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Big Bath Accounting in Norway

Empirical evidence on earnings management surrounding CEO turnovers in Norwegian firms

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Abstract

In this thesis, we investigate the empirical relationship between CEO turnovers and big bath accounting by analyzing 5 979 Norwegian firms from 1999 to 2013. Using OLS and Fixed Effects regressions on panel data, we investigate if incoming CEOs make reporting choices that reduce earnings in their initial year, i.e. take a big bath. The big bath allows incoming CEOs to artificially enhance earnings in later periods, in addition to setting an initial low performance benchmark. We follow existing literature and analyze the turnovers' effect on earnings in combination with revenue, write-downs and discretionary accruals. We distinguish between non-routine and routine turnovers, as well as divide our sample according to firm size. Our analysis suggest a clear correlation between low earnings and non-routine CEO turnovers, while it does not provide evidence of big bath accounting in routine turnovers. We also find indications of earnings reducing discretionary accruals and higher write-downs in the turnover year. As non-routine turnover often occurs in relation to bad firm performance, it is hard to determine if low earnings cause the turnover or if the turnover causes the low earnings. The issues with reversed causality make it hard to conclude with certainty that earnings are intentionally managed down in the turnover year rather than a result of bad firm performance. However, our finding of decreasing earnings combined with increasing revenue in the turnover year is consistent with big bath accounting, and calls for further investigation.

Preface

With this thesis, we conclude a Master of Science degree in Economics and Business Administration at the Norwegian School of Economics (NHH). The purpose of this thesis is to investigate whether newly appointed Norwegian CEOs engage in earnings management. To our knowledge, there has been no studies on big bath accounting in Norway. Being able to contribute to narrow a research gap has been a motivation in itself throughout the process. The process has been both challenging and rewarding, and we have enhanced our knowledge of earnings management in addition to increasing our competence in econometrics and the methodology for conducting an empirical analysis.

We would like to express our gratitude to our supervisor, Ragnhild Balsvik, for her guidance and feedback throughout this process. She has generously shared of her experience and expertise. Furthermore, we wish to thank SNF, center for applied research at NHH, for providing us with data material crucial for our analysis. Finally, we wish to thank our family and friends for their encouragement and support.

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1. Introduction

In recent years, deliberate manipulation or misrepresentation of reported earnings have surfaced through several large corporate scandals worldwide. In the wake of these revelations of earnings management, the interest in how firms pursue their financial reporting has increased the attention towards correct and fair accounting. The practice of earnings management weakens the credibility of financial records, and according to the Norwegian Ministry of finance (2008), it is one of the most common means used to mislead investors, creditors and other stakeholders. In order to limit earnings management, it is essential to know how it is performed and to which extent it occurs.

In the early 1930s, Berle and Means (1932) argued that legal, organizational, and technological developments in the 19th century eroded the power and influence of stockholders, and led to large firms being controlled by professional managers. This is known as the separation of ownership and control. Researchers, such as Monsen and Downs (1965), suggest that this separation often causes the motivation of managers to be quite different from that of stockholders. The stockholders will seek to maximize the long-term value of the firm, while managers might have a shorter horizon or a self-interest that is not aligned with increasing long-term firm value. While management has access to information about the firm on a daily basis, stockholder's information is restricted to what management presents them. This asymmetric information between stockholders and management provides opportunities for earnings management. Modern accounting principles tries to limit these opportunities through extensive regulations covering firm's accounting practices. However, the accounting standards include a certain amount of flexibility in the sense that accounting regulation often permits a choice of policy, for example in respect to asset valuation. This flexibility represents considerable latitude for managers to engage in earnings management (Healy & Whalen, 1999).

Big bath accounting is a specific pattern of earnings management recognized by low earnings in one period and higher earnings the next period. Firms lower earnings by reporting large write-downs, managing accruals or through other means that exaggerate the costs in a period, i.e. take a big bath. The big bath relieves future periods of the burden of these costs and thereby create a favorable platform for future earnings. Firms typically engage in big bath accounting when earnings are already depressed or in relation to a Chief Executive Officer (CEO) turnover. In a CEO turnover, the incoming CEO is usually first evaluated after his first full

year, but has control over the financial reporting in the turnover year. By performing a big bath, incoming CEOs can set an initial low benchmark against which future performance is judged, while at the same time blame the poor performance on their predecessor.

In this paper, we will examine the effect of a CEO turnover on earnings, write-downs and accruals in the turnover year, as well as two years before and after the turnover. We will look at Norwegian firms in the period 1999-2013. We will distinguish between non-routine and routine turnovers, as non-routine turnovers typically create more incentives for engaging in big bath accounting (Pourciau, 1993). We will also investigate whether the prevalence of big bath accounting varies with firm size. We address the following three questions in our thesis: First, do firms that appoint a new CEO report significantly lower earnings in the turnover year and higher earnings the following year? Do CEOs manage earnings through discretionary accruals and write-downs? Second, is earnings management more prevalent in firms with non-routine CEO turnovers than in firms with routine CEO turnovers? Third, is big bath accounting in relation to CEO turnover more prevalent in larger firms than in smaller firms? The first question addresses big bath accounting in general, while the second and third question separates the sample based on type of turnover and size.

The literature includes well-documented research on the phenomenon big bath accounting in several countries. In sum, prior studies have consistently found downward earnings management through discretionary accruals or write-downs in a CEO turnover year (e.g. Moore (1973), Bengtsson, Bergström and Nilsson (2008), Choi, Kwak and Choe (2014)). The findings of Murphy and Zimmerman (1993), Pourciau (1993) and Wells (2002) suggest that big bath accounting only occurs in the case of non-routine turnovers. To the best of our knowledge, our study is the first on big bath accounting surrounding CEO turnovers in Norwegian firms.

We use data consisting of company and accounting information on Norwegian firms provided by SNF, center for applied research at NHH. We will analyze a panel data sample of 73 081 observations and 5 979 firms over 15 years. The sample contains 2 371 CEO turnovers in 2 180 firms. Due to the characteristics of our data, our empirical method consists of several OLS and FE regressions.

Our analysis reveal that earnings are significantly lower in the year before a turnover. This aligns with previous research, which finds that poor firm performance increase the probability

of a turnover (Murphy & Zimmerman, 1993). Moreover, we find a further decrease in earnings in the turnover year before earnings increase the following year. In other words, our analysis reveals a V-shaped earnings curve, which is characteristic for big bath accounting. However, we encounter some problems related to endogeneity and reversed causality. The further decrease in earnings can be a result of bad firm performance prior to the turnover, meaning that the bad performance causes the turnover, and not vice versa. This makes it difficult to conclude with certainty that the earnings decrease in the turnover year is caused by opportunistic earnings management. However, while earnings decrease in the turnover year, we find that revenue increase. The development in revenue contradicts the argument that the further decrease in earnings is a result of bad firm performance. Thus, we conclude that our findings are consistent with what we would expect to see in the case of big bath accounting.

We structure our thesis as follows. In section 2, we present relevant theory on earnings management and big bath accounting. In this section, we focus on the incentives and opportunities for engaging in earnings management, while we regard previous empirical evidence in section 3. Next, in section 4, we present the formal hypotheses, which forms a basis for how we conduct our analysis. In section 5, we present our final dataset along with a discussion of certain limitations in our sample. In this section, we also include a description of the most relevant variables for our empirical analysis. Section 6 outlines descriptive statistics for our dataset. Moreover, in section 7, we present the empirical methods applied in our analysis, as well as addressing some econometric pitfalls. Sector 8 outlines the results from the empirical analysis, and finally, in section 9, we present our conclusions and a final discussion of our results.

2. Earnings Management and Big Bath Accounting

In this section, we provide a short review of relevant theory regarding earnings management and big bath accounting. First, we will look at earnings management, before we look more closely at big bath accounting. We will present the characteristics of the phenomenon, as well as look at the specific parts of a firm's financial records the CEO can use to manage earnings.

2.1 Earnings Management

Earnings, also referred to as net income, is a summary item represented by the bottom line of the income statement. Analysts and investors look to earnings because it represents a firm's value adding activities. Merchant and Rockness (1994) define earnings management as "Any action on the part of management which affects reported income and which provides no true economic advantage to the organization and may in fact, in the long term, be detrimental". There is a wide range of ways one can perform earnings management, but a variable suited for earnings management must, at least to some degree, be at the discretion of the management (Ronen & Sadan, 1981).

A typical purpose for performing earnings management is to increase reported earnings to meet or beat earnings benchmarks. Graham, Harvey and Rajgopal (2005) argue that the dominant reason for earnings management is capital-market related. The capital market, through investors and analysts, look to earnings to determine the attractiveness of firms' stocks. In Graham et al. (2005), over 86% of questioned Chief Financial Officers (CFOs) answered that meeting earnings benchmarks increase credibility in the capital market. The authors further reason that managers' external reputation, bonus contracts and debt covenants increase the incentives for performing earnings management. Firm's creditors often impose restrictions on dividend payouts and the issuing of additional debt in terms of accounting ratios and figures. Thus, firms have incentives to manage earnings upwards to ensure they do not breach the terms of their debt covenants and to ensure that they meet their bonus targets.

A CEO turnover affect the incentives and opportunities for engaging in earnings management. CEO turnovers involve two distinct decision makers, the departing CEO and the incoming CEO. Ronen and Yaari (2008) argue that turnovers yield two separate earnings management issues; how the departing CEO manages earnings and how the incoming CEO manages them. A departing CEO may have incentives to manage earnings upwards, either to mask poor

performance ("the cover-up problem") or to maximize his bonus payment in his last years ("the horizon problem"). In contrast, the incoming CEO may have incentives to manage earnings downwards, to create a favorable platform for future earnings, while blaming the poor performance on his predecessor. In other words, the incoming CEO has incentives to engage in big bath accounting.

2.2 Big Bath Accounting

While earnings management concerns all actions by management that affect reported earnings, big bath accounting refers to a specific pattern of earnings management; earnings are managed down in one period in order to artificially enhance earnings in later periods. CEOs that engage in big bath accounting overstate the costs of a period, i.e. take a big bath, typically when earnings are already depressed or in relation to a turnover. The advantages of taking a big bath is partially attributed to the market punishing firms relatively the same regardless of whether they barely miss their earning benchmark or falls well below it, making the downside of taking a big bath disproportionately small. At the same time, there exists a clear upside since the excessive costs in a big bath relieves future periods of the burden, and thereby makes future earning benchmarks more achievable (Henry & Schmitt, 2001).

For firms performing a big bath, there will always be a risk tied to how the capital market will receive the news of decreased earnings. However, the risk decreases when management can blame poor performance on factors outside their control, such as a general economic downturn or regulatory changes. On the note of regulatory changes, Riedl (2004) found that the adoption of a statement regarding impairment of goodwill increased CEOs' opportunity for taking a big bath[1]. Moreover, how firms compensate their CEOs may also influence the incentives for big bath accounting. In years where CEOs have reached a cap on bonus payouts or a bonus is out of reach, the CEOs will have incentives to shift earnings to future periods (Kinney & Trezevant, 1997).

An event that provides both strong incentives and opportunities for big bath accounting is a CEO turnover. Pourciau (1993) argues that to lower performance benchmarks and set achievable performance goals, an incoming CEO has incentives to engage in initial downward

[1] Riedl (2004) studied the adoption of SFAS (Statement of Financial Accounting Standard) 142 in 2002

earnings management in a turnover year. The excessive costs absorbed in a big bath also makes it possible to decrease costs in following years, and thereby achieve higher earnings. Furthermore, she argues that a turnover provides opportunities for big bath accounting since the incoming CEO has control over the financial reporting in the turnover year, without being properly evaluated before his first full year. Thus, a big bath allows incoming CEOs to blame poor performance on their predecessors.

As earnings is a summary item, it will capture the effect of big bath accounting regardless of which variables CEOs use to manipulate earnings. Hence, in cases where CEOs take a big bath, we expect to find lower earnings in the turnover year than the year before and after, i.e. a V-shaped earnings trend. Increased costs, a drop in revenue or both may cause low earnings. As it is difficult to reverse an intentional drop in revenue, this is more a sign of bad firm performance (Bengtsson, Bergström, & Nilsson, 2008). A drop in earnings is therefore a sign of big bath accounting only if it coincides with stable or increasing revenue.

Write-downs are a powerful tool to shift future expenses to current periods (Wells, 2002). If an incoming CEO reports large write-downs in the turnover year, this will lower depreciation in future periods and make it easier to reach earning benchmarks. However, a departing CEO who struggles with firm performance has incentives to cover up how bad the situation is by postponing maintenance, not writing down unprofitable divisions etc. (Murphy & Zimmerman, 1993). In such cases, large write-downs might reflect the appropriate decrease in asset value and indicate a failure of the departing CEO to act (Pourciau, 1993). In general, one cannot infer that a CEO engage in big bath accounting solely by looking at write-downs in one particular year. However, Francis, LaFond, Olsson and Schipper (2005) argue that changes in asset values are progressive and that large write-downs normally are dispersed over several years. An observation of significantly larger write-downs in one year may therefore indicate big bath accounting.

According to modern accounting principles, the income statement should present an accurate picture of the firm's economic activities rather than the actual cash flow going in and out of the firm. The difference is captured by accruals, which are defined as the difference between earnings and cash flow from operations. The principle of accrual-based accounting requires managers to move revenue and costs to their appropriate period, regardless of when the payment or expense is registered. This flexibility to make subjective decisions regarding timing of revenue and costs allows managers considerable latitude to manage earnings either

upwards or downwards (Healy and Wahlen (1999); DeFond and Park (2001)). Accrual-based accounting is divided into non-discretionary (normal) and discretionary (abnormal) components. Non-discretionary accruals are the expected levels of accruals based on factors such as sector, firm size, asset base and growth. Discretionary accruals is the difference between actual levels reported and non-discretionary accruals. Hence, a firm's level of discretionary accruals can indicate whether a CEO use his reporting flexibility to manage earnings.

2.3 Routine and Non-Routine Turnovers

A CEO turnover can occur due to a large variety of reasons, including voluntary or forced resignation, retirement, embezzlement, health issues and firm performance. Regardless of the circumstances, each turnover may be classified as one of two general types, routine and non-routine. Vancil (1987) describes a routine turnover as a fairly orderly and well-orchestrated process where the successor often is chosen several years in advance of the anticipated turnover. In the study of Bengtsson et al. (2008), they classify turnovers as routine if the departing CEO stays on the board of directors, retires, or leave the position on his own initiative. However, firms do not always have adequate opportunity to select and groom a successor. Pourciau (1993) defines non-routine turnovers as relatively unplanned events without proper time to structure the turnover. An obvious example of a non-routine turnover is the forced resignation of a CEO, typically caused by poor firm performance. Borokhovich, Parrino and Trapani (1996) find that the market views an outside successor more favorably than an inside successor when the turnover is forced. Thus, non-routine turnovers are typically sudden with an externally recruited CEO.

When firms announce a turnover, they seldom state whether the resignation of the CEO was voluntarily or forced. In the absence of adequate information, most researchers have relied on subjective assessments of firm announcements, media reports and other relevant sources in order to classify turnovers. These manual classification methods are time consuming, which limits the sample of firms possible to analyze. Pourciau (1993) classify 340 turnovers, but only analyzes the 73 turnovers she classifies as non-routine. Wells (2002) analyzes 65 turnovers of which he classifies 40 as routine and 25 as non-routine, while Godfrey, Mather and Ramsay (2003) end up with 63 turnovers, 19 routine and 44 non-routine. Godfrey et al. (2003) classify turnovers as routine if they are retirements and non-routine otherwise. Further, they drop all

turnovers where the CEO stays in the firm, as they believe this will reduce the possibility for earnings management. Bengtsson et al. (2008) analyze 63 firms and find that 25% of turnovers are non-routine.

Murphy and Zimmerman (1993) analyze a sample of over 1000 turnovers, making manual classification difficult. Consequently, they derive two other methods for classifying turnovers. The first based on the CEO's age and the second based on firm performance. When classifying turnovers according to age, all turnovers with a CEO older than 64 were assumed retirements and classified as routine, while the rest was classified as non-routine. In regards to performance, the authors find that the probability of a non-routine turnover increases with poor firm performance. Thus, Murphy and Zimmerman (1993) developed a performance index based on market-adjusted stock return and annual change in earnings. The two performance measures are included for both the turnover year and year before. After ranking the turnover firms according to this index, firms ranking above the median were classified as having a routine CEO turnover and the rest as having non-routine turnovers. Murphy and Zimmerman (1993) only finds evidence of big bath accounting for non-routine turnovers, regardless of whether the turnovers were classified based on the age of the departing CEO or based on the performance index. Moreover, the two classification methods produced roughly the same subsample of turnovers.

3. Empirical Evidence on CEO Turnovers and Big Bath Accounting

Earnings management surrounding CEO turnovers has been a subject of research since Moore (1973) found evidence of earnings reducing discretionary accounting in firms experiencing CEO turnovers. Further studies, by Strong and Meyer (1987) and Elliott and Shaw (1988), provide evidence that incoming CEOs report large discretionary write-downs and blame their predecessor. DeAngelo (1988) investigate U.S. firms where stockholders who disagree with managerial policies seek election to the firm's board of directors. She finds that newly selected management use accruals to manage earnings downwards in the turnover year in order to create a favorable picture of their own performance in the following years. Pourciau (1993) argues that the incentives for big bath accounting is more prominent in non-routine turnovers than routine turnovers, leading her to study only non-routine turnovers. She finds evidence of significantly higher write-downs in the turnover year, but acknowledges that this can be a result of past management's failure to perform necessary write-downs. Furthermore, she finds evidence of significantly lower accruals in the turnover year. Murphy and Zimmerman (1993) and Denis and Denis (1995) find evidence suggesting big bath accounting in U.S. firms, while Wells (2002) find similar results among Australian firms. Both Wells (2002) and Murphy and Zimmerman (1993) find evidence of big bath accounting in the case of non-routine CEO turnovers, but not for routine CEO turnovers

In recent studies, the focus is primarily on big bath accounting through discretionary accruals. DeFond and Jiambalvo (1994) argue that write-downs are easy to detect in the years they are undertaken and that the benefits therefore might be limited. Godfrey et al. (2003) looks at discretionary accruals surrounding CEO turnovers in 63 Australian listed firms. They argue that previous research reporting evidence of big bath accounting has been unable to determine if opportunistic behavior or poor firm performance cause the results. They therefore analyze earnings management in combination with an analysis of management's attempt to influence the interpretation of financial performance through presentation methods. The authors find some evidence of earnings reducing discretionary accruals in the turnover year and strong evidence of earnings increasing discretionary accruals the following year. Furthermore, they find evidence of firms manipulating the impression of performance in the year after a turnover, which they argue substantiates that opportunistic behavior cause the big bath. The non-routine

subsample provides the strongest support for the findings, while routine turnovers show few signs of earnings management.

Wilson and Wang (2010) analyze earnings management through discretionary accruals in around 1000 Australian listed firms. They study both a CEO turnover alone and a CEO turnover combined with a change of either CFO or board chairperson. Geiger and North (2011) study the combination of CEO and Principal Financial Officer (PFO) turnovers in around 1000 U.S. listed firms. Both papers argue that it is easier to perform earnings management if both the CEO and the one in charge of finance is replaced. Wilson and Wang (2010) find evidence of earnings management in the turnover year only when the CEO turnover is accompanied by a change in board chairperson. Geiger and North (2011) find evidence of big bath accounting through discretionary accruals in the case of CEO turnovers and in the case of a CEO turnover combined with a PFO turnover. Unlike Godfrey et al. (2003), neither Wilson and Wang (2010) nor Geiger and North (2011) distinguish between routine and non-routine turnovers.

Bengtsson et al. (2008) analyze 63 Swedish firms in the period 1995-2004. They find evidence of downward earnings management through earnings, write-downs and accruals for both routine and non-routine turnovers. They argue that opportunistic behavior rather than poor firm performance cause their results, based on the observation of increased revenue in the turnover year. Choi et al. (2014) find earnings decreasing accruals in Korean firms in the turnover year when the departure is forced and the successor is internal. They analyze 1209 observations between 2001 and 2010. Instead of the typical separation in routine and non-routine turnovers, they divide the turnovers into four groups based on whether the departure was a retirement or forced, and whether the successor was internal or external. They address the problem of endogeneity caused by the fact that a CEO turnover often is correlated with other characteristics that also affect the firm's earnings management decisions. They follow Murphy and Zimmerman (1993) and argue that past performance, measured through return on assets and stock return, is correlated with CEO turnovers, but not with discretionary accruals. In their analysis, they therefore use this measure of firm performance as an instrument variable for CEO turnover and run the regressions as two stage least squares (2SLS). In section 7, we argue why this is not a suitable approach in this thesis. Choi et al. (2014) run the same analysis in the following three models; regular OLS that control for firm performance, 2SLS and finally Heckman's two stage approach. All three models yield the same qualitative findings; earnings decreasing accruals in the case of forced CEO departures combined with internal successors.

4. Hypotheses About the Extent of Earnings Management

Existing research has shown that incoming CEOs have incentives to take a big bath when they are first appointed (e.g. Strong and Meyer (1987), DeAngelo (1988), Pourciau (1993), Murphy and Zimmerman (1993), Denis and Denis (1995), Wells (2002)). The incoming CEOs "clean the corporate financial house" by making reporting choices that reduce reported earnings in their first year in order to boost future earnings. Excessive write-downs in the turnover year will reduce the need for future write-downs, as well as lower the depreciation costs (Wells, 2002). However, in recent research the attention has shifted from write-downs to discretionary accruals (e.g. Godfrey et al. (2003), Wilson and Wang (2010), Geiger and North (2011), Choi et al. (2014)). Reducing discretionary accruals will move earnings from one period to another, resulting in both low earnings in the turnover year and artificially enhanced earnings in later periods. Overall, we expect to find lower accruals and higher write-downs in the turnover year and higher accruals and lower write-downs the following year.

> *H_1: Firms that appoint a new CEO report significantly lower earnings in the turnover year and higher earnings the following year. CEOs manage earnings through discretionary accruals and write-downs.*

Previous studies have found that big bath accounting is more prevalent in the case of non-routine turnovers (e.g. Wells (2002), Murphy and Zimmerman (1993), Godfrey et al. (2003)). Wells (2002) argues that such turnovers usually provide greater incentives for engaging in big bath accounting and that it is easier to get away with earnings management in the chaotic environment that typically arises after a sudden CEO turnover. In contrast, in a routine turnover the incoming CEO is often recruited internally and have typically filled a prominent position in the firm. Thus, blaming poor results on past decisions may also be attributable to his own involvement or skills. This makes it less likely that a routine turnover will provide incentives or opportunities to engage in big bath accounting. We therefore expect to find stronger evidence of big bath accounting in the case of non-routine turnovers.

> *H_2: Big bath accounting is more prevalent in firms with non-routine turnovers than in firms with routine turnovers.*

Existing research has primarily looked at samples with large firms. As we look at firms based in Norway, as opposed to the U.S. or Australia, the firms we study inevitably will be smaller. In general, larger firms tend to be public firms that experience more pressure from the capital market to meet or beat earnings benchmarks. Moreover, larger firms typically have a more distinct separation between management and stockholders. Thus, in many cases, large firms have more opportunities and incentives to engage in big bath accounting. While previous research has found empirical results when studying large firms, there is no evidence suggesting that smaller firms also engage in big bath accounting. This leads us to believe that we will find stronger indications of big bath accounting among the largest firms in our sample.

> *H_3: Big bath accounting in relation to CEO turnover is more prevalent in larger firms than in smaller firms.*

5. Data Description

In this section, we will present our data sample, the data cleaning process and present the variables we have deemed relevant for our analysis. Furthermore, we will present our method for distinguishing between routine and non-routine turnovers, before we discuss some limitations in our data sample.

5.1 Description of Dataset and Restrictions

We use a database consisting of company and accounting information on Norwegian firms, both from the income statement and the balance sheet. We use the individual firm's information, not data from the consolidated financial statements. The database also includes non-accounting company information. This is primarily information on sector, location, ownership and board composition, but also more specific information such as funding year, year of a management turnovers, number of employees etc. The database is provided by SNF, center for applied research at NHH and is managed by Endre Berner, Aksel Mjøs and Marius Olving. They gather data from Brønnøysund Register Centre via Bisnode D&B Norway AS and in collaboration with Menon Business Economics AS (Berner, Mjøs, & Olving, 2015).

The database contains data from 1991 to 2013. Information regarding CEO turnovers is introduced in 1997, while information on write-downs is included in 1999 due to new regulations in the Norwegian 1998 Accounting Act. As both these variables are relevant in our analysis, we have chosen to look at data from 1999 to 2013. 40% of the database consists of firms that at some point lack information on revenue or is registered with revenue equal to zero. We assume these firms have irregular operations and exclude them from our dataset. At this point our dataset consists of roughly 2 million observations and 250 000 individual firms over a 15-year period.

In order to avoid different price levels in the economy to affect our results, we use the yearly consumer price index published by Statistics Norway to deflate all monetary values to 1998 prices. In empirical analysis, extreme values are a typical source of biased results, and we therefore remove firms with observations larger than the 99.5^{th} percentile or smaller than the 0.5^{th} percentile for the variables Profit Margin, Write-Downs in percent of Assets, Change in Assets and Change in Revenue. We use change in assets and revenue to make sure we do not end up with disproportionately removing the largest firms, but the ones with revenue or an

asset base that is unnaturally large compared to earlier years. Moreover, in our analysis we will assume that firms are profit maximizing. Without this assumption, the arguments and incentives for big bath accounting do not apply. Thus, only limited share companies (Ltd) and publicly traded companies (plc) are included in our dataset.

In our analysis, we wish to explore the development in relevant variables in the years around a CEO turnover. In order to look at the effects of a turnover over time, we have defined a five-year CEO window including the two years leading up to a CEO turnover and the two years following. All firms in our sample must have at least five observations and cannot have more than one turnover within the CEO window. Furthermore, in order to observe firms in the full five-year window around a turnover, we drop firms with CEO turnovers in the two first and two last years of our sample period, i.e. firms with turnovers in 1999, 2000, 2012 and 2013. Although we wish to analyze whether trends of big bath accounting differ between large and small firms, we have included size restrictions. We do not wish to remove all small firms, but we have defined a floor under which we believe the incentives and opportunities to engage in big bath accounting do not apply. Hence, we drop firms with an average revenue less than 10 million or an average asset base of less than 2 million, in addition to firms that over our sampling period never have more than 20 employees. In order to see the development in relevant variables properly, the firms in our sample must have continuous observations leading, us to drop firms without continuous observations. We follow Berner et al. (2015) and divide the firms in our dataset into 14 sectors based on the five-digit main industry code (NACE Code) according to SN2007[2]. In our analysis, we only want firms that maximize earnings and have regular revenue and cost streams, and we therefore drop two of the 14 sectors, Research and Development and Public/Culture. As we are analyzing the effect of a CEO turnover, our final restriction is dropping all firms missing information on turnovers. After all restrictions are applied, we end up with a dataset of 73 081 observations and 5 979 unique firms, where 2 180 of the firms have turnovers. We summarize the data cleaning process in table 1.

[2] We present an overview of the sectors and NACE codes in table A1 in Appendix A.

Table 1: Sample Restrictions 1999-2013

Restriction	Deleted observations	Remaining observations	% remaining
Original dataset		1 933 422	100 %
Extreme values	343 778	1 589 644	82,2 %
Firms that are not Ltd or plc	216 316	1 373 328	71,0 %
<4 years between CEO turnovers	331 873	1 041 455	53,9 %
Mean revenue<10 MNOK	858 634	182 821	9,5 %
Mean assets<2 MNOK	4 996	177 825	9,2 %
Max employees<20	90 020	87 805	4,5 %
Not continuous observations	2 318	85 487	4,4 %
<5 observations	2 045	83 442	4,3 %
Sectors (R&D, Public/Culture)	3 796	79 646	4,1 %
Missing turnover information	6 565	73 081	3,8 %
Restricted dataset		**73 081**	**3,8 %**

5.2 Relevant Variables for Further Analysis

5.2.1 Turnover Year and Control Group

In order to assess the link between CEO turnovers and earnings management, we will study the years around a turnover in addition to the turnover year itself. Previous research has established that poor firm performance increases the likelihood of a forced turnover, and we will therefore study firm performance in the two years leading up to a turnover. Furthermore, as big bath accounting also entails upwards earnings management after a turnover, we will study the two years following a turnover. In the remainder of this paper, we will refer to the turnover year as year 0. Year -1 and -2 refer to one and two years before a turnover, while year 1 refers to the year following a turnover and year 2 is two years after the turnover. All observations of firms more than two years away from a turnover will constitute the control group.

5.2.2 Return on Assets, Profit Margin, Revenue and Write-Downs

In order to analyze earnings and other relevant variables in different firms, we need a relative measure of the variable. Previous research (e.g. DeAngelo (1988), Bengtsson et al. (2008))

have divided all relevant variables on last year's total assets, i.e. deflated them by lagged total assets ($TA_{i,t-1}$). The purpose is to avoid heteroscedasticity and facilitate comparisons between firms, as well as to remove the effect of an increased asset base. We will use the same technique for the relevant variables in our analysis. Earnings is one of the variables we have deemed relevant for our analysis and we will study how a turnover affects earnings by looking at return on assets ($ROA_{i,t}$):

$$\mathrm{ROA}_{\mathrm{i,t}} = \frac{\mathrm{Earnings}_{\mathrm{i,t}}}{\mathrm{TA}_{\mathrm{i,t-1}}} \tag{1}$$

In our initial analysis of turnovers' effect on ROA, we will also look at the development in revenue over total assets. We look at revenue in order to shed some light on whether the observed changes in earnings are due to increased costs or reduced revenue. In order to study the development in earnings, one could also regard a firm's profit margin; earnings divided by revenue. We will run analysis on the effect of a turnover on profit margin as a robustness test to see whether our results depend on the choice of performance measure. Furthermore, we will also perform independent analysis of turnovers' effect on write-downs over total assets to see if incoming CEOs use write-downs as a tool for performing earnings management. All the variables mentioned in this paragraph; earnings, revenue, total assets and write-downs, appear directly in firm's income statement or balance sheet.

5.2.3 Discretionary Accruals

In recent years, research on big bath accounting has primarily analyzed the effect a turnover has on discretionary accruals. Discretionary accruals are the proportion of a firm's total accruals that cannot be explained by firm specific factors such as sector, firm size, asset base and growth. It is defined as the difference between total accruals and non-discretionary accruals. We define total accruals ($TAC_{i,t}$) as the difference between Net Operating Income and Cash Flow from operations ($CFO_{i,t}$) (Bengtsson et al., 2008). As we do not have access to cash flow data, we calculate $CFO_{i,t}$ using an indirect method based on Earnings before Interest, Tax, Depreciation and Amortization (EBITDA). We present the full calculation in appendix B.

We calculate discretionary accruals using the cross-sectional modified Jones model (Dechow, Sloan and Sweeney (1995); Jones (1991)), and we follow Kothari, Leone and Wasley (2005) when adjusting for performance. This method is a regression approach that controls for non-discretionary factors that influence accruals. We estimate weights that determine the accruals

sensitivity to the different factors *k*, depending on sector, *j*, and year, *t*, to control for differences in firms' asset structures and operations. Firms experiencing turnovers are not included in the estimation of the weights. We follow Wilson and Wang (2010) and estimate the weights, $B_{k,j,t}$, by running the following OLS regression for all combination of 12 sectors and 15 years:

$$\frac{\mathrm{TAC_{i,t}}}{\mathrm{TA_{i,t-1}}} = \beta_1\left(\frac{1}{\mathrm{TA_{i,t-1}}}\right) + \beta_2\left(\frac{\Delta\mathrm{Revenue_{i,t}} - \Delta\mathrm{Receivables_{i,t}}}{\mathrm{TA_{i,t}}}\right) + \beta_3\left(\frac{\mathrm{PPE_{i,t-1}}}{\mathrm{TA_{i,t-1}}}\right) + \beta_4(\mathrm{ROA_{i,t-1}}) \quad (2)$$

where $TAC_{i,t}$ is total accruals for firm *i* at time *t*, $TA_{i,t-1}$ is lagged total assets, $\Delta Revenue_{i,t}$ and $\Delta Receivables_{i,t}$ are the difference from time *t-1* to time *t* in revenue and accounts receivables. $PPE_{i,t-1}$ is the lagged level of property plant and equipment for firm *i* at time *t* and $ROA_{i,t-1}$ is lagged return on assets. The estimated regression coefficients, $B_{k,j,t}$ are used to calculate non-discretionary accruals ($NDAC_{i,t}$) as:

$$\frac{\mathrm{NDAC_{i,t}}}{\mathrm{TA_{i,t-1}}} = \mathrm{B_{1,j,t}}\left(\frac{1}{\mathrm{TA_{i,t-1}}}\right) + \mathrm{B_{2,j,t}}\left(\frac{\Delta\mathrm{Revenue_{i,t}} - \Delta\mathrm{Receivables_{i,t}}}{\mathrm{TA_{i,t}}}\right) + \mathrm{B_{3,j,t}}\left(\frac{\mathrm{PPE_{i,t-1}}}{\mathrm{TA_{i,t-1}}}\right) + \mathrm{B_{4,j,t}}(\mathrm{ROA_{i,t-1}}) \quad (3)$$

where $NDAC_{i,t}$ are non-discretionary accruals for firm *i* at time *t*. Finally, we calculate discretionary accruals ($DAC_{i,t}$) as the difference between the observed total accruals over total assets for each firm and the calculated non-discretionary accruals:

$$\mathrm{DAC_{i,t}} = \frac{\mathrm{TAC_{i,t}}}{\mathrm{TA_{i,t-1}}} - \frac{\mathrm{NDAC_{i,t}}}{\mathrm{TA_{i,t-1}}} \quad (4)$$

5.3 Distinguishing Between Routine and Non-Routine Turnovers

The incentives and opportunities for engaging in big bath accounting differ for non-routine and routine turnovers. As we deal with a sample of 2 371 turnovers, we do not have the capacity to use a manual classification method. However, since the probability of a non-routine CEO turnover increases with bad firm performance, we will use firm performance to distinguish between routine and non-routine turnovers (Murphy & Zimmerman, 1993). Our

first step is to create a performance index. We base the performance index on a firm's financial records and attempt to capture a reliable representation of the firm's financial status at the time when the decision to change CEO is made. A firm's profit margin, revenue and return on assets partially depend on factors such as sectors, size and year. In order to determine which firms likely had a non-routine turnover due to bad firm performance, we look at change in earnings and revenue from one year to another, in addition to how earnings and revenue deviate from comparable firms in the control group.

In order to look at how firms with turnovers deviate from a comparable control group, we divide all firms into 900 different cell groups based on 12 different sectors, 5 categories of firm size and our 15 sample years. The five firm size categories are based on the mean revenue quintiles. Within each cell group, we calculate mean return on assets, revenue and profit margin for all firms that are not going through a CEO turnover process. Then, we calculate the deviation from comparable firms in the control group by comparing the respective variables in the five years surrounding a turnover with the mean for the cell group. A negative deviation indicates that firms with CEO turnovers have lower return on assets than the average of control group firms in each cell group.

We construct the performance index by ranking all firms according to six performance measures, before we calculate an average ranking for each firm. The following six performance measures are included in our index; change in profit margin from year -2 to year -1 and from year -1 to year 0 and deviation in profit margin from the cell group mean in year -1 and year 0. We have also included change in revenue from year -2 to year -1 and deviation from cell group mean in year -1. Most of our performance criteria regard the financial situation in year -1, i.e. the year before the turnover. The board will rely heavily on measures from year -1 as this is the last annual financial information available before a turnover decision is made. The annual financial information from the turnover year will not be available before after the turnover, but the board will have access to monthly and quarterly data. As turnover decisions are made throughout the whole fiscal year, the financial situation in parts of the turnover year will affect the decision and should be included. As we do not have access to monthly or quarterly data, we use annual data as a substitute. Bengtsson et al. (2008) use manual classification on Swedish firms and find that around 25% of the turnovers are non-routine. We will assume a similar share of non-routine turnovers in Norwegian firms. Thus, we classify the turnovers in our 25% worst ranking firms as non-routine turnovers.

Our performance index implies that all firms experiencing routine turnovers perform better than all firms experiencing non-routine turnovers. This assumption is unrealistic and some turnovers will inevitably have the wrong classification. Hence, the overall performance for the routine turnovers will look stronger as we only look at the best performing firms, while the overall performance for the non-routine turnovers will look weaker as we only look at the worst performing firms. Despite these imperfections, we still believe that it is useful to distinguish between the two types of turnovers. Furthermore, another incentive for big bath accounting is bad firm performance (Henry & Schmitt, 2001). If results are already poor, it is easier to get away with managing earnings downwards. Thus, it is possible that big bath accounting is more prevalent in firms where performance is already poor, regardless of whether the turnover was routine or non-routine. We therefore expect to find stronger indications of big bath accounting among non-routine turnovers, both due to the type of turnover and due to poor firm performance.

5.4 Limitations in the Data Sample

As opposed to several studies on discretionary accruals, we lack proper cash flow information for the firms in our data sample. In our analysis of a turnover's effect on discretionary accruals, we calculate accruals though an indirect method using the income statement and the balance sheet. The indirect method will result in measurement errors that increase the variance and the uncertainty of our findings. We therefore choose to analyze turnovers' effect on earnings rather than discretionary accruals as our primary analysis. Discretionary accruals are a measure of abnormal accruals, while earnings capture both normal and abnormal activity. Thus, analysis on turnovers' effect on accruals could have provided a more convincing evidence of earnings management. However, compared to discretionary accruals with measurement error, we believe earnings offer a better indication of whether incoming CEOs engage in big bath accounting.

In a turnover year, both the incoming and the departing CEO can influence earnings. If a turnover takes place in the last months of the year, earnings most likely will be a reflection of the departing CEO. The departing CEO can have incentives to manage earnings up in the turnover year to cover up bad performance, or because he is more concerned with short term earnings. This will result in higher earnings in the turnover year. The incoming CEO will be in charge for the annual settlement, but in order to avoid disturbance from the departing CEO,

it would be ideal to analyze only turnovers that occurred in the first few months of the year. In these cases, the firm performance leading up to, and possibly causing, the turnover is reflected in year -1, while the earnings the incoming CEO can manage are reflected in year 0. However, as we do not have specific information on when a turnover takes place, this is not possible in this thesis.

Furthermore, we lack information on the CEO's age, market value of equity and firms' stock return. Murphy and Zimmerman (1993) use stock return and the CEO's age when distinguishing between non-routine and routine turnovers. Stock return is an important component in how firms compensate CEOs and is used to measure performance, while the CEO's age could help determining if a turnover is due to retirement. Thus, information about stock return and CEO age would have ensured a more accurate classification of routine and non-routine turnovers.

In the study by Choi et al. (2014), the authors choose the control group based on matching where they pick out two comparable firms for each firm experiencing a turnover. The sampling method ensures that the group experiencing the turnover and the control group are as similar as possible, making it easier to find a causal effect. We have a large sample with 2 371 turnovers, which makes a manual sampling method unsuitable. We therefore argue that the full sample of firms is a better control group than specific firms selected solely based on financial records and sector information.

6. Descriptive Statistics

In this section, we present descriptive statistics for our variables and show how total observations and turnovers disperse over years, sectors and firm size classes. We will further present how earnings and revenue develop around a turnover, both in the full sample and when distinguishing between routine and non-routine turnovers.

6.1 Descriptive Statistics for our Variables

Table 2: Total Observations per Year

Year	CEO Turnovers	Routine Turnovers		Non-Routine Turnovers		Observations
	Total	Total	% of total Turnovers	Total	% of total Turnovers	Total
1999	0	0	0 %	0	0 %	3960
2000	0	0	0 %	0	0 %	4162
2001	234	168	72 %	66	28 %	4399
2002	211	161	76 %	50	24 %	4635
2003	185	139	75 %	46	25 %	4839
2004	197	148	75 %	49	25 %	4972
2005	174	143	82 %	31	18 %	5122
2006	182	150	82 %	32	18 %	5199
2007	205	158	77 %	47	23 %	5271
2008	219	175	80 %	44	20 %	5308
2009	230	163	71 %	67	29 %	5304
2010	220	144	65 %	76	35 %	5178
2011	314	230	73 %	84	27 %	5050
2012	0	0	0 %	0	0 %	4915
2013	0	0	0 %	0	0 %	4767
Total	**2371**	**1779**	**75 %**	**592**	**25 %**	**73081**

Table 2 shows that our 73 081 observations are distributed quite evenly across our sample period. Since we want to observe our variables both before and after a CEO turnover, we do not have observations of CEO turnovers in the first two and last two years of our dataset. From table 2, we see that while the full sample has the desired ratio of non-routine and routine turnovers, the ratio varies over the years. We classify the 25% worst performing firms as non-routine regardless of which fiscal year the turnover happens, resulting in a higher share of non-routine turnovers in years when firms in general perform badly. We believe this is an accurate representation of reality, as non-routine turnovers correlates with bad firm performance. Table 2 shows that the share of non-routine turnovers is higher in the wake of the financial crisis in 2008.

Table 3: Descriptive Statistics: Full Sample

Variables	**Mean**	**SD**	**P5**	**Median**	**P95**
Return on Assets	0.09	0.19	-0.1	0.08	0.34
Profit Margin	0.04	0.18	-0.05	0.03	0.16
Revenue (over $TA_{i,t-1}$)	3.09	2.57	0.64	2.49	8
Write-Downs (over $TA_{i,t-1}$)	0	0.02	0	0	0
Accruals (over $TA_{i,t-1}$)	-0.07	0.27	-0.41	-0.05	0.24
Earnings	6 665	265 000	-1 379	840	12 590
Revenue	92 871	1 525 324	7 644	29 507	235 000
Write-Downs	152	5 052	0	0	0.75
Accruals	-7 596	562 647	-13 247	-493	5 273
Total Assets	121 000	3 864 395	2648	12 481	163 000
Observations		**73 081**			

Table 4: Descriptive Statistics: By CEO Turnover Status

Variables	**Firms without CEO Turnovers**	**Firms with CEO Turnovers**	**Non-Routine Turnovers**	**Routine Turnovers**
Return on Assets	0.1	0.09	0.04	0.11
Profit Margin	0.04	0.04	0.01	0.05
Revenue (over $TA_{i,t-1}$)	3.33	2.74	2.32	2.89
Write-Downs (over $TA_{i,t-1}$)	0	0	0	0
Accruals (over $TA_{i,t-1}$)	-0.07	-0.07	-0.06	-0.07
Earnings	2 776	12 604	2 613	16 104
Revenue	58 845	145 000	96 950	157 000
Write-Downs	98	234	526	149
Accruals	-3 132	-14 302	-5 273	-17 500
Total Assets	78 115	187 000	147 000	202 000
Observations	**44 164**	**28 917**	**6 579**	**21 270**

From table 3 we see large variations in several of our relevant variables. In terms of assets, a firm represented by the 95th percentile is about 40 times larger than the 5th percentile. Moreover, we see that most firms in our dataset do not report write-downs. In table 4, we have looked at the same variables, but distinguished between firms with and without CEO turnovers and between routine and non-routine turnovers[3]. Return on assets and profit margin are similar

[3] Firms with both routine and non-routine turnovers are included in the calculation of mean for all firms with turnovers, but not included after we distinguish between them. This is the case for 74 turnovers (1 084 observations), equaling 3.1% of the turnovers.

for firms with and without turnovers, but significantly[4] lower for firms with non-routine turnovers. Based on our performance index, we have classified the worst performing firms as non-routine. The three years included in our performance index will affect the overall mean for firms with non-routine turnovers negatively. If we had a longer sample period than 15 years, we would expect a smaller gap between firms with non-routine and routine turnovers. From table 4, we also observe a connection between size and CEO turnovers. The firms with CEO turnovers are significantly larger in regards to earnings, revenue and assets.

Table 5: CEO Turnovers by Sectors

Sector	**CEO Turnovers**				**Total Observations**	
	Routine	Non-Routine	Total	% of total Turnovers	Total	% of Observations
Primary Industries	45	8	53	2 %	1409	2 %
Oil & Gas	22	4	26	1 %	407	1 %
Manufacturing Industries	347	139	486	20 %	13776	19 %
Energy, Water & Sewage	40	16	56	2 %	1316	2 %
Constructions	321	95	416	18 %	15221	21 %
Trade	533	168	701	30 %	23184	32 %
Shipping	17	13	30	1 %	740	1 %
Transport & Tourism	146	47	193	8 %	6820	9 %
Telecom, IT & Media	85	31	116	5 %	2745	4 %
Finance & Insurance	20	5	25	1 %	474	1 %
Real Estate & Services	38	19	57	2 %	1416	2 %
General Services	165	47	212	9 %	5573	8 %
Total	1779	592	2371	100 %	73081	100

Table 6: CEO Turnovers by Firm Size Classes

Mean Revenue	**CEO Turnovers**				**Observations**
(‘000 NOK)	Routine	Non-Routine	Total	% of total Turnovers	Total
10 000 – 16 500	343	83	426	18 %	14 936
16 500 – 24 500	306	112	418	18 %	14 185
24 500 – 38 000	325	106	431	18 %	14 517
38 000 – 70 000	343	119	462	19 %	14 721
> 70 000	462	172	634	27 %	14 722
Total	1779	592	2371	100 %	**73 081**

[4] T-tests for differences between firms with and without turnovers and differences between non-routine and routine turnovers for all variables in table 4 are presented in table C1 in appendix C.

From table 5, we see that the turnovers are quite evenly distributed over the different sectors, when we consider total observations. 68% of all turnovers occur in the three largest sectors, trade, constructions and manufacturing industries, while the three sectors make up 72 % of total observations in our dataset. Further, we have divided all observations in five firm size classes based on mean revenue quintiles, as shown in table 6. Each of the four smallest firm size classes include about 18% of all CEO turnovers, while the largest firms in our sample, firms with a mean revenue over 70 million, seem to change CEOs more frequently.

6.2 Return on Assets In the Years Surrounding a Turnover

In this section, we wish to study the development in return on assets and revenue in the years surrounding a turnover. In figure 1, we display the calculated mean for every separate year in the turnover process, regardless of the fiscal year in which it occurs. Hence, the point 0 in figure 1 is the mean of all observations in the year of a CEO turnover. Since observations from all fiscal years are included in the calculation of the mean, the trends we observe is less likely to be affected by economic cycles and other macro conditions specific for a single year. Further, in figure 2, we investigate whether ROA and revenue for firms with turnovers deviate from comparable firms that are not in a CEO turnover process. As discussed in section 5.3, we divide all observations into cell groups based on firm size, sector and year. The firms with CEO turnovers are then compared to the averages of their respective cell groups. In figure 2, we present the average percentage deviation from the cell group mean for all the five years in a turnover process.

Figure 1: Earnings Development in the Years Surroundig a Turnover

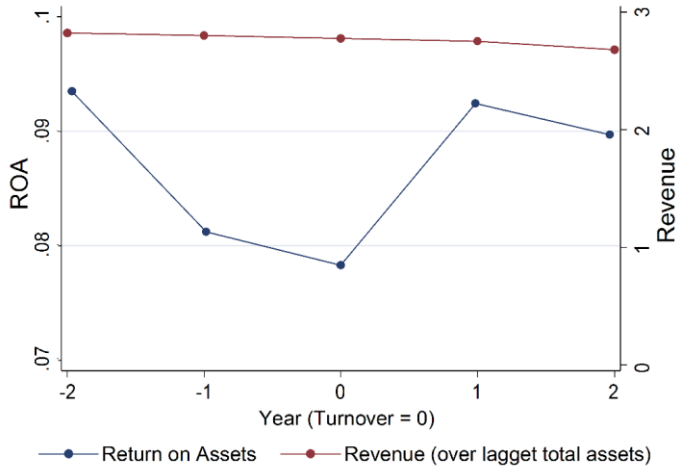
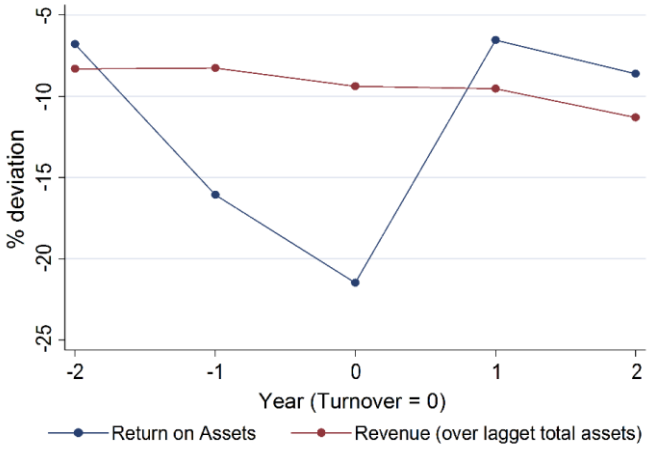


Figure 2: Earnings Development in the Years Surrounding a CEO Turnover – Deviation from Comparable firms (%)



An earnings drop in the turnover year without a corresponding drop in revenue, is an indication of big bath accounting. Both figures 1 and 2 display a trend of low return on assets in year -1 and a further decrease from year -1 to year 0. The average return on assets for firms without turnovers is 10% and t-tests confirm that return on assets is significantly lower for firms with turnovers, both in the year before a turnover and in the turnover year[5]. Further t-tests reveal that return on assets is significantly higher in year 1 than in year 0, which is what we expect to find in the case of big bath accounting. Figure 2 shows that the return on assets on average is more than 20% lower than the mean for comparable firms in a turnover year. Both figures 1 and 2 show that revenue does not follow the same trend as return on assets. While return on assets shows a distinctive V-shaped curve, revenue decreases steadily over the full five-year period. Our data for all CEO turnovers show the same trends as Bengtsson et al. (2008) find in Swedish firms; v-shaped earnings combined with stable revenue.

In figures 3 and 4, we perform the same descriptive techniques as in figure 1 and 2, but we distinguish between routine and non-routine CEO turnovers. Both figures 3 and 4 show that the trends differ for routine and non-routine turnovers. Return on assets follows the characteristic V-shaped earnings trend from year -1 to year 1 for non-routine turnovers, while it remains stable for routine turnovers. T-tests confirm that for non-routine turnovers, return on assets is significantly lower in year 0 than in year -1, while revenue is significantly higher in year 0 than year -1. Hence, we find indications that incoming CEOs engage in big bath

[5] T-tests for ROA and revenue in years surrounding a turnover (figures 1 and 3) are presented in table C2 in appendix C

accounting after a non-routine turnover, but not after a routine turnover. The trend is evident both when we look at the development in ROA and revenue in the years surrounding a turnover isolated and when we look at the percentage deviation from comparable firms. The trends we observe for non-routine and routine turnovers align with results from studies by Wells (2002) and Murphy and Zimmerman (1993).

Figure 3: Earnings Development in the Years Surrounding Non-Routine and Routine Turnovers

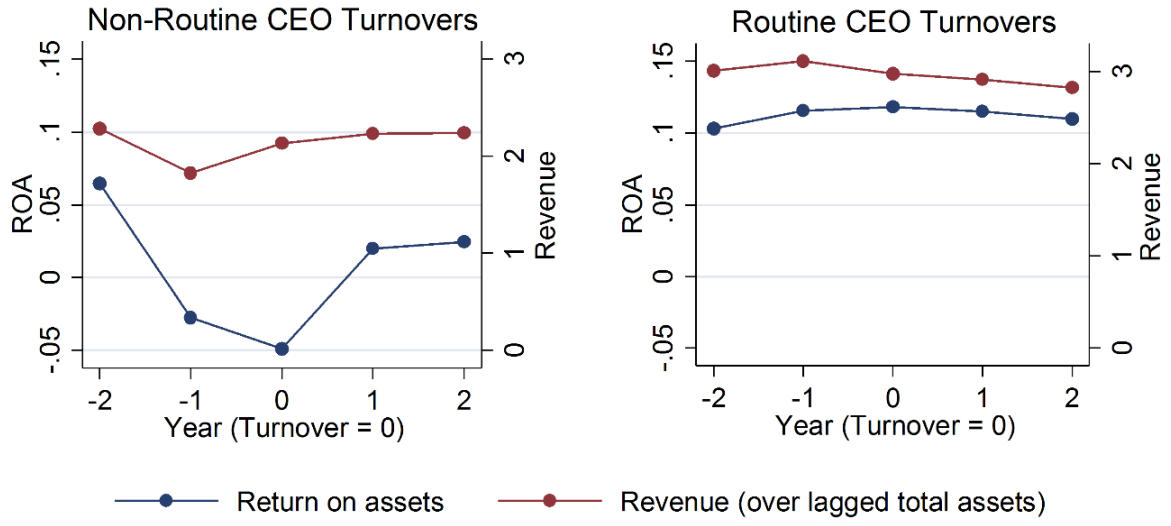
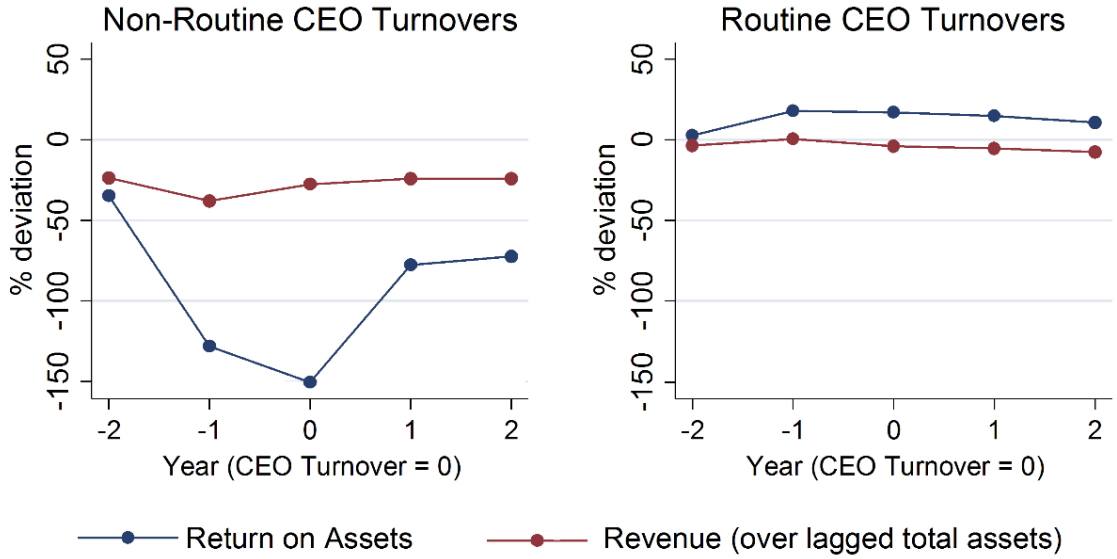


Figure 4: Earnings Development in the Years Surrounding Non-Routine and Routine Turnovers - Deviation from Comparable firms (%)



In this section, we analyze the unconditional means for return on assets and revenue in the different years surrounding a CEO turnover. In section 8, we will analyze the effect of a turnover through regressions where we control for factors such as size, sector, year, age and performance. So far, we have only looked at earnings and revenue, but we see that the non-routine turnovers drive the results for the whole sample. As a non-routine CEO turnover often coincide with bad firm performance (Murphy & Zimmerman, 1993), observations of low earnings in the years surrounding a turnover are expected. Therefore, it is possible that what we observe is the reason for the turnover, rather than the effect of it. However, the fact that revenue increases from year -1 to year 0 while return on assets decreases further, indicates that the decrease in earnings might be a result of big bath accounting. In the following, we will control for firm performance by including measures of past performance in our regressions.

7. Empirical Method

In this section, we will present the econometric method applied in our analysis, as well as the specification of our regressions. We will also address some econometric pitfalls.

7.1 Specification of our Regressions

We investigate the effect of CEO turnovers' on earnings, revenue, write-downs and discretionary accruals by running both Ordinary Least Squares (OLS) and Fixed Effects (FE) regressions. In order to obtain the most accurate estimates possible, we add relevant control variables to our regression models. Our baseline regression is:

$$y_{i,t} = \beta_0 + \sum_{\tau=t-2}^{t+2} \beta_\tau \text{Turnover}_{i,\tau} + \beta_2 \text{Performance}_{i,t-1} + \beta_3 \text{Controls}_{i,t} + \varepsilon_{i,t} \quad (5)$$

where $y_{i,t}$ is either return on assets, profit margin, revenue, write-downs or discretionary accruals. $Turnover_{i,\tau}$ represents five dummy variables where τ runs from *t-2* to *t+2* and represents the year in the turnover process. τ equals *t-1* and *t-2* one and two years before the turnover, *t* in the turnover year, *t+1* and *t+2* one and two years following the turnover. Hence, the variable $Turnover_{i,\tau}$ takes the value of one if there is a CEO turnover in firm *i* at time τ and the value zero otherwise. The inclusion of dummy variables for all five years surrounding the turnover ensure that the reference group consists of firms that are not in a CEO turnover process. Furthermore, the coefficients show the variation in the dependent variable for all five years surrounding the turnover when we control for other factors that also vary. $Performance_{i,t-1}$ is a measure of past firm performance and will be measured as either lagged return on assets ($ROA_{i,t-1}$) or lagged profit margin ($PM_{i,t-1}$). Past performance is highly correlated with turnovers. Failing to control for overall firm performance in our regression will therefore lead to an omitted variable problem, causing biased estimates (Murphy & Zimmerman, 1993).

$Controls_{i,t}$ consists of Sector, Year, Age and Firm Size Group, as well as an interaction term between sector and year (Sector*Year), and will be included in all of our regressions. The sector dummies capture the differences between sectors in regards to profitability, different asset structure, write-downs etc., while the interaction term between sector and year capture different trends over time. The 15 different time dummy variables control for macro conditions and business cycles, such as changes in interest rates, statutory taxes and legislation that affect

all firms in a similar way. In addition, we include five dummies that represent the firm size quintiles, measured in mean revenue. Age is the firm's age, calculated as the difference between the current year and the founding year.

Following Bengtsson et al. (2008), we start by analyzing the effect of a turnover on return on assets ($ROA_{i,t}$). Both a reduction in revenue and increased costs might cause a reduction in earnings. In order to determine which is most prominent, we will look at turnovers' effect on earnings in combination with the effect on revenue. $Performance_{i,t-1}$ is measured through lagged profit margin ($PM_{i,t-1}$). We analyze the effect on earnings through $ROA_{i,t}$, and hence argue that this is the best measure of firm performance. It may therefore seem logical to include $ROA_{i,t-1}$ to control for past performance. However, with longitudinal data this may result in biased coefficients unless t is large compared to n, and we have therefore chosen to use $PM_{i,t-1}$[6] (Baltagi, 2013). We analyze the turnovers' effect on return on assets as follows:

$$\mathrm{ROA}_{i,t} = \beta_0 + \sum_{\tau=t-2}^{t+2} \beta_\tau \mathrm{Turnover}_{i,\tau} + \beta_2 \mathrm{PM}_{i,t-1} + \beta_3 \mathrm{Controls}_{i,t} + \varepsilon_{i,t} \quad (6)$$

Our first hypothesis, stated in section 4, is to find lower earnings in the turnover year and higher earnings the following year. Hence, we expect the coefficient for $Turnover_{i,t}$ to be more negative than the coefficient for $Turnover_{i,t-1}$ and less negative than the coefficient for $Turnover_{i,t+1}$. This will indicate V-shaped earnings and is what we expect to see in the case of big bath accounting. We study the effect on revenue and write-downs by running a similar regression line as in (6). However, in this regression, $ROA_{i,t}$ is not the dependent variable and we therefore use $ROA_{i,t-1}$ instead of $PM_{i,t-1}$ to control for past firm performance. Return on assets is the preferred performance measure in existing research, and using $ROA_{i,t-1}$ as a control variable will therefore better align with existing studies. When analyzing the effect on write-downs, we expect high write-downs in the turnover year and low write-downs the following year, hence we expect a positive coefficient for $Turnover_{i,t}$ and a negative coefficient for $Turnover_{i,t+1}$.

[6] In table D1 in appendix D, we ran the initial regressions with $ROA_{i,t-1}$, $PM_{i,t-1}$, and without controlling for firm performance. The regressions yield roughly the same coefficients, and we therefore conclude that profit margin is a good substitute for measuring past firm performance.

In recent years, research on big bath accounting has been conducted primarily by analyzing turnovers' effect on discretionary accruals (e.g. Godfrey et al. (2003), Wilson and Wang (2010), Geiger and North (2011); Choi et al. (2014)). As we lack cash flow data, our calculation of discretionary accruals suffers from measurement error and we therefore analyze the turnovers effect on discretionary accruals ($DAC_{i,t}$) as a supplementary analysis rather than the primary analysis. We analyze turnovers' effect on discretionary accruals as follows:

$$\mathrm{DAC_{i,\,t}} = \beta_0 + \sum_{\tau=t-2}^{t+2} \beta_\tau \mathrm{Turnover_{i,\,\tau}} + \beta_2 \left(\frac{\mathrm{TAC_{i,t-1}}}{\mathrm{TA_{i,t-1}}} \right) + \beta_4 \mathrm{Growth_{i,\,t}} + \beta_3 \mathrm{ROA_{i,\,t-1}} + \beta_3 \mathrm{Controls_{i,\,t}} + \varepsilon_{i,\,t} \tag{7}$$

where $TAC_{i,t-1}$ is lagged total accruals and $Growth_{i,t}$ is growth in revenue for firm *i* from time *t-1* to *t*. We follow Wilson and Wang (2010) and include $TAC_{i,t-1}$ over lagged total assets to control for the natural reversing of accruals, while revenue growth are included because it is found to be positively associated with discretionary accruals (Menon & Williams, 2004). The difference from the former control variables are the inclusion of these two variables, as well as replacing $PM_{i,t-1}$ with $ROA_{i,t-1}$. The changes made ensure that our analysis aligns better with existing literature, making it easier to compare our findings with previous studies. In accordance with our first hypothesis, we expect a negative coefficient for $Turnover_{i,t}$ and a positive or less negative coefficient for $Turnover_{i\,t+1}$.

Our second hypothesis is that big bath accounting is more prevalent in the case of non-routine turnovers. We therefore run the exact same regressions again, but with different explanatory variables. The original dummies $Turnover_{i,\tau}$ are replaced by five new dummies $NonRoutineTurnover_{i,\tau}$ and five new dummies $RoutineTurnover_{i,\tau}$. The reference group is the same as before, firms who are not in a turnover process. As stated in our second hypothesis, we expect the coefficients for the variables $NonRoutineTurnover_{i,\tau}$ to have the same sign as before, but provide stronger indications of big bath accounting. Furthermore, we expect coefficients that does not show sign of big bath accounting for all variables $RoutineTurnover_{i,\tau}$. Our third hypothesis is that big bath accounting is more prevalent in large firms. We will analyze this by running the separate regressions for our five different firm size quintiles, and we expect stronger indications of big bath accounting for the larger quintiles.

7.2 Econometric Method and Pitfalls

We start our analysis by running the regressions as ordinary least squares (OLS) before we run them as Fixed Effects (FE). When running OLS on panel or longitudinal data, multiple problems can lead to biased, inefficient or inconsistent results. Panel data consists of both cross sections and time series data; hence, we address problems related to both data types. OLS requires error terms that are independent and have constant variance. In time series data, an observation in time *t* is likely to be closely linked to an observation in time *t-1*, resulting in autocorrelation, i.e. not independent error terms. In cross sectional data, each unit (i.e. firm) have different characteristics. The volatility for each unit are likely to vary, producing non-constant variance. Heteroscedasticity is therefore a common problem in cross sectional data (Garba, Oyejola, & Yahya, 2013). In our regression, we use robust standard errors clustered on firm, which provide results that are robust to both autocorrelation and heteroscedasticity.

The advantage of performing OLS on longitudinal data is that you use all variation in the dataset, both between firms and within firms. The drawbacks are mainly due to unobservable heterogeneity. Most of the factors influencing earnings are hard to observe and include in the regression model, and they are therefore accounted for in the error term. If some of these omitted variables are correlated with the variables included in our model, we will get biased coefficients that can lead us to draw wrong conclusions. We therefore try to account for these by including them in our model or address them through Fixed Effects. Omitted variables that do not correlate with variables included in our regression model, will result in our model having low explanatory power. As we are only interested in the effect of a CEO turnover and do not wish to use the model to predict the dependent variable, this is not a problem.

The original error term includes unobservable firm specific factors that do not vary with time, and can thus be expressed in a variable with subscript *i*. The Fixed Effects model, later referred to as FE, is calculated by extracting the mean over all years of all variables from the regression equation. All factors constant over time for each firm will then disappear and we end up with a model without unobservable time-constant heterogeneity. We call this the within-group transformation. Hence, in a FE regression we only look at variation within each firm and are not able to capture the variation between firms as we do in OLS. In the primary analysis of the first hypothesis, we will therefore run both OLS with clustered robust standard errors and FE. As we believe we have a problem with unobserved heterogeneity in our data, we will only use the FE model to analyze our second and third hypothesis.

A problem with our regressions is related to reversed causality and endogeneity. We analyze how a CEO turnover affect earnings by comparing return on assets in the turnover year to return on assets in other years. A problem with this approach is that we find a correlation between return on assets and turnovers without knowing if the turnover actually *cause* the observed effect on earnings. Murphy and Zimmerman (1993) find that the probability of a CEO turnover increases with bad firm performance. Thus, low return on assets in the turnover year can be a reflection of the reason for the turnover rather than a causal effect of the turnover. Bengtsson et al. (2008) analyze turnovers' effect on earnings in combination with the effect on revenue. They argue that revenue is a reflection of firm performance that is hard to manipulate. Thus, decreasing earnings combined with stable or increasing revenue are interpreted as intentional downward earnings management.

Choi et al. (2014) address the problem with endogeneity by using a two stages least squares (2SLS) approach where stock return, return on assets and other control variables in the year leading up to the turnover is used as an instrument for the CEO turnover. They follow Murphy and Zimmerman (1993) and argue that past firm performance (the instrument) is not correlated with the dependent variable as they analyze turnovers' effect on discretionary accruals. As stated in section 5.4, we lack access to information on stock return as well as the departing CEO's age. This information would have made it possible to estimate the probability of a turnover and use this as an instrument in a 2SLS approach. Without these components, the first stage in the 2SLS approach will be too weak to be useful. As our primary analysis is on earnings, and not discretionary accruals, we cannot assume that past performance is uncorrelated with our dependent variable, and their 2SLS approach is therefore not an option. However, Choi et al. (2014) obtain the same qualitative findings with 2SLS and OLS, when controlling for firm performance in the OLS regression. We follow Bengtsson et al. (2008) and address the problem of reversed causality by analyzing the effect on earnings in combination with the effect on revenue.

8. Empirical Findings

In section 6, descriptive statistics reveal significant trends suggesting incoming CEOs engage in big bath accounting after a non-routine turnover. In our following analysis, we will start by looking at the full sample of turnovers[7]. We will analyze the effect of a turnover on return on assets, write-downs and discretionary accruals, as well as revenue. We measure revenue and write-downs over lagged total assets. Furthermore, we will look at alternative performance measures and do robustness tests. In order to investigate differences between non-routine and routine turnovers, we will repeat the same analysis, but distinguish between routine and non-routine turnovers. Finally, we will run regressions on our five firm size classes to explore whether the extent of earnings management varies with firm size.

8.1 Do We Find Evidence of Big Bath Accounting in the Full Sample?

In accordance with our first hypothesis, we expect lower earnings in the turnover year and higher earnings the following year. Table 7 shows the results of the regressions on return on assets, revenue and profit margin. Columns 1, 3 and 5 display the results of OLS regressions, while columns 2, 4 and 6 display the results from FE regressions.

[7] The number of observations included in the regressions vary with the different control variables included. Lagged profit margin only requires observations from the year before, while lagged ROA require observations from two years before. As the calculation of discretionary accruals use lagged ROA, this variable will have more missing observations than return on assets, revenue and write-downs. As our original data sample have financial information on years before 1999, missing observations is primarily a problem for firms established after 1997.

Table 7: Results from OLS and FE Regressions on Return on Assets, Revenue and Profit Margin

	(1) Return on Assets OLS	(2) Return on Assets FE	(3) Revenue OLS	(4) Revenue FE	(5) Profit Margin OLS	(6) Profit Margin FE
Turnover -2	-0.005	-0.003	-0.237***	-0.012	-0.008**	-0.007**
	(0.004)	(0.004)	(0.048)	(0.028)	(0.003)	(0.003)
Turnover -1	-0.014***	-0.011***	-0.240***	-0.011	-0.010***	-0.009***
	(0.004)	(0.004)	(0.046)	(0.028)	(0.003)	(0.003)
Turnover	-0.018***	-0.014***	-0.210***	0.040	-0.015***	-0.013***
	(0.004)	(0.004)	(0.045)	(0.027)	(0.003)	(0.003)
Turnover +1	-0.003	-0.001	-0.210***	0.054**	-0.007**	-0.004
	(0.003)	(0.003)	(0.043)	(0.025)	(0.003)	(0.003)
Turnover +2	-0.007**	-0.001	-0.256***	0.019	-0.006*	-0.004
	(0.003)	(0.004)	(0.042)	(0.024)	(0.004)	(0.003)
Constant	0.134***	0.069***	3.174***	2.677***	0.067***	0.043***
	(0.013)	(0.002)	(0.106)	(0.018)	(0.013)	(0.003)
R^2	0.069	0.034	0.207	0.034	0.035	0.005
Observations	70855	70855	68496	68496	68496	68496

Additional variables included in the regression:
Column 1-2: L.PM, Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Column 3-6: L.ROA, Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Standard errors in parentheses, clustered on firm when running OLS
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

We start by regressing ROA and revenue on dummy variables for the different years in the turnover process using OLS. In OLS, we compare the firms experiencing turnovers with all firms not experiencing turnovers. We expect negative coefficients in the years surrounding a turnover, as a turnover often takes place in relation with bad firm performance. From column 1, we see that the coefficients are negative both before and after the turnover. The coefficient of -0.018 in the turnover year is both economically meaningful and significant on a 1% level. The significance level indicates that the probability of observing a value of -0.018 when the true value is zero is less than 1%. Thus, we infer that firms going through a turnover on average have 1.8 percentage points lower return on assets than the control group. As the average ROA for the control group is 10%, this implies an 18% deviation in the turnover year. In column 3, we run OLS with revenue as the dependent variable. We find negative coefficients for all years surrounding the turnover, which indicate lower revenue in firms with turnovers. The average revenue over lagged total assets for firms not experiencing turnovers is 3.33. Hence, the coefficients in column 3 indicate a negative deviation in revenue of 6-8% in the years around

the turnover. Despite small differences in the coefficients, the deviation from the control group is smallest in year 0 and year 1.

In columns 2 and 4, we run the same regressions using the FE model instead of OLS. In FE, we look at the deviation from the average return on assets and revenue for each firm by comparing the years around the turnover to other observations for the same firm. The FE regression with return on assets as the dependent variable yields similar results as OLS; negative coefficients for all years surrounding the turnover. Earnings in percent of total assets are 1.1 percentage points below the firm average in the year leading up to the turnover and 1.4 percentage points below average in the turnover year, both significant on a 1% level. This implies that earnings decrease further after the new CEO takes control of the firm, but the difference is not significant[8]. However, t-tests reveal that return on assets is significantly higher in year 1 than in year 0. The trend is consistent with big bath accounting, which is recognized by V-shaped earnings around a turnover. While earnings decrease in the turnover year, revenue is significantly higher than the year before.

We want to test the robustness of our results by performing the same analysis with a different earnings measure. We therefore run the same regressions with profit margin as our dependent variable. In table 7, columns 5 and 6 display the same V-shaped earnings trend in profit margin as we see when analyzing turnovers' effect on return on assets. As we find roughly the same results when analyzing turnovers' effect on both ROA and profit margin, the trend of decreasing earnings in the turnover year does not seem to depend on performance measure.

[8] T-tests of the difference between year-1 and year 0, year 0 and year 1, and year -1 and year 1 for coefficients from all regressions on return on assets and revenue are presented in table C3 in appendix C.

Table 8: Results from OLS and FE Regression on Discretionary Accruals and Write-Downs

	(1) Write-Downs	(2) Write-Downs	(3) Discretionary Accruals	(4) Discretionary Accruals
	OLS	FE	OLS	FE
Turnover -2	-0.001***	-0.001***	-0.003	-0.003
	(0.000)	(0.000)	(0.005)	(0.005)
Turnover -1	0.001	0.000	-0.005	-0.005
	(0.001)	(0.001)	(0.005)	(0.005)
Turnover	0.000	0.000	-0.011*	-0.010*
	(0.000)	(0.000)	(0.006)	(0.006)
Turnover +1	-0.000	-0.000	-0.001	0.000
	(0.000)	(0.000)	(0.004)	(0.005)
Turnover +2	0.000	-0.000	0.001	0.002
	(0.000)	(0.000)	(0.005)	(0.005)
Constant	0.002***	0.002***	0.067***	-0.026***
	(0.001)	(0.000)	(0.012)	(0.003)
R^2	0.008	0.007	0.072	0.093
Observations	68496	68496	64951	64951

Additional variables included in the regression:
Column 1-2: L.ROA, Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Column 3-4: L.ROA, Age, L.TAC, Growth, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Standard errors in parentheses, clustered on firm when running OLS
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8 shows the result of our analysis on the effect of a turnover on write-downs and discretionary accruals. In columns 1 and 2, we run OLS and FE with write-downs over total assets as the dependent variable. We expected to find higher write-downs in the turnover year, followed by lower write-downs the next year. The coefficients for both year 0 and year 1 are zero, which does not provide any support for our hypothesis. In columns 3 and 4, we run regressions with discretionary accruals as the dependent variable. Discretionary accruals are defined as the difference between total accruals and expected accruals. Thus, a negative coefficient for discretionary accruals indicate that total accruals are lower than what we would expect based on industry, growth, asset base etc. As total accruals are the difference between earnings and cash flow, lower total accruals indicate that earnings are moved to another period. Both OLS and FE yield negative coefficients on a 10% level in year 0. OLS and FE estimate that discretionary accruals are 1.1 and 1.0 percentage points below average. The significantly negative coefficients in the turnover year is consistent with what we expect to see if CEOs manage earnings downwards in the turnover year.

In accordance with our hypothesis, we expected to find lower earnings in the turnover year and higher earnings the following year. Our regressions confirmed that earnings, measured through return on assets (ROA), was significantly lower in the turnover year. A t-test also shows that earnings increase significantly from year 0 to year 1, which indicate upwards earnings management. This leads us to conclude that earnings follow a V-shaped curve, which is consistent with big bath accounting. The decreasing earnings from year -1 to year 0 can also be a result of poor firm performance. However, our analysis on revenue over total assets reveal that revenue increase from year -1 to year 0. Hence, there are no indication that the fall in earnings in the turnover year is caused by a fall in revenue.

We also hypothesized that the earnings management would happen through write-downs and accruals, leading us to expect higher write-downs and lower discretionary accruals in the turnover year and lower write-downs and higher discretionary accruals the following year. Our analysis did not confirm higher write-downs in the turnover year or lower write-downs the year after. However, only 31% of the firms in our sample have reported write-downs and only 14% have reported write-downs more than once. Write-downs are more common in relation to poor performance, and Wells (2002) found increased write-downs only in the case of non-routine turnovers. Previous research has also argued that excessive write-downs are easy to detect and not the most suitable tool for earnings management. Discretionary accruals are likely a favored tool to manage earnings. Our analysis revealed significantly lower discretionary accruals in the turnover year. Lower accruals indicate that earnings are moved to other periods and can indicate that performance are managed down in the turnover year in order to boost future earnings.

Overall, we find evidence that partially support our first hypothesis. The correlation between CEO turnovers and decreased earnings is evident, but we see less evidence for the typical tools CEOs use to manage earnings. Decreasing earnings and increasing revenue in the turnover year are similar to what Bengtsson et al. (2008) find in their study on Swedish firms. They conclude that the fall in earnings most likely are a result of earnings management rather than poor performance primarily because of a stable trend in revenue. Although not confident that the findings are a direct result of earnings management, we conclude that the strong correlation between negative earnings and CEO turnover are consistent with what we would expect to observe in the case of big bath accounting in relation to a CEO turnover.

8.2 Is Big Bath Accounting more Prevalent in Non-Routine Turnovers?

In this subsection, we distinguish between routine and non-routine turnovers and rerun our regressions. Based on previous research, we hypothesized that earnings management is more prevalent in non-routine turnovers. Following our performance index, we classified the 25% worst performing firms as having non-routine turnovers. The classification allows the share of non-routine turnovers to vary between years. Table E1, in appendix E, presents the results of the same regression with a fixed ratio of 25% non-routine turnovers each year. The findings were roughly the same as in table 9. In table 9, we only run the regressions as FE, as section 8.1 indicated that OLS and FE yield similar results[9].

[9] We ran all the regressions in our analysis using OLS. It did not produce any differences in the overall results

Table 9: Results from FE Regression on ROA, Revenue, Discretionary Accruals and Write-Downs Separated in Routine and Non-routine Turnovers

	(1) Return on Assets	(2) Revenue	(3) Write-Downs	(4) Discretionary Accruals
Non-Routine Turnover -2	-0.002	-0.091*	-0.002***	0.002
	(0.008)	(0.049)	(0.001)	(0.010)
Non-Routine Turnover -1	-0.088***	-0.457***	0.001	-0.003
	(0.006)	(0.036)	(0.001)	(0.009)
Non-Routine Turnover	-0.104***	-0.132**	0.002*	-0.009
	(0.008)	(0.051)	(0.001)	(0.013)
Non-Routine Turnover +1	-0.033***	-0.007	-0.001	0.005
	(0.008)	(0.045)	(0.001)	(0.010)
Non-Routine Turnover +2	-0.032***	0.029	0.000	0.005
	(0.009)	(0.044)	(0.001)	(0.012)
Routine Turnover -2	-0.004	0.012	-0.001	-0.004
	(0.004)	(0.033)	(0.000)	(0.006)
Routine Turnover -1	0.013***	0.135***	0.000	-0.005
	(0.005)	(0.034)	(0.001)	(0.006)
Routine Turnover	0.014***	0.092***	-0.000	-0.010
	(0.004)	(0.031)	(0.000)	(0.006)
Routine Turnover +1	0.012***	0.071**	-0.000	-0.002
	(0.004)	(0.028)	(0.000)	(0.005)
Routine Turnover +2	0.009***	0.013	-0.000	0.001
	(0.003)	(0.028)	(0.000)	(0.005)
Constant	0.069***	2.682***	0.003	-0.025***
	(0.002)	(0.018)	(0.002)	(0.003)
R^2	0.039	0.036	0.008	0.093
Observations	70855	68496	68496	64951

Additional variables included in the regression:
Column 1: L.PM, Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Column 2-3: L.ROA, Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Column 4: L.ROA, Age, L.TAC, Growth, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

In table 9, column 1 shows a turnover's effect on return on assets when dividing the sample in routine and non-routine turnovers. As expected, we find negative coefficients for all years surrounding a non-routine turnover and positive coefficients for most years surrounding a routine turnover. For non-routine turnovers, we find that ROA is 8.8 percentage points lower

than the firm average the year before the turnover and 10.4 percentage points lower in the turnover year. Both coefficients are significant on a 1% level. This reduction indicates a significant drop of 1.6 percentage points in return on assets after the new CEO takes control of the firm. In the corresponding years, column 2 shows that revenue over lagged total assets increases from a negative deviation of 0.457 before the turnover to a negative deviation of 0.132 in the turnover year. The coefficients are significantly different from one another on a 1% level. As expected, we find no indication of big bath accounting in routine turnovers.

Column 3 shows the results of the regression with write-downs over total assets as the dependent variable. The positive coefficient for year 0 is significant on a 10% level for non-routine turnovers and indicate that write-downs are higher in a turnover year than other years. The difference is on average 0.2 percent of total assets. In Column 4, we see the results of the regression on discretionary accruals. The signs of the coefficients for discretionary accruals in non-routine turnovers are as expected, negative in the turnover year and positive the following year. However, the coefficients are not significant. For routine turnovers, the coefficients for both year 0 and year 1 are negative.

Our hypothesis is that big bath accounting is more prevalent in the case of non-routine turnovers. While we find no signs of big bath accounting among routine turnovers, we find significantly lower ROA in the turnover year for non-routine turnovers. T-tests revealed that while ROA drops significantly from year -1 to year 0, revenue increase significantly. Furthermore, we found significantly higher write-downs in the turnover year in the case of non-routine turnovers as opposed to routine turnovers. However, we did not find any indication of earnings management through discretionary accruals. For non-routine turnovers, we find stronger indication of negative discretionary accruals in the turnover year than the other years, but the finding is not significant. Overall, we find support for our second hypothesis. The routine turnovers provide no indications of big bath accounting, while the analysis on non-routine turnovers reveal decreasing ROA combined with increasing revenue in the turnover year, as well as significantly higher write-downs.

8.3 Is Big Bath Accounting more Prevalent in Large Firms?

In our dataset, we have divided firms into five quintiles based on mean revenue. In the main analysis, we added firm size dummies to control for differences between firm size classes, but in this subsection, we wish to explore these differences. As we do not find any indication of

big bath accounting for the four smallest quintiles in our sample, table 10 presents the regression on return on assets, revenue, write-downs and discretionary accruals for the top quintile in our sample[10].

Table 10: Results from FE Regression on ROA, Revenue, Write-Downs and Discretionary Accruals for the Top Quintile

	(1) Return on Assets	(2) Revenue	(3) Write-Downs	(4) Discretionary Accruals
Turnover -2	-0.010*	-0.065	-0.000	0.002
	(0.006)	(0.046)	(0.000)	(0.009)
Turnover -1	-0.016***	-0.107**	0.001	-0.011
	(0.005)	(0.044)	(0.001)	(0.008)
Turnover	-0.033***	-0.016	0.001	-0.016*
	(0.008)	(0.051)	(0.001)	(0.009)
Turnover +1	-0.011**	-0.030	0.001	-0.006
	(0.005)	(0.041)	(0.001)	(0.009)
Turnover +2	-0.003	-0.024	0.001	0.005
	(0.004)	(0.052)	(0.001)	(0.008)
Constant	0.068***	2.576***	0.004***	-0.025***
	(0.003)	(0.039)	(0.001)	(0.006)
R^2	0.082	0.036	0.024	0.054
Observations	14378	14036	14036	13235

Additional variables included in the regression:
Column 1: L.PM, Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Column 2-3: L.ROA, Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Column 4: L.ROA, Age, L.TAC, Growth, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

In column 1, we find that return on assets is 1.6 percentage points below the firm average in the year before the turnover and 3.3 percentage points below average in the turnover year. A t-test reveals that the two coefficients are significantly different on a 1% level. Furthermore, ROA is only 1.1 percentage points lower than average in the year after the turnover, a significant increase from the turnover year. While ROA decreases in the turnover year, column 2 shows that revenue is higher than the year before. The difference is significant on a 1% level. The V-shaped earnings trend, in combination with increasing revenue, is consistent with big

[10] The regressions on ROA, revenue, write-downs and discretionary accruals for all five quintiles are presented in table F1-F4 in appendix F.

bath accounting. Furthermore, our analysis does not provide significant results when analyzing turnovers' effect on write-downs, but in column 4, we find that discretionary accruals are 1.6 percentage points below average in the turnover year. The coefficient is larger than what we find for the full sample and significant on a 10% level. Our findings for discretionary accruals align with our assumption that CEOs in larger firms have greater opportunity and incentive to manage earnings.

We also analyzed the effect of non-routine and routine turnovers on the different variables for each firm size group. The results from these regressions are displayed in table F5-F8 in appendix F. In the regressions, we see the expected trends; the prevalence of big bath accounting increase with firm size class and is more evident for non-routine turnovers. When analyzing non-routine turnovers in table F5, we see that return on assets is low in the year before the turnover, but decreases further in the turnover year for all size groups. The difference between year -1 and year 0 is largest for the top quintile. In this quintile, return on assets is 10.3 percentage points below average in the turnover year compared to 7.6 percentage points below average the year before.

Our hypothesis was to find stronger evidence of big bath accounting in larger firms. The largest quintile consists of firms with an average revenue higher than 70 MNOK. The average revenue for the firms in this quintile is 345 MNOK. Elliott and Shaw (1988), Bengtsson et al. (2008) and Wilson and Wang (2010) have samples where the mean revenue is higher than 345 MNOK. In the sample of Elliott and Shaw (1988), the mean revenue is 2.6 billion USD, while mean revenue in Bengtsson et al. (2008) is 40 billion SEK. Thus, the 20% largest firms in our sample are more comparable to previous research than our full sample. This group of firms have the largest share of turnovers, 27% of all turnovers. Furthermore, the development in both earnings, measured in return on assets, and discretionary accruals is consistent with big bath accounting. The magnitude of the coefficients are larger than what we find in the full sample and the difference between year -1 and 0 is significant. Overall, we find support for our third hypothesis.

8.4 Robustness and Analysis with Different Sample Specifications

8.4.1 Reduced CEO Window

In order to assess the effect of a turnover and avoid disturbance between turnovers, we argue that we need two years before and after a turnover. Thus, we have at least four years between each turnover, resulting in a maximum of two turnovers for each firm. We will now relax this assumption by only requiring one year before and after a turnover. The relaxing of this assumption yields a sample of 90 697 observations compared to our original sample of 73 081 observations. In table 11, we present FE regressions with this new relaxed restriction.

Table 11: Results from Regression on Return on Assets, Revenue, Profit Margin, Write-Downs and Discretionary Accruals Using a Reduced CEO Window

	(1) Return on Assets	**(2) Revenue**	**(3) Write-Downs**	**(4) Discretionary Accruals**
Turnover -1	-0.015***	-0.030	0.001**	-0.007*
	(0.003)	(0.021)	(0.000)	(0.004)
Turnover	-0.017***	0.004	0.001	-0.005
	(0.003)	(0.021)	(0.000)	(0.005)
Turnover +1	-0.003	0.026	0.000	-0.001
	(0.002)	(0.019)	(0.000)	(0.004)
Constant	0.100***	2.852***	0.001**	-0.020***
	(0.002)	(0.016)	(0.000)	(0.004)
R^2	0.034	0.033	0.006	0.080
Observations	87971	85083	85083	80663

Additional variables included in the regression:
Column 1: L.PM, Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Column 2-3: L.ROA, Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Column 4: L.ROA, Age, L.TAC, Growth, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

In columns 1 and 2, we see the same trend as the original analysis, V-shaped earnings pattern combined with an increase in revenue from year -1 to year 0. Column 3 shows that write-downs now is significantly higher than average in the year before a turnover. Furthermore, discretionary accruals significantly contribute to decrease earnings in the year before the turnover, as opposed to the turnover year as in the original analysis. Write-downs and accruals

do not suggest earnings management in this analysis, but our findings of V-shaped earnings are robust to a reduced CEO window.

8.4.2 Increased Share of Non-Routine Turnovers

Bengtsson et al. (2008) find that 25% of the turnovers in Swedish firms are non-routine. We assumed a similar share in Norwegian firms and classified the 25% worst ranking firms as having non-routine turnovers. In other studies, the share of non-routine turnovers varies. Murphy and Zimmerman (1993) classify the 50% worst ranking firms as non-routine, while Wells (2002) finds that 40 turnovers are routine and 25 are non-routine, yielding a share of 38% non-routine turnovers. We wish to investigate whether our results are robust to the share of non-routine turnovers. In table 12, we run the same regressions as earlier, but this time we classify the 50% worst performing firms as having non-routine turnovers.

Table 12: Results from Regression with 50% Non-routine Turnovers

	(1) Return on Assets	(2) Revenue	(3) Write-Downs	(4) Discretionary Accruals
Non-Routine Turnover -2	0.001	-0.051	-0.001**	-0.004
	(0.005)	(0.034)	(0.000)	(0.007)
Non-Routine Turnover -1	-0.059***	-0.303***	0.002*	-0.004
	(0.004)	(0.030)	(0.001)	(0.006)
Non-Routine Turnover	-0.069***	-0.048	0.001**	-0.005
	(0.006)	(0.039)	(0.001)	(0.008)
Non-Routine Turnover +1	-0.017***	0.032	-0.000	-0.004
	(0.005)	(0.034)	(0.000)	(0.006)
Non-Routine Turnover +2	-0.017***	0.048	0.001	-0.005
	(0.005)	(0.036)	(0.001)	(0.007)
Routine Turnover -2	-0.007	0.026	-0.001*	0.001
	(0.006)	(0.046)	(0.000)	(0.008)
Routine Turnover -1	0.036***	0.282***	-0.001**	-0.004
	(0.006)	(0.045)	(0.000)	(0.007)
Routine Turnover	0.041***	0.126***	-0.000	-0.012
	(0.005)	(0.037)	(0.000)	(0.009)
Routine Turnover +1	0.020***	0.074**	-0.000	0.006
	(0.005)	(0.035)	(0.000)	(0.006)
Routine Turnover +2	0.015***	-0.013	-0.001**	0.009
	(0.005)	(0.031)	(0.000)	(0.006)
Constant	0.069***	2.678***	0.002***	-0.017***
	(0.002)	(0.018)	(0.001)	(0.003)
R^2	0.040	0.036	0.009	0.047
Observations	70855	68496	68496	68491

Additional variables included in the regression:
Column 1: L.PM, Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Column 2-3: L.ROA, Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Column 4: L.ROA, Age, L.TAC, Growth, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

From table 12, we see that return on assets in firms with non-routine turnovers follow the same V-shaped trend as earlier. The deviations from the firm average are smaller, but the coefficients in year -1, 0 and 1 still significantly different from each other. As expected, the coefficients for the years surrounding a routine turnover are higher than before. The routine subsample now include the 50% best performing firms, as opposed to the 75% best performing firms. In column 2, we see that non-routine turnovers' effect on revenue follows the same

pattern as earlier, while column 3 shows a difference in the effect on write-downs. In addition to being significant in the turnover year, write-downs are also significantly higher than the firm average in the year before the turnover. Higher write-downs in year -1 contradicts the argument that higher write-downs in year 0 might be a result of the departing CEO's failure to report necessary write-downs. Discretionary accruals provide no indications of big bath accounting for neither routine nor non-routine turnovers. Overall, we see a small difference in turnovers' effect on write-downs, while the trends for earnings remain the same. Thus, we conclude that changing the ratio of non-routine and routine turnovers does not alter our findings or conclusions.

8.4.3 Dividing the Sample in Two Time Periods

In our original analysis, the sample period is 15 years, 1999-2013. As modern accounting standards have allowed firms more latitude concerning fair value of assets, Riedl (2004) argues that the opportunities for performing earnings management have increased. Moreover, turbulent macroeconomic conditions might make it easier to cover up earnings management. Thus, one could expect to see clearer trends of big bath accounting during and following the financial crisis in 2008. To explore this possibility, we divide our sample in two separate periods, 1999-2006 and 2007-2013. Tables 13 and 14 show the results of the regressions on return on assets, revenue, write-downs and accruals for the two subsamples[11].

[11] Since our subsamples only include 7 and 8 years, we have used the relaxed CEO window assumption, allowing firms to have two years between turnovers as oppose to four years in the original analysis.

Table 13: Results from Regressions on the Sample Including 1999-2006

	(1) Return on Assets	(2) Revenue	(3) Write-Downs	(4) Discretionary Accruals
Turnover -1	-0.019***	-0.047*	0.001	0.004
	(0.004)	(0.026)	(0.001)	(0.006)
Turnover	-0.020***	0.075**	0.000	-0.003
	(0.005)	(0.030)	(0.001)	(0.008)
Turnover +1	-0.002	0.066**	0.000	0.008
	(0.004)	(0.029)	(0.001)	(0.006)
Constant	0.100***	2.852***	0.002***	-0.020***
	(0.002)	(0.016)	(0.000)	(0.004)
R^2	0.023	0.013	0.005	0.086
Observations	41023	39946	39946	39938

Additional variables included in the regression:
Column 1: L.PM, Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Column 2-3: L.ROA, Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Column 4: L.ROA, Age, L.TACC, Growth, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 14: Results from Regressions on the Sample Including 2007-2013

	(1) Return on Assets	(2) Revenue	(3) Write-Downs	(4) Discretionary Accruals
Turnover -1	-0.016***	-0.004	0.000	-0.009
	(0.004)	(0.036)	(0.001)	(0.006)
Turnover	-0.018***	-0.013	0.001	-0.013**
	(0.004)	(0.026)	(0.001)	(0.006)
Turnover +1	-0.004	0.019	-0.000	-0.001
	(0.003)	(0.027)	(0.000)	(0.005)
Constant	0.075***	2.801***	0.002***	-0.022***
	(0.002)	(0.014)	(0.000)	(0.003)
R^2	0.016	0.022	0.006	0.093
Observations	40289	39669	39669	39669

Additional variables included in the regression:
Column 1: L.PM, Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Column 2-3: L.ROA, Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Column 4: L.ROA, Age, L.TAC, Growth, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

In table 13, we see the analysis with the first sample, 1999-2006, while table 14 presents the second sample, 2007-2013. We find a trend of V-shaped earnings in both subsamples. As before, the drop in earnings do not coincide with a drop in revenue. Furthermore, we find no significant results for write-downs in either period, but discretionary accruals are significant in the turnover year in the second period. In table 14, column 4 shows that discretionary accruals are 1.3 percentage points below the firm average in the turnover year. The coefficient is significant on a 5% level and larger than the coefficient from the full sample. Overall, we find few differences between the two subsamples, but the results may indicate that discretionary accruals are more frequently used to manage earnings in recent years. In regards to earnings, both subsamples show trends that are consistent with what we would expect to observe in the case of big bath accounting.

9. Conclusion and Final Discussion

In this thesis, we analyze big bath accounting in Norwegian firms in the period between 1999 and 2013. We investigate whether we find evidence to support the well-documented phenomenon of reducing earnings in the year of a CEO turnover. Our first hypothesis relates to the full sample of observations and looks at return on assets, revenue, write-downs and accruals. In our second hypothesis, we follow existing literature and distinguish between routine and non-routine turnovers, while our third hypothesis regards whether the prevalence of big bath accounting is more evident in large firms. In this final section, we will answer our three hypotheses and provide a final discussion of our findings.

Hypothesis 1: *Firms that appoint a new CEO report significantly lower earnings in the turnover year and higher earnings the following year. CEOs manage earnings through discretionary accruals and write-downs.*

While we find a clear correlation between a CEO turnover and lower return on assets, we do not see equally strong evidence of earnings reducing discretionary accruals or write-downs in the turnover year. As recent research has pointed out, discretionary accruals is the main channel through which earnings management may occur. Although only significant on a 10% level, we find that discretionary accruals are lower in the turnover year. As opposed to previous research, we calculate cash flow using an indirect method, which produces measurement errors in discretionary accruals. As a result, we conclude primarily based on the trends we observe in earnings and revenue. Although not confident that the low earnings are a direct result of earnings management, we conclude that the strong correlation between negative return on assets and a CEO turnover are consistent with big bath accounting. The significant increase in revenue in the turnover year substantiates the indication of earnings management.

Hypothesis 2: *Big bath accounting is more prevalent in firms with non-routine turnovers than in firms with routine turnovers.*

When distinguishing between routine and non-routine turnovers, we find trends that are consistent with big bath accounting only in the case of non-routine turnovers. This supports our hypothesis that earnings management in relation to a turnover is more prevalent in the worst performing firms. We find that return on assets in the turnover year is significantly lower than the year before, while revenue is significantly higher. Following Bengtsson et al. (2008),

this is a strong indication that the low earnings are managed rather than the result of bad firm performance. We do not find any evidence of earnings decreasing discretionary accruals when dividing the sample. We argue that this can be the result of measurement error and that the main conclusion should be based on the analysis of turnovers' effect on return on assets. Hence, our findings support existing research in the conclusion that big bath accounting is more prevalent in non-routine turnovers.

Hypothesis 3: *Big bath accounting in relation to CEO turnover is more prevalent in larger firms than in smaller firms.*

As expected, we only find evidence that suggest big bath accounting among the 20% largest firms. The top quintile consists of firms with an average revenue above 70 MNOK and is the most comparable sample to previous research. In the turnover year, both return on assets and discretionary accruals are significantly lower than the year before the turnover. When distinguishing between routine and non-routine turnovers, we find that non-routine turnovers provide some evidence of earnings management in all size quintiles, but the results are strongest in the largest quintile. Our findings lead us to confirm the hypothesis that larger firms are more involved in earnings management than smaller firms are.

We have difficulties with ascertaining whether the results observed in the turnover year reflect the incoming CEO, or if the departing CEO affects the results as well. We argue that this problem can be solved by only looking at turnovers that take place in the first few months of the year, but we do not have access to this information. A study of the effect of a turnover on discretionary accruals, using accurate cash flow would be able to use SLS with instrument variables. This would reduce our problem with reverse causality and we therefore believe that this would make a strong contribution to the discussion of big bath accounting in Norway.

Overall, we find strong evidence suggesting earnings management among non-routine turnovers and in our largest firms. Our analysis of routine turnovers yields no significant results. These findings suggest that big bath accounting exists among the largest firms in Norway, and is more prevalent when firm performance is bad. Due to problems related to reverse causality, we cannot conclude with certainty that the findings are a result of deliberate manipulation and not a reflection of bad firm performance. However, the combination of decreasing earnings and increasing revenue in the turnover year points to earnings being managed. Thus, we argue that the field deserves more attention.

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Appendix

Appendix A – Sector Descriptions

Table A1: Breakdown into 14 sector groups

Sector	**NACE-codes follow SN2007**			**NACE-codes follow SN2002**		
	From & Including	To	Excluding	From & Including	To	Excluding
Primary Industries	0	5000		0	10000	
Oil & Gas	5 000	10000		11 000	12000	
Manufacturing Industries	10 000	35000		10 000	11000	
				12 000	40000	
Energy, Water & Sewage	35 000	40000				
Constructions	40 000	45000		40 000	50000	
Trade	45 000	49000		50 000	60000	
Shipping	50 000	51000		60 300	60400	
				61 100	61200	
Transport & Tourism	49 000	58000	Shipping	60 000	65000	Shipping, IT
Telecom, IT & Media	58 000	64000		30 020	31000	
				64 200	65000	
				71 330	71340	
				72 000	73000	
Finance & Insurance	64 000	68000		65 000	70000	
Real Estate & Services	68 000	69000		70 000	75000	IT
				90 000	91000	
General Services	69 000	84000	R&D	85 000	90000	
Research & Development	72 000	73000				
Public Sector & Culture	84 000	max		92 000	95000	

Appendix B – Calculation of Cash Flow

$$\begin{aligned} \mathrm{CFO}_{i,t} = \ & \mathrm{EBITDA}_{i,t} + \left(\mathrm{AccountsReceivables}_{i,t-1} - \ \mathrm{AccountsReceivables}_{i,t}\right) \\ & + \left(\mathrm{Inventory}_{i,t-1} - \ \mathrm{Inventory}_{i,t}\right) \\ & + \left(\mathrm{ShortTermDebt}_{i,t} - \ \mathrm{ShortTermDebt}_{i,t-1}\right) \\ & + \left(\mathrm{Provisions}_{i,t} - \ \mathrm{Provisions}_{i,t-1}\right) \end{aligned}$$

Cash flow from operations is calculated using the indirect method. We start with Earnings before interest, tax, depreciation and amortization (EBITDA). We add back last year's receivables as they are received in cash this year, but not registered as revenue. We further remove this year's receivables for the opposite reason; they are registered as revenue, but not received in cash. The opposite is the case for short term debt and provisions. These are costs that are registered, but not paid in cash. An increase in short term debt or provisions will hence increase the cash flow compared to EBITDA. Inventory are generated as cash through accounts payable. An increase in inventory will mean that some costs are paid, but not yet registered because of the matching principle. This will lower the cash flow compared to EBITDA and an increase in inventory therefore has a negative sign in the equation. Bengtsson et al. (2008) have used after tax numbers, while we have calculated before tax. The reason for this is that when calculating $CFO_{i,t}$ from EBITDA you get before tax results. Transforming both EBITDA and the balance post to after tax numbers will potentially increase the measurement error.

Appendix C – T-tests

Table C1: P-values from T-tests of Differences in Mean for the Variables Presented in Section 6.1, table 4

	Firms with Turnovers vs. Firms without Turnovers	Routine Turnovers vs. Non-Routine Turnovers
ROA	0.00	0.00
Profit Margin	0.04	0.00
Revenue (over $TA_{i,t-1}$)	0.00	0.00
Write-Downs (over $TA_{i,t-1}$)	0.13	0.00
Accruals (over $TA_{i,t-1}$)	0.01	0.07
Earnings	0.00	0.03
Revenue	0.00	0.08
Write-Downs	0.00	0.00
Total Accruals	0.01	0.30
Total Assets	0.00	0.37

Table C2: T-tests for ROA and Revenue in Years Surrounding a Turnover (Section 6.2)

	Year -1	Year 0	Year 1	Control Group	Difference	(p-value)
Full sample						
ROA	0.08			0.10	-0.01	0.00
ROA		0.08		0.10	-0.02	0.00
ROA	3.11		0.09	0.10	-0.00	0.37
Revenue	2.80			3.16	-0.36	0.00
Revenue		2.77		3.16	-0.38	0.00
Revenue			2.75	3.16	-0.41	0.00
ROA	0.08	0.08			0.00	0.60
ROA		0.08	0.09		-0.01	0.01
ROA	0.08		0.09		-0.01	0.03
Revenue	2.80	2.77			0.03	0.67
Revenue		2.77	2.75		0.03	0.67
Revenue	2.80		2.75		0.05	0.40
Non-routine						
ROA	-0.03			0.10	-0.12	0.00
ROA		-0.05		0.10	-0.14	0.00
ROA			0.02	0.10	-0.08	0.00
Revenue	1.83			3.16	-1.33	0.00
Revenue		2.14		3.16	-1.02	0.00
Revenue			2.23	3.16	-0.93	0.00
ROA	-0.03	-0.05			0.02	0.01
ROA		-0.05	0.02		-0.07	0.00
ROA	-0.03		0.02		-0.05	0.00
Revenue	1.83	2.14			-0.31	0.00
Revenue		2.14	2.23		-0.09	0.32
Revenue	1.83		2.23		-0.40	0.00
Routine						
ROA	0.12			0.10	0.02	0.00
ROA		0.12		0.10	0.02	0.00
ROA			0.12	0.10	0.02	0.00
Revenue	3.11			3.16	-0.05	0.43
Revenue		2.98		3.16	-0.18	0.00
Revenue			2.91	3.16	-0.25	0.00
ROA	0.12	0.12			-0.00	0.66
ROA		0.12	0.12		0.00	0.60
ROA	0.12		0.12		0.00	0.60
Revenue		2.98			0.13	0.09
Revenue		2.98	2.91		0.06	0.38
Revenue	2.98		2.91		0.06	0.38

Table C3: P-values for T-tests of Different Mean Between Coefficients

	Year-1 vs. Year0	**Year0 vs. Year1**	**Year-1 vs. Year1**
T.7.1 ROA	0.38	0.00	0.01
T.7.2 ROA	0.47	0.00	0.00
T.7.3 Revenue	0.30	0.99	0.33
T.7.4 Revenue	0.07	0.59	0.03
T.7.5 PM	0.12	0.01	0.20
T.7.6 PM	0.15	0.01	0.12
T.9.1 ROA Non-Routine	0.02	0.00	0.00
T.9.1 ROA Routine	0.79	0.58	0.85
T.9.2 Revenue Non-Routine	0.00	0.01	0.00
T.9.2 Revenue Routine	0.18	0.43	0.05
T.10.1 ROA	0.01	0.01	0.41
T.10.2 Revenue	0.04	0.77	0.08
T.11.1 ROA	0.44	0.00	0.00
T.11.2 Revneue	0.13	0.31	0.02
T.12.1 ROA Non-Routine	0.03	0.00	0.00
T.12.1 ROA Routine	0.47	0.00	0.02
T.12.2 Revenue Non-Routine	0.00	0.03	0.00
T.12.2 Revenue Routine	0.00	0.16	0.00
T.13.1 ROA	0.91	0.00	0.00
T.13.2 Revenue	0.00	0.80	0.00
T.14.1 ROA	0.60	0.00	0.00
T.14.2 Revneue	0.82	0.31	0.59

Column 2 compare the dummy variable who represent one year before the turnover to the dummy variable who represent the turnover year. Column 3 and 4 do the same with the dummies for the different years surrounding the turnover. T.7.1 represent Table 7, Column 1. The same logic applies for all rows.

Appendix D: Testing Different Control Variables for Past Firm Performance

Table D1: Testing How We Control for Firm Performance

	(1) **ROA** OLS	(2) **ROA** FE	(3) **ROA** OLS	(4) **ROA** FE	(5) **ROA** OLS	(6) **ROA** FE
Turnover -2	-0.011***	-0.007**	-0.005	-0.003	-0.007*	-0.004
	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)
Turnover -1	-0.014***	-0.010***	-0.015***	-0.011***	-0.017***	-0.012***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Turnover	-0.019***	-0.014***	-0.018***	-0.014***	-0.020***	-0.014***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Turnover +1	-0.005	0.001	-0.003	0.001	-0.006*	0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Turnover +2	-0.007**	-0.000	-0.007**	-0.001	-0.008**	-0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Lagged ROA	0.008	0.003				
	(0.006)	(0.002)				
Lagged PM			0.192***	0.091***		
			(0.028)	(0.021)		
Constant	0.197***	0.072***	0.086***	0.069***	0.226***	0.072***
	(0.034)	(0.002)	(0.015)	(0.002)	(0.044)	(0.002)
R^2	0.038	0.023	0.063	0.025	0.030	0.018
Observations	68496	68496	70855	70855	70930	70930

Additional variables included in the regression:
Column 1-2: L.ROA, Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Column 3-4: L.PM, Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Column 5-6: Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Standard errors in parentheses, clustered on firm when running OLS
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Appendix E – Routine and Non-routine Turnovers

Table E1: Results from FE regression on ROA, Revenue, Discretionary Accruals and Write-Downs Separated in Routine and Non-routine Turnovers with a 75/25 Ratio for Each Year

	(1) Return on Assets	(2) Revenue	(3) Write-Downs	(4) Discretionary Accruals
Non-Routine Turnover -2	-0.005	-0.119**	-0.000	-0.000
	(0.008)	(0.050)	(0.001)	(0.010)
Non-Routine Turnover -1	-0.091***	-0.492***	0.004*	-0.007
	(0.006)	(0.037)	(0.002)	(0.009)
Non-Routine Turnover	-0.109***	-0.195***	0.003***	-0.011
	(0.008)	(0.053)	(0.001)	(0.012)
Non-Routine Turnover +1	-0.035***	-0.019	0.001	0.007
	(0.008)	(0.046)	(0.001)	(0.009)
Non-Routine Turnover +2	-0.030***	0.010	0.001	0.002
	(0.009)	(0.044)	(0.001)	(0.013)
Routine Turnover -2	-0.003	0.022	-0.001***	-0.001
	(0.004)	(0.033)	(0.000)	(0.006)
Routine Turnover -1	0.015***	0.145***	-0.001**	-0.003
	(0.005)	(0.034)	(0.000)	(0.006)
Routine Turnover	0.016***	0.115***	-0.000	-0.007
	(0.004)	(0.031)	(0.000)	(0.007)
Routine Turnover +1	0.013***	0.075***	-0.000*	-0.001
	(0.004)	(0.029)	(0.000)	(0.005)
Routine Turnover +2	0.009**	0.019	-0.000	0.002
	(0.004)	(0.028)	(0.000)	(0.005)
Constant	0.069***	2.678***	0.002***	-0.017***
	(0.002)	(0.018)	(0.001)	(0.003)
R^2	0.040	0.036	0.009	0.047
Observations	70855	68496	68496	68491

Additional variables included in the regression:
Column 1: L.PM, Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Column 2-3: L.ROA, Age, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Column 4: L.ROA, Age, L.TAC, Growth, Dummy variables (12 Sectors, 15 Years, 5 Firm size groups, Interaction between sector and firm)
Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Appendix F – Firm Size Regressions

Table F1: Results from Regression on ROA for Different Firm Sizes

	(1)	(2)	(3)	(4)	(5)
Mean revenue	**ROA**	**ROA**	**ROA**	**ROA**	**ROA**
(MNOK)	10-16.5	16.5-24.5	24.5-38	38-70	>70
Turnover -2	-0.009	0.020**	-0.004	-0.004	-0.010*
	(0.012)	(0.010)	(0.008)	(0.006)	(0.006)
Turnover -1	-0.004	-0.006	0.005	-0.027***	-0.016***
	(0.013)	(0.009)	(0.009)	(0.008)	(0.005)
Turnover	-0.012	-0.002	-0.006	-0.010	-0.033***
	(0.010)	(0.008)	(0.010)	(0.007)	(0.008)
Turnover +1	0.016	0.009	-0.006	0.001	-0.011**
	(0.010)	(0.008)	(0.010)	(0.006)	(0.005)
Turnover +2	-0.001	0.009	-0.003	-0.003	-0.003
	(0.009)	(0.008)	(0.010)	(0.010)	(0.004)
Constant	0.058***	0.075***	0.069***	0.074***	0.068***
	(0.006)	(0.004)	(0.004)	(0.006)	(0.003)
R^2	0.053	0.046	0.054	0.041	0.082
Observations	14400	13713	14071	14293	14378

Additional variables included in the regression:
Column 1-5: L.PM, 33 Dummy variables (12 Sectors, 15 Years, 5 Age groups, 5 Firm size groups)
Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table F2: Results from Regression on Revenue for Different Firm Sizes

	(1)	(2)	(3)	(4)	(5)
Mean revenue	**Revenue**	**Revenue**	**Revenue**	**Revenue**	**Revenue**
(MNOK)	10-16.5	16.5-24.5	24.5-38	38-70	>70
Turnover -2	-0.053	0.126*	-0.047	0.024	-0.065
	(0.057)	(0.068)	(0.060)	(0.087)	(0.046)
Turnover -1	0.086	0.054	0.052	-0.085	-0.107**
	(0.070)	(0.080)	(0.066)	(0.063)	(0.044)
Turnover	0.116*	0.039	0.027	0.058	-0.016
	(0.064)	(0.062)	(0.060)	(0.072)	(0.051)
Turnover +1	0.155**	0.123*	-0.022	0.061	-0.030
	(0.062)	(0.064)	(0.063)	(0.054)	(0.041)
Turnover +2	0.082	0.019	0.065	-0.056	-0.024
	(0.053)	(0.049)	(0.059)	(0.054)	(0.052)
Constant	2.292***	2.597***	2.865***	3.109***	2.576***
	(0.035)	(0.039)	(0.041)	(0.048)	(0.039)
R^2	0.057	0.054	0.051	0.038	0.036
Observations	13823	13201	13588	13848	14036

Additional variables included in the regression:
Column 1-5: L.ROA, 33 Dummy variables (12 Sectors, 15 Years, 5 Age groups, 5 Firm size groups)
Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table F3: Results From Regression on Write-Downs for Different Firm Sizes

	(1) Write-Downs	(2) Write-Downs	(3) Write-Downs	(4) Write-Downs	(5) Write-Downs
Mean revenue (MNOK)	10-16.5	16.5-24.5	24.5-38	38-70	>70
Turnover -2	-0.001***	-0.001*	-0.001	-0.001	-0.000
	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)
Turnover -1	0.000	-0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)
Turnover	0.000	-0.001	-0.001	0.001	0.001
	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)
Turnover +1	-0.001	-0.000	-0.002**	-0.000	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Turnover +2	-0.001*	-0.001	-0.001	0.001	0.001
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Constant	0.001***	0.001***	0.001***	0.001***	0.004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
R^2	0.017	0.025	0.029	0.054	0.024
Observations	13823	13201	13588	13848	14036

Additional variables included in the regression:
Column 1-5: L.ROA, 33 Dummy variables (12 Sectors, 15 Years, 5 Age groups, 5 Firm size groups)
Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table F4: Results from Regression on Accruals for Different Firm Sizes

	(1) Discretionary Accruals	(2) Discretionary Accruals	(3) Discretionary Accruals	(4) Discretionary Accruals	(5) Discretionary Accruals
Mean revenue (MNOK)	10-16.5	16.5-24.5	24.5-38	38-70	>70
Turnover -2	-0.021	0.006	-0.012	0.004	0.002
	(0.013)	(0.012)	(0.011)	(0.015)	(0.009)
Turnover -1	0.011	-0.020*	0.010	-0.012	-0.011
	(0.015)	(0.012)	(0.011)	(0.011)	(0.008)
Turnover	-0.029	0.014	-0.007	-0.013	-0.016*
	(0.020)	(0.011)	(0.012)	(0.012)	(0.009)
Turnover +1	-0.008	0.004	0.007	0.009	-0.006
	(0.012)	(0.011)	(0.010)	(0.010)	(0.009)
Turnover +2	-0.001	0.020*	-0.009	-0.003	0.005
	(0.011)	(0.011)	(0.010)	(0.013)	(0.008)
Constant	-0.018***	-0.030***	-0.029***	-0.023***	-0.025***
	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)
R^2	0.106	0.120	0.109	0.105	0.054
Observations	13170	12558	12889	13099	13235

Additional variables included in the regression:
Column 1-5: L.ROA, L.TACC, Growth, 33 Dummy variables (12 Sectors, 15 Years, 5 Age groups, 5 Firm size groups)
Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table F5: Results from Regression on ROA for Different Firm Sizes – Divided Between Routine and Non-routine Turnovers

	(1) ROA	(2) ROA	(3) ROA	(4) ROA	(5) ROA
Mean revenue (MNOK)	10-16.5	16.5-24.5	24.5-38	38-70	>70
Non-Routine Turnover -2	0.043	-0.005	0.003	-0.003	-0.029***
	(0.047)	(0.016)	(0.013)	(0.013)	(0.008)
Non-Routine Turnover -1	-0.106***	-0.107***	-0.079***	-0.089***	-0.076***
	(0.023)	(0.017)	(0.014)	(0.011)	(0.009)
Non-Routine Turnover	-0.124***	-0.107***	-0.096***	-0.104***	-0.103***
	(0.030)	(0.017)	(0.021)	(0.017)	(0.012)
Non-Routine Turnover +1	0.009	-0.018	-0.053**	-0.042***	-0.049***
	(0.029)	(0.013)	(0.021)	(0.016)	(0.011)
Non-Routine Turnover +2	-0.042	-0.010	-0.032*	-0.043	-0.034***
	(0.027)	(0.014)	(0.017)	(0.033)	(0.008)
Routine Turnover -2	-0.024**	0.028**	-0.006	-0.005	-0.004
	(0.011)	(0.012)	(0.009)	(0.008)	(0.007)
Routine Turnover -1	0.021	0.027***	0.030***	-0.005	0.005
	(0.014)	(0.010)	(0.010)	(0.010)	(0.006)
Routine Turnover	0.015	0.033***	0.022**	0.022***	-0.008
	(0.009)	(0.009)	(0.010)	(0.007)	(0.010)
Routine Turnover +1	0.018*	0.017*	0.008	0.016**	0.002
	(0.011)	(0.009)	(0.011)	(0.007)	(0.005)
Routine Turnover +2	0.008	0.015*	0.006	0.010	0.007
	(0.009)	(0.009)	(0.011)	(0.007)	(0.005)
Constant	0.058***	0.076***	0.069***	0.075***	0.069***
	(0.006)	(0.004)	(0.004)	(0.006)	(0.003)
R^2	0.057	0.054	0.061	0.048	0.092
Observations	14400	13713	14071	14293	14378

Additional variables included in the regression: Column 1-5: L.PM, 33 Dummy variables (12 Sectors, 15 Years, 5 Age groups, 5 Firm size groups)

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table F6: Results from Regression on Revenue for Different Firm Sizes – Divided Between Routine and Non-routine Turnovers

	(1) Revenue	(2) Revenue	(3) Revenue	(4) Revenue	(5) Revenue
Mean revenue (MNOK)	10-16.5	16.5-24.5	24.5-38	38-70	>70
Non-Routine Turnover -2	-0.062	-0.053	-0.081	-0.156	-0.122
	(0.137)	(0.086)	(0.110)	(0.109)	(0.106)
Non-Routine Turnover -1	-0.523***	-0.492***	-0.451***	-0.564***	-0.380***
	(0.132)	(0.075)	(0.085)	(0.082)	(0.067)
Non-Routine Turnover	-0.271**	-0.155	-0.156*	-0.129	-0.120
	(0.126)	(0.113)	(0.094)	(0.136)	(0.104)
Non-Routine Turnover +1	0.050	0.053	-0.124	0.003	-0.069
	(0.137)	(0.109)	(0.095)	(0.098)	(0.080)
Non-Routine Turnover +2	0.019	-0.045	0.159	0.042	-0.053
	(0.122)	(0.075)	(0.118)	(0.101)	(0.073)
Routine Turnover -2	-0.056	0.187**	-0.038	0.087	-0.045
	(0.062)	(0.086)	(0.070)	(0.112)	(0.047)
Routine Turnover -1	0.242***	0.247**	0.214***	0.087	-0.010
	(0.078)	(0.101)	(0.079)	(0.079)	(0.052)
Routine Turnover	0.208***	0.101	0.083	0.120	0.019
	(0.071)	(0.072)	(0.071)	(0.086)	(0.057)
Routine Turnover +1	0.178**	0.144*	0.009	0.079	-0.018
	(0.072)	(0.075)	(0.075)	(0.062)	(0.047)
Routine Turnover +2	0.094	0.038	0.035	-0.091	-0.015
	(0.059)	(0.060)	(0.068)	(0.061)	(0.064)
Constant	2.293***	2.599***	2.865***	3.109***	2.576***
	(0.035)	(0.039)	(0.041)	(0.048)	(0.039)
R^2	0.060	0.056	0.053	0.039	0.037
Observations	13823	13201	13588	13848	14036

Additional variables included in the regression: Column 1-5: L.PM, 33 Dummy variables (12 Sectors, 15 Years, 5 Age groups, 5 Firm size groups)

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table F7: Results from Regression on Revenue for Different Firm Sizes – Divided Between Routine and Non-routine Turnovers

	(1) Write-Downs	(2) Write-Downs	(3) Write-Downs	(4) Write-Downs	(5) Write-Downs
Mean revenue (MNOK)	10-16.5	16.5-24.5	24.5-38	38-70	>70
Non-Routine Turnover -2	-0.001	-0.003**	-0.004	-0.000	-0.002
	(0.000)	(0.001)	(0.004)	(0.002)	(0.001)
Non-Routine Turnover -1	0.001	-0.003**	0.008	-0.001	0.001
	(0.001)	(0.001)	(0.008)	(0.001)	(0.002)
Non-Routine Turnover	0.002	-0.002*	-0.003	0.005	0.003
	(0.002)	(0.001)	(0.003)	(0.003)	(0.002)
Non-Routine Turnover +1	0.000	-0.002***	-0.006*	-0.000	0.002
	(0.001)	(0.001)	(0.003)	(0.002)	(0.002)
Non-Routine Turnover +2	-0.000	-0.002	-0.002	0.002	-0.001
	(0.000)	(0.001)	(0.004)	(0.003)	(0.001)
Routine Turnover -2	-0.001**	-0.001	-0.000	-0.001**	0.000
	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)
Routine Turnover -1	0.000	0.000	-0.001***	0.002	0.001
	(0.001)	(0.001)	(0.000)	(0.003)	(0.001)
Routine Turnover	-0.000	-0.000	-0.000	-0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Routine Turnover +1	-0.001	0.001	-0.001	-0.000	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Routine Turnover +2	-0.001*	-0.000	-0.001	0.000	0.001
	(0.000)	(0.000)	(0.001)	(0.001)	(0.002)
Constant	0.001***	0.001***	0.001***	0.001***	0.004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
R^2	0.017	0.025	0.031	0.055	0.024
Observations	13823	13201	13588	13848	14036

Additional variables included in the regression: Column 1-5: L.PM, 33 Dummy variables (12 Sectors, 15 Years, 5 Age groups, 5 Firm size groups)

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table F8: Results from Regression on Revenue for Different Firm Sizes – Divided Between Routine and Non-routine Turnovers

	(1) Discretionary Accruals	(2) Discretionary Accruals	(3) Discretionary Accruals	(4) Discretionary Accruals	(5) Discretionary Accruals
Mean revenue (MNOK)	10-16.5	16.5-24.5	24.5-38	38-70	>70
Non-Routine Turnover -2	-0.064*	0.020	-0.027	0.015	0.016
	(0.033)	(0.029)	(0.022)	(0.023)	(0.017)
Non-Routine Turnover -1	-0.002	-0.018	0.010	-0.004	-0.008
	(0.035)	(0.024)	(0.019)	(0.020)	(0.012)
Non-Routine Turnover	-0.035	0.015	-0.001	-0.028	-0.005
	(0.053)	(0.027)	(0.019)	(0.029)	(0.016)
Non-Routine Turnover +1	-0.036	0.039*	-0.009	0.016	0.006
	(0.031)	(0.023)	(0.021)	(0.022)	(0.015)
Non-Routine Turnover +2	0.005	0.036	-0.035	0.016	0.003
	(0.028)	(0.022)	(0.023)	(0.046)	(0.016)
Routine Turnover -2	-0.001	-0.012	-0.003	0.007	0.001
	(0.014)	(0.013)	(0.012)	(0.017)	(0.010)
Routine Turnover -1	0.013	-0.022	0.011	-0.014	-0.006
	(0.015)	(0.014)	(0.013)	(0.012)	(0.009)
Routine Turnover	-0.026	0.016	-0.008	0.001	-0.019*
	(0.022)	(0.012)	(0.014)	(0.012)	(0.011)
Routine Turnover +1	0.002	-0.009	0.011	0.010	-0.008
	(0.013)	(0.012)	(0.011)	(0.011)	(0.010)
Routine Turnover +2	-0.004	0.014	-0.002	-0.009	0.006
	(0.011)	(0.013)	(0.011)	(0.011)	(0.010)
Constant	-0.009	-0.031***	-0.018***	-0.020***	-0.018***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)
R^2	0.071	0.105	0.101	0.070	0.051
Observations	13822	13201	13587	13847	14034

Additional variables included in the regression: Column 1-5: L.PM, 33 Dummy variables (12 Sectors, 15 Years, 5 Age groups, 5 Firm size groups)

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$