other forms of earnings management might go undetected. Concerns have also been raised that accrual-based models fail to show why managers choose to intervene in financial reporting. Some have argued that managers' discretion is likely to reflect opportunistic behavior while others have argued that managers may instead be attempting to increase the informational value of accounting numbers (Watts & Zimmerman, 1996). However, despite the criticism, accrual-based models remain the most common approach to measure earnings management in research.

6.4.2 Validity, reliability and comparability

In regards to the validity of our study, we have sought to make deliberate decisions regarding all aspects of delimitation, data sample, models and tests. We chose to limit ourselves to Swedish group companies listed on the main market to ensure that all companies operated under similar conditions in terms of rules and regulations. In order to avoid biased observations we were also very careful to only include data from companies in our sample during the years in which they satisfied all our requirements. Furthermore, we have been mindful of different definitions of variables and chosen those definitions that we believe would contribute to fulfilling the purpose of our study. We have also examined multicollinearity and heteroscedasticity, and found no indications that these effects have distorted our results. One problem that may impact our validity is that accrual-based models for detecting earnings management have been found to systematically include activities other than earnings management. This means that our proxy for earnings management does not only reflect management discretion but also a certain amount of noise.

In terms of the reliability of our study, we believe that our results are replicable and that the consistency of our findings, including sensitivity analysis and robustness checks, is high. Our references have strong trustworthiness and we have used established data sources such as Retriever Business, Thomson Reuters Datastream and industry classification databases provided by the Swedish House of Finance. The internal consistency reliability of our three models also seems strong, as the models have generally reached similar conclusions, especially in regards to our research variables. The same holds true for the tests of our different hypotheses, even when using different definitions of certain variables.

The comparability of our study is enhanced by our use of multiple models and different definitions of research variables in our sensitivity analysis and additional tests. The comparability of our study is slightly mitigated by the fact that we focus more on finding evidence to support the existence of earnings management in relation to successions, as opposed to investigating the direction of earnings management and the relating incentives. However, we think that we make a modest contribution to this discussion through our tests with non-absolute values of discretionary accruals. Finally, we have looked at a relatively short time period in comparison to some of the previous studies in our field. This means that we have been unable to cover a full business cycle and our results may reflect that we study a time period characterized by recovery from a financial crisis.

7. Suggestions for future research

In our study we have focused on earnings management in connection with CEO successions in Swedish listed companies. In this process we have made a number of delimitations and also identified a number of areas that could be of interest but have been out of the scope of this thesis. We will now present these findings as suggestions for future research.

We have used accrual-based models that have been developed for studies on U.S. data. Since researchers have predicted that there are differences in financial reporting between different countries (Nobes, 1998), it would be interesting to study how these models behave on data from other countries with different accounting practices. It could also be instructive to study the control variables used in the main regression model, as national differences in financial reporting or performance evaluation metrics could mean that different variables should be considered. This would contribute to the existing literature on the development and evaluation of models for detecting earnings management.

In our study, we have found evidence of earnings management in a sample of companies that belong to six different GICS sectors. However, it is possible that earnings management is more prevalent in some sectors if the incentives to manage earnings are higher. For example, the incentives could be higher in industries that are highly volatile or have higher CEO turnover rates. Studying the phenomenon that different business cycles also could have an effect on CEO incentives could increase the understanding for earnings management. For example, it has been found that CEOs tend to take big baths in downturns when they already experience losses (Kothari et al., 2005).

Previous studies in the U.S. have found that earnings management is reduced if firms are monitored more closely (Ali & Zhang, 2015) and similar results could be expected for corporate governance factors, which are intended to ensure that "companies are run as efficiently as possible in the interests of their shareholders" (Swedish Corporate Governance Board, 2016). Since Sweden is known for its demanding corporate governance code it would be valuable to investigate if this reduces opportunistic management behavior. Our study has found evidence of earnings management in a sample of firms that are obliged to follow the Swedish corporate governance code. However, a more thorough investigation would be interesting for the purpose of evaluating the effectiveness of corporate governance.

8. Summary and conclusions

In this study we have investigated earnings management in connection with CEO successions in Swedish listed companies. Using three different accrual-based models for detecting earnings management, we have found evidence suggesting that CEOs engage in earnings management in the first two years of their service. We also tested for earnings management in the final year of CEO service but did not initially find evidence that CEOs manage earnings in that period. However, when controlling for earnings management in the early years of CEO service, we found evidence of earnings management in the final year in two of three models. This suggests that the capability to detect earnings management in the final year is increased when early years is included in the models. Overall, our results indicate that CEOs also manage earnings to some degree in their final year of service and that models need to consider earnings management in the early years in order to avoid model misspecification.

Previous studies on earnings management in relation to CEO successions have mainly been conducted on U.S. data and our study contributes to the understanding of this phenomenon in Sweden. Our results are similar to the findings in previous research, indicating that CEOs in listed Swedish firms engage in earnings management like their U.S. counterparts. Since earnings management reduces the reliability and usefulness of financial reports, our findings indicate that users of financial reports should consider these effects before making economic decisions. Furthermore, evidence on the presence of earnings management suggests that opportunistic behavior by CEOs has not changed drastically after the financial crisis. This indicates that current control mechanisms and regulations in Sweden do not appear to deter managers from earnings manipulation.

We believe that our study is a step towards an increased understanding in regards to the recent effects of opportunistic CEO behavior and the reliability of financial reports in Sweden. However, we recognize that there are many situations where managers have incentives to manipulate earnings and that more research is needed to document earnings management in a variety of settings. We also identify some areas for future research, including how monitoring and corporate governance affects earnings management, how the incentives to manage earnings are different between industries and how national differences in accounting could affect model specifications.

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Appendix

Appendix A.

Descriptive statistics – Firm observations per industry and year (all industries)

Sector code	Industry	2009	2010	2011	2012	2013	Total
10	*Energy*	*2*	*2*	*2*	*2*	*2*	**10**
15	*Materials*	*8*	*8*	*8*	*8*	*7*	**39**
20	*Industrials*	*55*	*55*	*54*	*54*	*52*	**270**
25	*Consumer discretionary*	*13*	*15*	*16*	*19*	*19*	**82**
30	*Consumer staples*	*4*	*4*	*4*	*4*	*4*	**20**
35	*Healthcare*	*17*	*15*	*15*	*16*	*16*	**79**
40	*Financials*	*14*	*14*	*13*	*13*	*13*	**67**
45	*Information technology*	*29*	*29*	*28*	*29*	*30*	**145**
50	*Telecommunication services*	*4*	*4*	*4*	*4*	*4*	**20**
55	*Utilities*	*0*	*0*	*0*	*0*	*0*	**0**
	Total	**146**	**146**	**144**	**149**	**147**	**732**

Appendix B.

CEO succession variables per year

Year	2009	2010	2011	2012	2013	Total
Change year	*17*	*13*	*38*	*22*	*30*	***120***
Second year	*18*	*16*	*6*	*25*	*14*	***79***
Final year	*13*	*28*	*9*	*17*	*7*	***74***
"Normal year"	*88*	*79*	*81*	*75*	*86*	***409***
Total	**136**	**136**	**134**	**139**	**137**	**682**

Appendix C.

CEO successions per industry and year (change year)

Year	2009	2010	2011	2012	2013	Total
Materials 15	*0*	*0*	*3*	*2*	*1*	***6***
Industrials 20	*6*	*7*	*11*	*7*	*8*	***39***
Consumer discretionary 25	*3*	*0*	*6*	*4*	*4*	***17***
Healthcare 35	*0*	*0*	*6*	*2*	*5*	***13***
Financials 40	*0*	*1*	*3*	*2*	*2*	***8***
Information technology 45	*8*	*5*	*9*	*5*	*10*	***37***
Total	**17**	**13**	**38**	**22**	**30**	**120**

Appendix D.

Number of CEO changes per company (2009-2013)

Number of changes in the period	0	1	2	3	4	5	Total
Number of companies	73	45	22	9	1	0	**150**

Appendix E.

Definition of early years

Dependent variable = *Absolute Discretionary Accruals*

	(1) Modified Jones Model				(2) McNichols Model				(3) Kothari Model			
	Coefficients	***STD***	***t Stat***	***P-value***	***Coefficients***	***STD***	***t Stat***	***P-value***	***Coefficients***	***STD***	***t Stat***	***P-value***
Intercept	0.0775***	0.0111	7.01	0.0000	0.0696***	0.0095	7.31	0.0000	0.0574***	0.0077	7.44	0.0000
Change year	0.0147**	0.0065	2.25	0.0124	0.0099*	0.0056	1.77	0.0385	0.0121***	0.0046	2.67	0.0039
Second year	0.0173**	0.0078	2.21	0.0138	0.0146**	0.0067	2.18	0.0149	0.0055	0.0055	1.01	0.1556
Third year	0.0063	0.0087	0.72	0.2353	0.0021	0.0075	0.28	0.3892	0.0019	0.0061	0.31	0.3767
LnMVEquity	-0.0043***	0.0013	-3.19	0.0015	-0.0038***	0.0012	-3.31	0.0010	-0.0030***	0.0009	-3.19	0.0015
MarketBookRatio	0.0008	0.0006	1.35	0.1788	0.0011**	0.0005	2.32	0.0205	0.0014***	0.0004	3.46	0.0006
Leverage	-0.0298**	0.0141	-2.11	0.0351	-0.0445***	0.0121	-3.67	0.0003	-0.0362***	0.0098	-3.67	0.0003
ROA	-0.0731***	0.0220	-3.31	0.0010	-0.0732***	0.0190	-3.86	0.0001	0.0101	0.0154	0.66	0.5107
Loss	0.0117	0.0083	1.41	0.1597	0.0130*	0.0071	1.82	0.0692	0.0143**	0.0058	2.48	0.0135
CFO	0.0142	0.0185	0.77	0.4434	0.0287*	0.0159	1.80	0.0727	-0.0122	0.0129	-0.95	0.3447
Lagged NOA	0.0000	0.0001	-0.61	0.5424	0.0000	0.0001	-0.31	0.7531	0.0000	0.0001	-0.56	0.5754
TotalAssetGrowth	-0.0025	0.0051	-0.50	0.6191	-0.0085*	0.0044	-1.93	0.0545	0.0041	0.0036	1.14	0.2538
Adjusted R^2		0.15				0.18				0.12		

Appendix F.

Non-absolute discretionary accruals

Dependent variable = *Discretionary Accruals*

	(1) Modified Jones Model				(2) McNichols Model				(3) Kothari Model			
	Coefficients	***STD***	***t Stat***	***P-value***	***Coefficients***	***STD***	***t Stat***	***P-value***	***Coefficients***	***STD***	***t Stat***	***P-value***
Intercept	0.0355***	0.0116	3.07	0.0022	0.0212**	0.0101	2.09	0.0374	0.0163*	0.0094	1.73	0.0835
Change year	-0.0002	0.0070	-0.02	0.9801	0.0046	0.0061	0.75	0.4550	-0.0032	0.0057	-0.56	0.5769
Second year	-0.0064	0.0081	-0.79	0.4286	-0.0021	0.0071	-0.30	0.7652	-0.0038	0.0066	-0.58	0.5611
Final year	0.0078	0.0083	0.95	0.3444	0.0039	0.0073	0.53	0.5962	0.0048	0.0067	0.71	0.4802
LnMVEquity	-0.0390***	0.0014	-2.77	0.0057	-0.0020*	0.0012	-1.65	0.0994	-0.0009	0.0011	-0.80	0.4228
MarketBookRatio	0.0003	0.0007	0.48	0.6321	-0.0002	0.0006	-0.29	0.7726	-0.0010*	0.0006	-1.80	0.0719
Leverage	0.0043	0.0146	0.30	0.7680	-0.0007	0.0128	-0.05	0.9592	-0.0005	0.0119	-0.04	0.9684
ROA	0.2077***	0.0226	9.20	0.0000	0.1667***	0.0198	8.41	0.0000	0.0639***	0.0184	3.48	0.0005
Loss	-0.0271***	0.0082	-3.30	0.0010	-0.0286***	0.0072	-3.97	0.0001	-0.0067	0.0067	-1.00	0.3174
CFO	-0.1687***	0.0165	-10.24	0.0000	-0.1161***	0.0144	-8.03	0.0000	-0.1223***	0.0134	-9.12	0.0000
Lagged NOA	0.0000	0.0001	0.29	0.7727	0.0000	0.0001	0.25	0.7996	0.0000	0.0001	0.16	0.8727
TotalAssetGrowth	0.0007	0.0058	0.11	0.9111	0.0017	0.0052	0.34	0.7371	0.0021	0.0048	0.44	0.6597
Adjusted R^2		0.21				0.20				0.11		

****, **, * indicate significance at 0.01, 0.05, 0.1 levels respectively (1-tailed for Change year, Second year and Third year (Appendix E), 2-tailed for other variables), number of observations 546 (Appendix E), 682*

Appendix G.

Multicollinearity

Dependent variable = *Absolute Discretionary Accruals*

	(1) Modified Jones Model		**(2) McNichols Model**		**(3) Kothari Model**	
	Tolerance	***VIF***	***Tolerance***	***VIF***	***Tolerance***	***VIF***
Early years	0.87	1.15	0.88	1.14	0.87	1.15
Final year	0.93	1.08	0.93	1.08	0.93	1.08
LnMVEquity	0.82	1.22	0.84	1.19	0.82	1.22
MarketBookRatio	0.88	1.14	0.87	1.16	0.88	1.14
Leverage	0.93	1.08	0.93	1.08	0.93	1.08
ROA	0.37	2.71	0.37	2.71	0.37	2.71
Loss	0.54	1.86	0.54	1.85	0.54	1.86
CFO	0.55	1.81	0.55	1.81	0.55	1.81
Lagged NOA	0.95	1.06	0.95	1.06	0.95	1.06
TotalAssetGrowth	0.89	1.12	0.88	1.13	0.89	1.12

Appendix H.

Heteroscedasticity

Dependent variable = Absolute Discretionary Accruals

	(1) Modified Jones Model	**(2) McNichols Model**	**(3) Kothari Model**
White's General Test	*37.873*	*42.555*	*43.612*
Significance level	*0.9933*	*0.9719*	*0.9632*
R^2	*0.0555*	*0.0624*	*0.0639*

Appendix I.

Removing extreme observations

Dependent variable = *Absolute Discretionary Accruals*

	(1) Modified Jones Model				(2) McNichols Model				(3) Kothari Model			
	Coefficients	***STD***	***t Stat***	***P-value***	***Coefficients***	***STD***	***t Stat***	***P-value***	***Coefficients***	***STD***	***t Stat***	***P-value***
Intercept	0.0624***	0.0087	7.21	0.0000	0.0535***	0.0074	7.24	0.0000	0.0477***	0.0065	7.29	0.0000
Early years	0.0136***	0.0042	3.25	0.0006	0.0084***	0.0036	2.33	0.0100	0.0122***	0.0032	3.84	0.0001
Final year	0.0110**	0.0062	1.79	0.0371	0.0062	0.0052	1.18	0.1195	0.0081**	0.0047	1.73	0.0416
LnMVEquity	-0.0033***	0.0011	-3.08	0.0021	-0.0032***	0.0009	-3.58	0.0004	-0.0030***	0.0008	-3.81	0.0002
MarketBookRatio	0.0056***	0.0013	4.38	0.0000	0.0057***	0.0010	5.54	0.0000	0.0047***	0.0010	4.85	0.0000
Leverage	-0.0153	0.0137	-1.12	0.2638	-0.0297**	0.0116	-2.56	0.0108	-0.0041	0.0104	-0.40	0.6902
ROA	-0.1795***	0.0295	-6.08	0.0000	-0.1393***	0.0251	-5.55	0.0000	-0.0325	0.0223	-1.46	0.1453
Loss	-0.0050	0.0067	-0.75	0.4517	0.0034	0.0057	0.60	0.5459	0.0094*	0.0050	1.86	0.0638
CFO	0.0334	0.0295	1.13	0.2580	0.4800*	0.0255	1.88	0.0602	0.0134	0.0223	0.60	0.5486
Lagged NOA	-0.0002	0.0010	-0.24	0.8085	0.0001	0.0008	0.15	0.8847	-0.0013*	0.0007	-1.73	0.0839
TotalAssetGrowth	0.0134	0.0117	1.15	0.2510	0.0111	0.0099	1.12	0.2623	0.0180**	0.0088	2.03	0.0425
Adjusted R^2	0.20				0.21				0.13			

****,**,* indicate significance at 0.01, 0.05, 0.1 levels respectively (1-tailed for Early years and Final year, 2-tailed for other variables), number of observations 618*