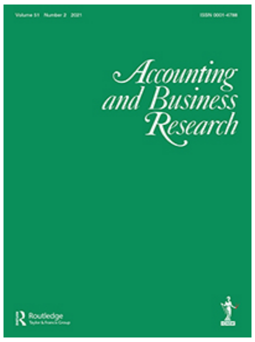

Accounting and Business Research

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/rabr20

Big baths and CEO overconfidence

Jochen Pierk

To cite this article: Jochen Pierk (2021) Big baths and CEO overconfidence, Accounting and Business Research, 51:2, 185-205, DOI: 10.1080/00014788.2020.1783634

To link to this article: https://doi.org/10.1080/00014788.2020.1783634

Published online: 26 Jun 2020.

Accounting and Business Research, 2021
Vol. 51, No. 2, 185–205, https://doi.org/10.1080/00014788.2020.1783634

Big baths and CEO overconfidence

JOCHEN PIERK*

Erasmus University Rotterdam, Rotterdam, Netherlands

This paper empirically investigates the relationship between managerial overconfidence and write-offs following CEO turnover. Incoming CEOs often engage in big bath accounting as they dispose of poorly performing projects. Overconfident managers overestimate their abilities and consequently have upwardly biased expectations concerning future firm performance. I hypothesise that overconfident CEOs are less likely to engage in a big bath following managerial change. The empirical results confirm this hypothesis by showing that big baths at CEO turnover are significantly less frequent among overconfident CEOs.

Keywords: Big bath; earnings management; managerial characteristics; overconfidence

1. Introduction

Overconfidence is a particular form of a biased managerial view. Overconfident individuals overestimate their abilities and therefore have upwardly biased expectations related to their future performance (e.g. Malmendier and Tate 2008, Ahmed and Duellman 2013). Overconfident managers are more optimistic about their ability to turn around poorly performing projects and are therefore more likely to overestimate the likelihood and magnitude of projects that go well and underestimate the likelihood and magnitude of those that do not perform well. For example, Ahmed and Duellman (2013) argue that they may erroneously perceive a project as profitable. In line with these arguments, Ahmed and Duellman (2013) show that overconfident managers are generally less conservative as they tend to report losses later compared to non-overconfident managers.

A specific form of accounting conservatism is large one-time write-offs, commonly known as taking a big bath, highlighting the magnitude of these write-offs. This paper argues that CEOs overconfidence determines the likelihood of taking a big bath after being hired, providing a potential channel through which the results of Ahmed and Duellman (2013) can arise. Recognition of losses is particularly relevant at CEO turnovers as empirical evidence indicates that they are more frequent (Johnson et al. 2011) and more extreme in the turnover year (Strong and Meyer 1987). When new CEOs step into office they often recognise problems ignored by their predecessors (Elliott and Shaw 1988), and managerial change induces restructuring (Strong and Meyer 1987). Consequently, managers engage in write-offs.

*Email: pierk@ese.eur.nl
Paper accepted by Maria Correia.

Overconfident CEOs overestimate their ability relative to other managers and are more optimistic about the company's projects when these projects are managed by them. Thus, if CEOs report in accordance with their overconfident beliefs, this will result in a lower likelihood of engaging in a big bath especially at CEO turnover. When overconfident managers fail to report these write-downs in the year of the turnover and postpone them to future periods, they do not 'clear the air' but 'muddy the waters' and degrade the firm's information environment (Haggard et al. 2015).

In the empirical analyses, I employ several measures of CEO overconfidence used in prior literature based on the CEOs stock option portfolios (e.g. Malmendier and Tate 2008), on their investment behaviour or on the magnitude of their capital expenditure in comparison to their industry peers. Following Elliott and Shaw (1988) and in line with recent literature (e.g. Haggard et al. 2015), I use the magnitude of write-offs in the form of special items to measure big baths.

The results support the empirical prediction. I find that overconfident CEOs are about 6.3–10.6 percent less likely to engage in a big bath in the turnover year than non-overconfident CEOs. Furthermore, I find that this difference is only prevalent in the year of the turnover but generally not in the years before or after the turnover.[1]

An alternative explanation for the finding could be that there is self-selection of non-overconfident managers into firms with higher potential for large write-offs in the turnover year. I address potential endogeneity and omitted correlated variables concerns in several ways. First, I show that the observed big bath choices are not driven by whether CEO turnover is forced. Big baths are especially prevalent in forced turnovers (Pourciau 1993, Wells 2002). Second, I use entropy balancing so that the first and second moments of all covariates in the year of the turnover are the same between overconfident and non-overconfident managers. This mitigates concerns that firm characteristics simultaneously explain the choice to hire a CEO of a certain behavioural type and determine the predicted big bath pattern. Third, by controlling in big bath regressions for the behavioural type of the outgoing CEO, I alleviate the concern that non-overconfident CEOs are selected to clean up bloated asset values left behind by overconfident CEOs. Fourth, I include firm fixed effects to control for time-invariant firm characteristics. The results remain qualitatively similar in all specifications.

This paper contributes to the literature by showing that differences in accounting conservatism in the form of write-offs across overconfident and non-overconfident managers only arise in the year of CEO turnover and not in subsequent years. This is in contrast to Ahmed and Duellman's findings (2013) that suggest that overconfident managers are generally less conservative in their accounting policies. Their market and accruals-based measures of conservatism do not explicitly identify one-time write-offs or any other channels through which accounting conservatism can be practiced. I add to their paper by showing that big baths at CEO turnovers are a potential channel for their findings. Investors should be aware that when overconfident managers fail to report these write-downs, earnings are overstated and the financial reporting does not accurately reflect the underlying economics of the firm, thereby degrading the firm's information environment. Furthermore, my results suggest that investors should especially focus on CEOs (non)overconfidence at CEO turnover; in all other periods, this CEO characteristic is of less importance.

The remainder of this paper is organised as follows. Section 2 develops the empirical hypothesis and section 3 introduces the research methodology. In section 4, I interpret the results and section 5 mitigates endogeneity concerns. Section 6 presents robustness tests and section 7 concludes.

[1]One measure of overconfidence also shows differences in the fourth year after the turnover. The results can be found in Panel C of Table 3.

2. Literature review and hypothesis development

Recent literature has documented several links between overconfidence and more aggressive accounting policies. For example, Schrand and Zechman (2012) report that overconfidence is related to financial misreporting and fraud, whereas Ahmed and Duellman (2013) find a negative relation between managerial overconfidence and accounting conservatism. Hribar and Yang (2016), Libby and Rennekamp (2012) and Hilary and Hsu (2011) indicate that overconfident managers are more likely to engage in more specific and optimistic management forecasts, and Davis et al. (2014) show that they use more positive language in conference calls. Hsieh et al. (2014) find that they are more likely to engage in income-increasing earnings management even after the introduction of the Sarbanes-Oxley Act. Wong and Zhang (2014) show that CEO optimism is a source of analyst forecast bias.

These results are not surprising as overconfident managers systematically overestimate their abilities and consequently the future cash flows they are able to generate. In line with the literature on CEO overconfidence and accounting outcomes (e.g. Ahmed and Duellman 2013), I argue that overconfident CEOs overestimate their ability relative to other managers. Consequently, they are more optimistic about the company's projects and they are more likely to overestimate the likelihood and magnitude of projects that go well and underestimate the likelihood and magnitude of projects that do not go well. This overestimation has important implications for managers' accounting decisions as they will tend to delay loss recognition (Ahmed and Duellman 2013). When CEOs report in accordance with their overconfident beliefs, this will result in a lower likelihood of engaging in a big bath. When new CEOs take the reins, they recognise problems ignored by their predecessors (Elliott and Shaw 1988), and managerial change induces restructuring (Strong and Meyer 1987). I expect that overconfident managers are less likely to show this pattern at CEO turnover.

HYPOTHESIS: Incoming overconfident CEOs are less likely to engage in big baths compared to incoming non-overconfident CEOs in the turnover year.

3. Research methodology

3.1. *Measurement of overconfidence*

Following Malmendier and Tate (2008), I construct the overconfidence measures based on executive option holdings. CEOs are classified as overconfident if they hold an option until maturity which is at least 40 percent[2] in-the-money at the year-end prior to maturity (*OC40*). Thus, overconfidence is considered as an inherent, time-invariant personal characteristic of CEOs. The rationale for relying on the option exercise behaviour to classify overconfident and non-overconfident managers is the following: CEOs face a trade-off between exercising their options and retaining them for later use. By retaining their options, they maintain the right to purchase company stock at potentially more favourable conditions in the future. The downside of this strategy is that it involves substantial costs for the CEO in terms of exposure to idiosyncratic risk. Executive stock options typically have a maturity of ten years and become vested after two to four years. Furthermore, CEOs are legally prohibited from short-selling their company's stock in the US. Given the large proportion of personal wealth tied to their company, diversification abilities across alternative investments are also limited. Besides financial exposure, substantial human capital is also tied to the company (Malmendier and Tate 2008). Consequently, CEOs

[2] I additionally use other thresholds and classify CEOs as overconfident if they hold an option until maturity which is at least 20, 60, 80 and 100 percent in-the-money at the year-end prior to maturity. The results remain qualitatively the same.

can be considered as under-diversified investors who have large exposure to their company's risk. Thus, a non-overconfident CEO should divest as soon as the option is sufficiently in-the-money because the cost of delayed exercise typically exceeds its option value. In contrast, an overconfident CEO will not likely exercise stock options in this situation.

Considering CEO overconfidence as a fixed effect allows me to exploit within-firm variation in a CEO turnover setting. However, I acknowledge that there might also be a time-varying part of an individual's overconfidence that impacts his/her decisions. Therefore, I run the tests with additional measures also to ensure that the respective managers' level of overconfidence is measured at the time of CEO change.

Similar to Schrand and Zechman (2012), I use a measure of overconfidence based on the dollar value of exercisable options. Managers are identified as overconfident if the dollar value of their exercisable options (measured as the difference between the current stock price and the average exercise price of the options times the number of options held) exceeds the industry median based on three-digit SIC codes in the respective year (*SZ*).

To further alleviate potential concerns associated with using option-based measures, I also employ two investment-based measures of overconfidence. For example, Malmendier and Tate (2005) show that overconfidence relates to firms' investment decisions. In line with Ahmed and Duellman (2013), *OVERINV* is coded one if the residual of industry-year regressions of total asset growth on sales growth is positive. Similarly, I classify CEOs as overconfident when capital expenditures deflated by lagged total assets exceed the industry-year median (*CAPEX*).

3.2. *Measurement of big baths*

Following Elliott and Shaw (1988), I classify all firm-years with special items (SPI, Compustat item #17) less than minus one percent of total assets as big bath years. Special items include any non-recurring items, impairment of goodwill, non-recurring inventory write-downs, bad debt expenses, restructuring costs, and provisions for doubtful accounts.[3] Special items could occur predominantly in a specific year due to economic downturns or other exogenous shocks (e.g. natural disasters). This should not have an impact in this setting as CEO changes are distributed over a period of 19 years for both groups (overconfident vs. non-overconfident) and both groups are approximately equally distributed over time.

3.3. *Control variables*

Besides the main variable of interest, I control for the following variables which could influence big bath behaviour.

Routine vs. Non-Routine CEO Turnover: Pourciau (1993) and Wells (2002) show that big baths are especially pronounced after non-routine turnovers when negative outcomes can easily be attributed to the CEO who has left the firm in discord. I hand-collect data on routine and non-routine turnovers following Hazarika et al. (2012). A CEO turnover is classified as non-routine (*NONROUTINE*) 'if (i) the CEO was fired, forced out from the position, or departed due to policy differences; or (ii) the departing CEO's age is below 60, and the announcement does not report that the CEO died, left because of poor health, or accepted another position elsewhere or within the firm; or (iii) the CEO 'retires' but leaves the job within six months of the 'retirement announcement'.'

[3] In my sample about 75% of special items consist of asset write-downs, goodwill impairment and restructuring costs.

Former CEO Type: If former CEOs were overconfident, they might have pursued less conservative accounting and depreciated less than necessary. Consequently, assets might be overvalued and big baths would be a justified correction of inflated asset values. Therefore, I control for the former CEO type.

Past Special Items: Elliott and Hanna (1996) show that firms repeatedly write-down assets, indicating that past asset write-downs are correlated with future ones. Therefore, I include a control variable (*PRIORSPI)* for the average special items of the last three years.

Conservatism: Ahmed and Duellman (2013) show that overconfident managers use less conservative accounting which could lead to fewer big baths. I control for the level of accounting conservatism prior to CEO turnover by including the average accruals over the three previous years (*PRIORACC*). The measure is multiplied by minus one so that larger values denote greater accounting conservatism.

Firm Performance: Prior research suggests that weak firm performance is related to more aggressive earnings management. If current firm performance is poor, earnings are shifted from the future to the current period (e.g. DeFond and Park 1997, Keating and Zimmerman 1999). Furthermore, performance could be mechanically linked to the magnitude of special items since poor performance might trigger extraordinary write-offs. To control for firm performance, I include return on assets (*ROA*), which is income before extraordinary items and before special items divided by total assets at the beginning of the year.

Firm Size: The size of the firm could also affect the earnings management behaviour of managers. Skinner (1993), for example, shows that firm size increases the likelihood of income-decreasing depreciation procedures. Further, big baths might be related to firm size as more visible firms behave differently with respect to earnings manipulation. *SIZE* is measured as the natural logarithm of total assets in millions of dollars.

Debt: The leverage ratio of a firm is related to debt covenant violations. Various papers show that earnings are manipulated before and after debt covenant violations (e.g. Press and Weintrop 1990, DeFond and Jiambalvo 1994, Sweeney 1994). Covenant violations are most often triggered by exceeding preset debt levels. Thus, I control for leverage in all regressions and define *LEV* as total debt divided by total assets at the beginning of the year.

Corporate Governance: Weak internal control systems are often correlated with poor earnings quality (Doyle et al. 2007). I include the Entrenchment Index (*GOVINDEX*) proposed by Bebchuk et al. (2009) to account for the impact of corporate governance mechanisms on earnings management and the Gompers et al. (2003) governance index (*GINDEX*) as a robustness check (not tabulated).

Managerial Compensation: Earnings-based compensation of CEOs provides several incentives to manipulate earnings. Holthausen et al. (1995) show that managers engage in income-decreasing earnings management when bonus schemes are at their maximum. Bergstresser and Philippon (2006) point out that earnings manipulation is especially prevalent if compensation is closely tied to firm value. I collect information on CEO compensation (bonus and salary) from ExecuComp. *BONUS* is defined as the annual bonus payment divided by the sum of bonus and salary.

Growth Opportunities: Missing earnings benchmarks such as analyst forecasts can be particularly severe for high-growth firms (Skinner and Sloan 2002), which may incentivise them to manipulate earnings. To control for growth opportunities, I include the market-to-book ratio (*MTB*) and future growth in the regressions. *MTB* is equal to the market value of a company's assets (fiscal year closing price times common shares outstanding plus preferred stock plus total liabilities divided by the book value of a company's assets). *GROWTH* is an ex-post measure of growth opportunities and is defined as the relative increase in market value in the next three years.

3.4. *Big bath model*

I use a logit model to test the paper's hypothesis, using *BIGBATH* as the dependent variable. *BIGBATH* is a dummy variable that is equal to one if special items are less than minus one percent of total assets. *OC* is the respective overconfident measure and is equal to one if the CEO is classified as overconfident and zero if classified as non-overconfident. *OC40* is the overconfidence classification based on 40 percent in-the-money at the year-end prior to maturity. *SZ* classifies managers as overconfident if the moneyness of their exercisable options exceeds the industry median based on three-digit SIC codes. *OVERINV* is coded one if the residual of an industry-year regression of total asset growth on sales growth is positive, and zero otherwise. *CAPEX* is coded one if the capital expenditures exceed the industry-year median, and zero otherwise.

I include ten years surrounding the CEO turnover to investigate whether the different big bath behaviour between overconfident and non-overconfident CEOs occurs only in the turnover year or also before or in the subsequent years. I use indicators for each year that the new CEO is in office. Thus, I include six indicator variables, for the year of the turnover and the five years after the turnover (e.g. *YEAR0* is the year of the turnover and *YEAR1* is the year thereafter). Next, I interact each year with the respective overconfidence measure (e.g. *YEAR0*OC*, *YEAR1*OC*, etc.). I expect a negative coefficient of the interaction of the turnover year with the overconfidence indicator (*YEAR0*OC*).

$$\text{logit(p)} = \ln(\text{p} \ / \ (1 \text{ - p})) = \beta_0 + \sum_{j=1}^{6} \beta_j * YEAR_{it} + \sum_{j=1}^{6} \lambda_j * YEAR_{it} * OC + controls_{it} + FE_{it} + \varepsilon_{it}$$

where p is the probability of engaging in big bath accounting.

4. Sample and results

I collect information about CEO compensation and CEO turnover from ExecuComp and merge the data with Compustat financials. I limit the sample to those CEOs who have the chance to reveal themselves as overconfident or not. CEOs who are only active for a few years cannot be classified as overconfident because there is no information in ExecuComp as to whether they hold an option package until maturity. I delete financial institutions from the sample because of their special asset and impairment structure and limit the sample to CEOs who stayed in office for at least one full year after CEO turnover. Thereby, I ensure that the CEO can benefit from a potential big bath.

I consider 1,175 CEO changes between 1993 and 2012 and the sample consists of 11,642 firm-year observations surrounding the turnover year [−5,+5] to investigate whether big baths occur more frequently and more severe during CEO turnover.[4] I include five years before and after CEO change. I limit the years after CEO change to firm years when the new CEO was still in office. Panel A of Table 1 shows the descriptive statistics of my sample. The incoming CEO is classified as overconfident in approximately 25.7–56.5 percent of the firms (depending on the measure). On average 1.3 percent of total assets are written off in the form of special items *(SPI)* and 27.8 percent of all firms have more than one percent special items *(BIGBATH)*. The average return on assets *(ROA)* is 7.0 percent, and the average leverage ratio *(LEV)* is 19.7 percent. The ratio of cash bonus to total cash salary *(BONUS)* has a mean of 30.8 percent. The average market-to-book ratio *(MTB)* is approximately two.

[4]The 1,175 CEO changes took place in 1,150 different firms.

Table 1. Summary Statistics.

Variable	N	Mean	Sd	Min	P25	P50	P75	Max
Panel A. Full Sample								
$BIGBATH_t$	11,642	0.278	0.448	0.000	0.000	0.000	1.000	1.000
SPI_t	11,642	−0.013	0.038	−0.243	−0.012	−0.001	0.000	0.070
$OC40_t$	11,642	0.257	0.437	0.000	0.000	0.000	1.000	1.000
SZ_t	11,642	0.551	0.497	0.000	0.000	1.000	1.000	1.000
$OVERINV_t$	11,642	0.297	0.457	0.000	0.000	0.000	1.000	1.000
$CAPEX_t$	11,642	0.565	0.496	0.000	0.000	1.000	1.000	1.000
$PRIORSPI_t$	11,642	−0.001	0.013	−0.702	0.000	0.000	0.000	0.167
$NONROUTINE_t$	11,642	0.009	0.093	0.000	0.000	0.000	0.000	1.000
$PRIORACC_t$	11,642	0.010	0.032	−0.178	−0.006	0.005	0.021	0.202
ROA_t	11,642	0.070	0.081	−0.234	0.032	0.062	0.106	0.375
$SIZE_t$	11,642	7.517	1.655	3.680	6.330	7.451	8.637	11.601
LEV_t	11,642	0.197	0.155	0.000	0.062	0.188	0.298	0.695
$GOVINDEX_t$	11,642	2.791	1.144	0.000	2.000	2.778	3.000	6.000
$BONUS_t$	11,642	0.308	0.119	0.000	0.313	0.313	0.313	0.702
MTB_{t-1}	11,642	1.970	1.293	0.737	1.198	1.540	2.209	8.390
$GROWTH_t$	11,642	1.411	1.083	0.147	0.872	1.119	1.591	7.475

	$BIGBATH_t$=0		$BIGBATH_t$=1	
Variable	N	Mean	N	Mean
Panel B. Comparison of Non-Big Bath Firms ($BIGBATH_t$=0) with Big Bath Firms ($BIGBATH_t$=1)				
SPI_t	8,407	0.001	3,235	−0.051***
$OC40_t$	8,407	0.270	3,235	0.222***
SZ_t	8,407	0.568	3,235	0.509***
$OVERINV_t$	8,407	0.313	3,235	0.254***
$CAPEX_t$	8,407	0.573	3,235	0.544***
$PRIORSPI_t$	8,407	−0.001	3,235	0.065***
$NONROUTINE_t$	8,407	0.006	3,235	−0.003***
$PRIORACC_t$	8,407	0.010	3,235	0.016
ROA_t	8,407	0.074	3,235	0.009***

(*Continued*)

Table 1. Continued.

Variable	$BIGBATH_t$=0 N	$BIGBATH_t$=0 Mean	$BIGBATH_t$=1 N	$BIGBATH_t$=1 Mean
$SIZE_t$	8,407	7.540	3,235	0.062**
LEV_t	8,407	0.194	3,235	7.457***
$GOVINDEX_t$	8,407	2.788	3,235	0.207
$BONUS_t$	8,407	0.310	3,235	2.798***
MTB_{t-1}	8,407	1.984	3,235	0.301***
$GROWTH_t$	8,407	1.386	3,235	1.936***

Year	*(1) OC40* = 0	*(2) OC40* = 1	Delta (1) – (2)
Panel C. Big Baths Around the Turnover Year			
YEAR-5	0.224	0.206	0.019
YEAR-4	0.260	0.181	0.079**
YEAR-3	0.293	0.248	0.045
YEAR-2	0.251	0.189	0.062*
YEAR-1	0.308	0.278	0.030
YEAR0	**0.368**	**0.252**	**0.116*****
*YEAR*1	0.317	0.297	0.020
YEAR2	0.293	0.211	0.082**
YEAR 3	0.294	0.283	0.010
YEAR 4	0.292	0.254	0.037
YEAR 5	0.306	0.258	0.048

This table provides descriptive statistics in Panel A. Panel B compares the mean values for firms with *BIGBATH*=0 and *BIGBATH*=1. Panel C shows the percentage of firm-years that engage in big bath accounting separately for firms that hire a manager classified as non-overconfident manager (*OC40* = 0) and overconfident (*OC40* = 1). *BIGBATH* is a dummy variable which equals one if special items divided by total assets are less than minus one percent. *SPI* is special items divided by total assets. *OC40* is the overconfidence classification based on 40 percent in-the-moneyness at the year-end prior to maturity. *SZ* classifies managers as overconfident if the moneyness of their exercisable options exceeds the industry median based on three-digit SIC codes. *OVERINV* is coded one if the residual of an industry-year regression of total asset growth on sales growth is positive, and zero otherwise. *CAPEX* is coded one if capital expenditures exceed the industry-year median, and zero otherwise. *PRIORSPI* is the average special items of the last three years prior to CEO turnover. *NONROUTINE* is coded one if the management change is non-routine following Hazarika et al. (2012). *PRIORACC* is the average accruals over the last three years prior to CEO turnover. ROA is return on assets measured as income before extraordinary items and special items divided by total assets. *SIZE* is total assets in log $million. *LEV* is total debt divided by total assets. *GOVINDEX* is the Bebchuk et al. (2009) entrenchment index. *BONUS* is a manager's annual bonus payment divided by the sum of bonus and salary. *MTB* is the market value of equity plus book value of debt divided by total assets. *GROWTH* is the relative increase in market value in the next three years. ***,**,* indicate significance between the means of Panel B and Panel C based on two-sided t-tests at the 1, 5, and 10 percent level, respectively.

Panel B of Table 1 shows the mean values for non-big bath firms and big bath firms. I find that big bath firms, on average, write-off 5.1 percent of total assets. Furthermore, in line with my predictions, big bath firms have fewer overconfident CEOs, independent of which measure is used. Panel C of Table 1 shows the fraction of big baths around the CEO turnover, separately for overconfident and non-overconfident CEOs. The Panel shows that big baths are also present before and after the turnover year. However, the fraction of big baths, relative to years before and after turnover, increases in the year of the turnover for non-overconfident (37%) but not for overconfident CEOs (25%). The difference in the turnover year is statistically significant based on a two-sided t-test.

Pearson and Spearman correlations are shown in Table 2. *BIGBATH* is negatively correlated ($p<0.01$) with all measures for overconfidence (*OC40*, *SZ*, *OVERINV* and *CAPEX*). The measures of overconfidence are positively correlated with each other and in most cases this correlation is also statistically significant at the 1 percent level. Furthermore, the overconfidence measures are positively correlated with *ROA*, *BONUS*, and *MTB*. *BIGBATH* is negatively correlated with *ROA*, *SIZE*, and *BONUS*.

To test the hypothesis that overconfident CEOs are less likely to engage in big baths compared with non-overconfident CEOs, I estimate logit regressions with *BIGBATH* as the dependent variable. In the regressions I control for the variables *PRIORSPI*, *PRIORACC*, *ROA*, *SIZE*, *LEV*, *GOVINDEX*, *BONUS*, *MTB,* and *GROWTH*. The models include industry and time fixed effects when indicated. Standard errors are clustered at the firm and year level. The marginal effects in Table 3 represent the change in the probability of engaging in a big bath for a one-unit change in the respective independent variable evaluated at the mean of all other independent variables. In Panel A, I only include a dummy variable for the turnover year (*YEAR0*) and interact it with the respective measure of overconfidence (*YEAR0*OC*). Thus, I compare the turnover year to all years before and after CEO turnover. Across all measures, I find that non-overconfident managers are more likely to engage in a big bath at CEO turnover, but that overconfident managers do not show this pattern. On average, an overconfident CEO is about 4.3–12.0 percent less likely to engage in big bath accounting. Thus, I find support for the hypothesis that overconfident CEOs engage in big baths less frequently than non-overconfident CEOs.

In Panel B, I include separate indicators for each year after CEO turnover and the respective interactions to investigate if the two types of managers show differences in the likelihood of taking a big bath in all years or whether these differences are especially visible in the year of the turnover. In all specifications, non-overconfident managers are more likely to engage in earnings baths in the year of the turnover, and overconfidence of the new CEO is negatively related to a big bath in the year of the turnover. No consistent pattern can be observed in other years.[5] Panel C of Table 3 includes control variables. The effects of the control variables are in line with the findings of prior literature on big baths. In particular, big baths are more likely to occur after non-routine turnovers. After a CEO has been fired or forced out, the new CEO will engage more often in large write-offs that can be attributed to his predecessor. Furthermore, past special items are negatively associated with *BIGBATH*.

5. Addressing endogeneity

Firm characteristics may influence the firm's decision to hire an overconfident CEO and simultaneously explain the predicted big bath pattern. I control for potential endogeneity in various ways. First, I control for non-routine turnover events because big baths are especially prevalent

[5]In model 3, the coefficient of *YEAR4*OC* is of similar statistical significance and of similar magnitude as *YEAR0*OC*.

Table 2. Correlations.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) BIGBATH$_t$		−0.79*	−0.05*	−0.05*	−0.06*	−0.03*	−0.04*	0.05*	0.02	−0.05*	−0.02	0.03*	−0.01	−0.03*	−0.03*
(2) OC40$_t$	−0.62*		0.07*	0.04*	0.04*	0.02	0.07*	−0.04*	−0.02	0.03*	−0.02	−0.04*	−0.03*	0.04*	0.05*
(3) SZ$_t$	−0.05*	0.04*		0.11*	0.02	0.01	0.01	−0.01	−0.05*	0.09*	−0.03*	−0.02	−0.01	0.04*	0.08*
(4) OVERINV$_t$	−0.05*	0.05*	0.11*		0.03*	0.09*	−0.01	−0.01	0.01	0.17*	0.21*	0.03*	0.07*	0.02*	0.12*
(5) CAPEX$_t$	−0.06*	0.05*	0.02	0.03*		0.16*	0.01	−0.02	−0.01	0.08*	0.01	0.00	0.02	0.01	0.08*
(6) PRIORSPI$_t$	−0.03*	0.03*	0.01	0.09*	0.16*		−0.00	−0.02	−0.06*	0.15*	−0.01	−0.02*	0.03*	0.00	0.15*
(7) NONROUTINE$_t$	−0.07*	0.07*	0.01	0.00	0.02	0.02		−0.19*	−0.01	0.02	0.01	−0.00	−0.01	−0.01	0.00
(8) PRIORACC$_t$	0.05*	−0.04*	−0.01	−0.01	−0.02	−0.02	−0.16*		0.00	−0.02*	−0.01	0.00	−0.00	0.00	−0.01
(9) ROA$_t$	0.01	0.01	−0.07*	0.00	−0.02	−0.03*	0.00	0.01		−0.15*	0.15*	0.05*	−0.01	0.01	−0.05*
(10) SIZE$_t$	−0.06*	0.05*	0.08*	0.15*	0.07*	0.14*	0.05*	−0.03*	−0.15*		−0.09*	−0.31*	−0.03*	0.08*	0.67*
(11) LEV$_t$	−0.02	0.06*	−0.03*	0.21*	0.00	−0.02	0.03*	−0.01	0.17*	−0.05*		0.32*	0.10*	0.04*	−0.15*
(12)GOVINDEX$_t$	0.04*	−0.02	−0.02	0.03*	−0.01	−0.02*	0.02	0.00	0.05*	−0.22*	0.27*		0.10*	0.00	−0.34*
(13) BONUS$_t$	0.01	0.01	−0.02	0.05*	0.01	0.02	0.00	−0.0057	0.01	−0.05*	0.05*	0.08*		−0.05*	−0.10*
(14) MTB$_{t-1}$	−0.04*	0.04*	0.04*	0.03*	0.01	−0.00	−0.01	−0.001	0.01	0.08*	0.05*	−0.01	−0.07*		0.08*
(15) GROWTH$_t$	−0.02	0.00	0.05*	0.08*	0.07*	0.12*	−0.03*	−0.01	−0.05*	0.54*	−0.20*	−0.27*	−0.14*	0.07*	

This table provides Spearman correlations below the diagonal and Pearson correlations above the diagonal. Variables are defined in Table 1. * indicates significance at the 1 percent level.

Table 3. Big Bath Regressions.

Dependent Variable: $BIGBATH_t$	Model 1 *OC40*	Model 2 *SZ*	Model 3 *OVERINV*	Model 4 *CAPEX*
Panel A: Big Bath Regressions – Turnover Year				
$YEAR0*OC_t$	**−0.110*****	**−0.120*****	**−0.069****	**−0.043****
	(0.035)	**(0.028)**	**(0.031)**	**(0.021)**
YEAR0	0.089***	0.128***	0.084***	0.088***
	(0.014)	(0.017)	(0.013)	(0.015)
Year-FE	No	No	No	No
Industry-FE	No	No	No	No
N	11,642	11,642	11,642	11,642
Pseudo R-squared	0.003	0.003	0.002	0.002
Panel B: Big Bath Regressions – Years after Turnover				
$YEAR0*OC_t$	**−0.104*****	**−0.118*****	**−0.091****	**−0.042***
	(0.032)	**(0.027)**	**(0.036)**	**(0.022)**
$YEAR1*OC_t$	−0.012	−0.033	−0.043*	−0.037*
	(0.025)	(0.038)	(0.023)	(0.021)
$YEAR2*OC_t$	−0.084***	−0.045*	−0.035	−0.002
	(0.029)	(0.027)	(0.028)	(0.021)
$YEAR3*OC_t$	−0.010	−0.036	−0.050	−0.023
	(0.032)	(0.023)	(0.043)	(0.027)
$YEAR4*OC_t$	−0.036	−0.004	−0.101**	0.015
	(0.037)	(0.025)	(0.043)	(0.038)
$YEAR5*OC_t$	−0.035	−0.009	−0.043*	0.009
	(0.032)	(0.027)	(0.023)	(0.034)
YEAR0	**0.082*****	**0.119*****	**0.082*****	**0.080*****
	(0.015)	**(0.017)**	**(0.014)**	**(0.016)**
YEAR1	0.028**	0.041	0.034***	0.044***
	(0.011)	(0.027)	(0.013)	(0.014)
YEAR2	0.005	0.008	−0.008	−0.015
	(0.018)	(0.022)	(0.016)	(0.019)
YEAR3	0.004	0.018	0.012	0.012
	(0.018)	(0.020)	(0.016)	(0.019)
YEAR4	0.000	−0.011	0.013	−0.021
	(0.024)	(0.026)	(0.024)	(0.023)
YEAR5	0.016	0.008	0.014	−0.001
	(0.019)	(0.020)	(0.020)	(0.024)
Year-FE	Yes	Yes	Yes	Yes
Industry-FE	Yes	Yes	Yes	Yes
N	11,642	11,642	11,642	11,642
Pseudo R-squared	0.054	0.055	0.055	0.053
Panel C: Big Bath Regressions – Controls and Fixed Effects				
$YEAR0*OC_t$	**−0.091*****	**−0.106*****	**−0.065***	**−0.063***
	(0.034)	**(0.028)**	**(0.039)**	**(0.036)**
$YEAR1*OC_t$	−0.005	−0.025	−0.038	−0.029
	(0.026)	(0.041)	(0.024)	(0.024)
$YEAR2*OC_t$	−0.054	−0.041	−0.037	0.003
	(0.031)	(0.026)	(0.029)	(0.022)
$YEAR3*OC_t$	−0.005	−0.029	−0.053	−0.016
	(0.033)	(0.023)	(0.046)	(0.028)
$YEAR4*OC_t$	−0.032	0.004	−0.106**	0.023
	(0.038)	(0.026)	(0.045)	(0.039)
$YEAR5*OC_t$	−0.032	−0.006	−0.024	0.017

(*Continued*)

Table 3. Continued.

Dependent Variable: *BIGBATH$_t$*	Model 1 *OC40*	Model 2 *SZ*	Model 3 *OVERINV*	Model 4 *CAPEX*
	(0.034)	(0.028)	(0.026)	(0.037)
YEAR0	**0.043**	**0.069******	**0.050******	**0.012**
	(0.032)	**(0.033)**	**(0.025)**	**(0.024)**
NONROUTINE$_t$	**0.126*******	**0.123*******	**0.121******	**0.126*******
	(0.047)	**(0.047)**	**(0.048)**	**(0.046)**
YEAR1	0.022*	0.033	0.030**	0.036**
	(0.011)	(0.029)	(0.013)	(0.014)
YEAR2	0.006	0.006	−0.007	−0.018
	(0.019)	(0.021)	(0.017)	(0.020)
YEAR3	0.004	0.016	0.015	0.010
	(0.019)	(0.021)	(0.018)	(0.020)
YEAR4	0.002	−0.012	0.018	−0.022
	(0.025)	(0.027)	(0.025)	(0.025)
YEAR5	0.021	0.012	0.020	0.000
	(0.019)	(0.020)	(0.020)	(0.025)
OC$_{t-1}$	−0.007	0.002	−0.056***	0.065**
	(0.018)	(0.020)	(0.021)	(0.032)
PRIORSPI$_t$	−1.952***	−1.987***	−1.900***	−2.034***
	(0.422)	(0.402)	(0.418)	(0.459)
PRIORACC$_t$	0.119	0.126	0.114	0.140
	(0.187)	(0.185)	(0.190)	(0.190)
ROA$_t$	−0.409***	−0.397***	−0.408***	−0.413***
	(0.108)	(0.108)	(0.111)	(0.112)
SIZE$_t$	0.000	0.001	0.000	0.000
	(0.006)	(0.006)	(0.006)	(0.006)
LEV$_t$	0.092**	0.094**	0.096**	0.094**
	(0.038)	(0.038)	(0.038)	(0.038)
GOVINDEX$_t$	−0.001	−0.001	−0.001	−0.001
	(0.005)	(0.005)	(0.005)	(0.005)
BONUS$_t$	−0.072*	−0.066*	−0.074*	−0.076*
	(0.040)	(0.037)	(0.040)	(0.040)
MTB$_{t-1}$	0.011*	0.012**	0.012*	0.011*
	(0.006)	(0.006)	(0.006)	(0.006)
GROWTH$_t$	0.012***	0.011***	0.012***	0.012***
	(0.004)	(0.004)	(0.004)	(0.004)
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
N	11,642	11,642	11,642	11,642
Pseudo R-squared	0.063	0.063	0.064	0.062

This table provides marginal effects for logit regressions. Variables are defined in Table 1. Panel A only includes a dummy variable for the turnover year (*YEAR0*) and the interaction with the respective measure of overconfidence (*YEAR0*OC*). *OC* is the respective overconfidence classification. Panel B also includes separate indicators for each year after CEO turnover and the interactions with the overconfidence measures. *YEARX* is an indicator variable coded 1 in year X year after CEO turnover (e.g. *YEAR1* is the first year after CEO turnover). Panel C additionally includes control variables. The regressions include industry and year dummies when indicated. Standard errors are clustered by firm and year and are provided below the coefficients. ***,**,* indicate significance at the 1, 5, and 10 percent level, respectively.

in non-routine turnovers (Pourciau 1993, Wells 2002). Second, I include firm fixed effects in the linear probability model of Panel A of Table 4 to control for time-invariant unobservable firm-specific characteristics. I still find that overconfident CEOs are less likely to engage in a big bath, although the magnitude of the effect is smaller compared to Table 3. Overconfident

Table 4. Firm Fixed Effects and Random Fixed Effects.

Dependent Variable: *BIGBATH*$_t$	Model 1 *OC40*	Model 2 *SZ*	Model 3 *OVERINV*	Model 4 *CAPEX*
Panel A. Linear Probability Model Including Firm Fixed Effects				
***YEAR0*OC*$_t$**	**−0.070****	**−0.077*****	**−0.053***	**−0.060***
	(0.028)	**(0.027)**	**(0.029)**	**(0.034)**
YEAR0	0.038	0.064*	0.055***	0.035
	(0.033)	(0.033)	(0.018)	(0.022)
Controls	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
N	11,642	11,642	11,642	11,642
Adjusted R-squared	0.19	0.19	0.18	0.19
Panel B. Random Effects Logistic Regression				
***YEAR0*OC*$_t$**	**−0.075****	**−0.093*****	**−0.034***	**−0.054***
	(0.026)	**(0.027)**	**(0.017)**	**(0.032)**
YEAR0	0.051*	0.080**	0.062***	0.038*
	(0.031)	(0.033)	(0.018)	(0.023)
Controls	Yes	Yes	Yes	Yes
N	11,642	11,642	11,642	11,642
Pseudo R-squared	0.07	0.07	0.07	0.08

This table provides the results of a linear probability model in Panel A and random effects logistic regression in Panel B. *YEAR0* is the turnover year. *OC* is the respective overconfidence classification. Variables are defined in Table 1. Standard errors are clustered by firm and year and are provided below the coefficients. ***,**,* indicate significance at the 1, 5, and 10 percent level, respectively.

CEOs are between 5.3 and 7.7 percent less likely to take a big bath. Third, I include random effects in the regression in Panel B of Table 4 and the magnitude of the coefficient is between 3.4 and 9.3 percent.

Fourth, I entropy balance the sample to adjust for inequalities in the covariates' distributions of first and second moments between firms that hire an overconfident manager and those that hire a non-overconfident manager (Hainmueller 2012). Since prior tables show that differences between the two types of managers are only prominent in the turnover year, I only use the turnover year in these specifications. Specifically, I reweigh control group observations in such a way that they have the same mean and variance as the covariates in the treatment group. Panel A of Table 5 shows the summary statistics of the treatment and control groups before and after balancing. Although the means and variance are all statistically different between the two groups prior to balancing, I do not observe differences in the reweighted sample. Panel B shows that using the weights from the entropy balancing does not change the interpretation of my results. In Panel C, I additionally match the entropy balanced sample by year so that CEO turnover is equally distributed over time for the two types of managers.[6] This rules out that the findings are driven by any changes over time, e.g. inflation or economic trends. The sample size in this test is reduced due to the matching algorithm. The results are in line with my predictions.

[6]The matching procedure matches one treated observation (overconfident) with one un-treated observation (non-overconfident) by year. This matching procedure results in more successful matches when observations classified as overconfident and non-overconfident are equally distributed over time. Since the distribution of managers classified as overconfident and non-overconfident over time varies across overconfidence measures, the number of observations also varies in Panel C of Table 5.

Table 5. Big Bath Regressions in Turnover Year – Entropy Balancing.

	TREATMENT		CONTROL ORIGINAL		CONTROL BALANCED	
	Mean	Variance	Mean	Variance	Mean	Variance
Panel A: Original Sample						
$NONROUTINE_t$	0.068	0.064	0.093	0.085***	0.068	0.064
OC_{t-1}	0.833	0.139	0.800	0.160	0.833	0.139
$PRIORSPI_t$	−0.011	0.001	−0.015**	0.002***	−0.011	0.001
$PRIORACC_t$	0.014	0.001	0.008***	0.001***	0.013	0.001
ROA_t	0.084	0.006	0.060	0.007**	0.083	0.006
$SIZE_t$	7.498	2.200	7.636	2.775**	7.496	2.200
LEV_t	0.192	0.023	0.199	0.024	0.192	0.023
$GOVINDEX_t$	2.733	1.291	2.770	1.332	2.732	1.291
$BONUS_t$	0.340	0.060	0.282***	0.066	0.340	0.060
MTB_{t-1}	2.115	1.983	1.948**	1.831***	2.115	1.982
$GROWTH_t$	1.485	0.847	1.453	1.364***	1.486	0.850
Panel B: Big Bath Regressions – Entropy Balancing						
Dependent Variable:	Model 1	Model 2	Model 3	Model 4		
$BIGBATH_t$	*OC40*	*SZ*	*OVERINV*	*CAPEX*		
$\mathbf{OC_t}$	**−0.083*****	**−0.101*****	**−0.054***	**−0.077***		
	(0.030)	**(0.030)**	**(0.032)**	**(0.042)**		
Controls	Yes	Yes	Yes	Yes		
Year Fixed Effects	Yes	Yes	Yes	Yes		
Industry Fixed Effects	Yes	Yes	Yes	Yes		
Pseudo R-squared	0.15	0.12	0.08	0.18		
N	1,175	1,175	1,174	1,174		

Panel C: Big Bath Regressions – Entropy Balancing and Matching on Years

Dependent Variable:	Model 1	Model 2	Model 3	Model 4
$BIGBATH_t$	*OC40*	*SZ*	*OVERINV*	*CAPEX*
$\boldsymbol{OC_t}$	**−0.133*** **	**−0.094*** **	**−0.071* **	**−0.073* **
	(0.038)	**(0.032)**	**(0.039)**	**(0.043)**
Controls	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Pseudo R-squared	0.15	0.12	0.09	0.17
N	582	1,038	659	1,023

This table provides marginal effects for logit regressions using $BIGBATH_t$ as the dependent variable of an entropy balanced sample. Panel A shows the summary statistics before and after entropy balancing. Panel B displays the entropy balanced regression results. In Panel C, treatment and control firms are additionally matched on year. Variables are defined in Table 1. The regressions include industry and year dummies. Standard errors are clustered by firm and year and are provided below the coefficients. ***,**,* indicate significance at the 1, 5, and 10 percent level, respectively.

Table 6. Big Bath Regressions – Years Prior to CEO Change.

Dependent Variable: $BIGBATH_t$	Model 1 *OC*=1	Model 2 *OC*=0	*DIFF*
YEAR-4	−0.046**	0.023	−0.069*
	(0.023)	(0.024)	
YEAR-3	0.016	0.051**	−0.035
	(0.027)	(0.021)	
YEAR-2	−0.038	−0.001	−0.037
	(0.030)	(0.023)	
YEAR-1	0.045*	0.062***	−0.017
	(0.024)	(0.023)	
YEAR0	**−0.037**	**0.079****	**−0.116*****
	(0.039)	**(0.033)**	
YEAR1	0.033	0.047**	−0.014
	(0.037)	(0.021)	
YEAR2	−0.042	0.031	−0.073**
	(0.035)	(0.031)	
YEAR3	0.017	0.031	−0.014
	(0.025)	(0.029)	
YEAR4	−0.010	0.028	−0.038
	(0.031)	(0.032)	
YEAR5	0.002	0.052*	−0.050
	(0.041)	(0.031)	
Controls	Yes	Yes	
Year Fixed Effects	Yes	Yes	
Industry Fixed Effects	Yes	Yes	
N	11,642	11,642	
Pseudo R-squared	0.073	0.066	

This table provides marginal effects for logit regressions using $BIGBATH_t$ as the dependent variable. *OC* is the overconfidence classification based on 40 percent in-the-moneyness at the year-end prior to maturity. Variables are defined in Table 1. The regressions include industry and year dummies. Standard errors are clustered by firm and year and are provided below the coefficients. ***,**,* indicate significance at the 1, 5, and 10 percent level, respectively.

Fifth, I take a closer look at the decision made by the previous CEO. So far, the empirical results include the variable *PRIORSPI* to control for write-offs in the previous period. In Table 6, I additionally include separate indicators for the four years prior to the turnover event. Thus, I compare all years relative to year minus 5, the first year of the sample. Table 6 splits the sample into firms where the incoming CEO is overconfident (*OC*=1) and non-overconfident (*OC*=0). In line with the previous tables, I find that non-overconfident managers engage in a big bath in the year of the turnover and overconfident managers do not.[7] The difference in the likelihood is statistically significant. Interestingly, I also find a higher likelihood of a big bath in the year prior to the CEO change (*YEAR-1*) independent of CEO type. This could be driven by poor performance prior to CEO change. Most importantly, there is no statistical difference in big bath behaviour between the two samples. This further alleviates self-selection concerns Table 7.

[7]Unreported analyses show similar results for the other overconfidence measures with the exception of the statistically significant differences in Year 2. In line with Table 3, there is a significant difference between overconfident and non-overconfident in Year 2 when using the OC40 measure, but not when using the other measures of overconfidence.

Table 7. Big Bath Regressions – Alternative Big Bath Thresholds.

Dependent Variable: $BIGBATH_t$	(< 0.000)	(< 0.005)	(< 0.010)	(< 0.015)	(< 0.020)
$OC40_t$	**−0.109*** **	**−0.110*** **	**−0.092** **	**−0.095*** **	**−0.049**
	0.027	**0.036**	**0.039**	**0.034**	**0.035**
Controls	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
N	1,175	1,175	1,175	1,175	1,175
Pseudo R-squared	0.111	0.102	0.112	0.104	0.099

This table provides marginal effects for logit regressions using $BIGBATH_t$ as the dependent variable. *BIGBATH* is defined as a dummy variable that equals one if special items over total assets are less than the specified threshold in each column in the turnover year. Variables are defined in Table 1. The regressions include industry and year dummies. Standard errors are clustered by firm and year and are provided below the coefficients. ***,**,* indicate significance at the 1, 5, and 10 percent level, respectively.

6. Robustness tests and further results

6.1. *Alternative big bath thresholds*

This section tests the robustness of my results with respect to the thresholds for big baths. First, I define big baths as dummy variable that is equal to one if special items are negative. Next, *BIGBATH* is a dummy variable that is equal to one if special items are less than −0.5 percent of total assets, less than −1 percent of total assets, less than −1.5 percent of total assets, or less than −2 percent of total assets. The results suggest that the findings are not sensitive to the measurement of big baths. Firms hiring an overconfident rather than a non-overconfident CEO are less likely to engage in a big bath. The effect is statistically significant across all specifications. I only report the results using the *OC40* classification. However, using the alternative overconfidence classifications leads to similar results.

6.2. *Quarterly data*

One potential concern with the analysis is the use of annual data. With annual data, I cannot be sure that write-offs can be attributed to the new CEO. For example, the new CEO may have been hired in the fourth fiscal quarter of the year, and write-offs may have taken place in the first three quarters and therefore be attributable to the old CEO. To further ensure that the results are not driven by write-offs of the outgoing CEO, I additionally investigate quarterly data on special items. The results of Table 8 are similar in economic magnitude to those in the previous analyses: Incoming overconfident CEOs are about 8.3–9.2 percent less likely to engage in a big bath in the last fiscal quarter of the turnover year ($BIGBATH_{t,4Q}$). The sample size of Table 8 is lower bcause quarterly special items are not available for the entire time frame.

6.3. *Discontinued operations*

An alternative way of taking a big bath is disposing of a major line of business. The effect of the disposal is reflected in discontinued operations (Compustat Item #66). Compared to special items, discontinued operations are less frequent and lower in magnitude. In my sample, the mean of discontinued operations is 0.08 percent of total assets. In line with the previous analyses, I define a big bath if discontinued operations are below minus one percent of total assets. Table 9 repeats the analyses of Table 3 with $BIGBATH_{t,DC}$ as the dependent variable. I find that overconfident managers are less likely to have discontinued operations at the time

Table 8. Big Bath Regressions – 4th Quarter.

Dependent Variable: $BIGBATH_{t,4Q}$	Model 1 *OC40*	Model 2 *SZ*	Model 3 *OVERINV*	Model 4 *CAPEX*
OC_t	**−0.088****	**−0.092*****	**−0.083*****	**−0.086*****
	0.028	**0.025**	**0.027**	**0.031**
Controls	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
N	842	842	842	842
Pseudo R-squared	0.094	0.103	0.102	0.095

This table provides marginal effects for logit regressions using big bath accounting as the dependent variable. *BIGBATH* is defined as a dummy variable that equals one if special items over total assets are less than minus 0.25 percent in the fourth quarter of the turnover year. *OC* is the respective overconfidence classification. Variables are defined in Table 1. The regressions include industry and year dummies when indicated. Standard errors are clustered by firm and year and are provided below the coefficients. ***,**,* indicate significance at the 1, 5, and 10 percent level, respectively.

of CEO turnover across all models. However, the results are only statistically significant in two specifications.

6.4. *Size of big baths*

The findings show that overconfident managers are less likely to engage in a big bath in the turnover year. In untabulated results, I limit the sample to firms with negative special items. Thus, I test whether managers take a smaller write-down conditional on taking the write-down. I do not find statistically significant differences between overconfident and non-overconfident CEOs. I conclude that overconfidence influences the likelihood of a big bath, but that the size of the big bath is unrelated to overconfidence.

6.5. *Internal vs. external CEO*

The incoming CEO can either be hired externally or recruited from inside the firm. This could affect the probability of engaging in a big bath and also be correlated with routine turnovers or overconfidence. For a subset of observations, I examine the time when the CEO joined the

Table 9. Big Bath Regressions – Discontinued Operations.

Dependent Variable: $BIGBATH_{t,DC}$	Model 1 OC40	Model 2 SZ	Model 3 OVERINV	Model 4 CAPEX
OC_t	**−0.023****	**−0.018**	**−0.050****	**−0.002**
	0.011	**0.015**	**0.021**	**0.017**
Controls	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
N	1,175	1,175	1,175	1,175
Pseudo R-squared	0.150	0.144	0.146	0.140

This table provides marginal effects for logit regressions using big bath accounting as the dependent variable. $BIGBATH_{DC}$ is defined as a dummy variable that equals one if discontinued operations divided by total assets are less than minus one percent. *OC* is the respective overconfidence classification. Variables are defined in Table 1. The regressions include industry and year dummies when indicated. Standard errors are clustered by firm and year and are provided below the coefficients. ***,**,* indicate significance at the 1, 5, and 10 percent level, respectively.

company to determine whether the CEO was an internal promotion or an external hire. I classify CEOs as insiders if they joined the respective firm at least two years prior to the engagement as CEO. I find that approximately 23 percent of the CEOs are external hires, which is positively correlated with a non-routine turnover (Coef. 0.116, *P*-Value: <0.01). In other words, when a CEO is fired, it is more likely that an external CEO is hired. However, the decision to hire an internal or external CEO is not correlated with the level of overconfidence of the CEO. In non-tabulated results, I continue to find that overconfident CEOs are less likely to engage in big bath accounting when I control for internal promotions or external hires.

6.6. *Corporate governance*

I additionally investigate the effect of corporate governance on the relation between overconfidence and the likelihood of engaging in a big bath. Good corporate governance mechanisms and external monitoring can help to align the write-off behaviour of overconfident CEOs with the underlying economics of the firm. Unreported results show no differences when I partition the sample based on low vs. high level the Bebchuk et al. (2009) entrenchment index. Alternatively, I split the sample based on the Gompers et al. (2003) governance index (*GINDEX*). Again, the results are inconclusive. However, both measures are proxies for the level of shareholder rights and thus might not be able to capture governance structures that directly affect financial reporting. These findings are consistent with the results of Ahmed and Duellman (2013) and Schrand and Zechman (2012). Ahmed and Duelman (2013) do not find consistent evidence that external monitoring moderates the relation between overconfidence and accounting conservatism. Similarly, Schrand and Zechman (2012) do not report systematic differences in governance structures between firms that misreport earnings and those that do not. In line with the arguments above, they note that 'the notion of good governance is difficult to identify and measure'.

7. Conclusion

Prior literature shows that CEOs use large write-offs in the year of the turnover (Murphy and Zimmerman 1993) and that non-routine CEO changes explain cross-sectional variation in big baths at CEO turnover. I investigate whether overconfident managers are less likely to engage in an earnings big bath after their appointment. In my empirical analyses, I find fewer big baths in firms with a new overconfident CEO than in firms with a new non-overconfident CEO. The findings are robust to alternative overconfidence classifications, big bath definitions, the endogenous choice of hiring an overconfident CEO, and to several alternative explanations of accounting behaviour at the turnover event, such as the turnover type (routine vs. non-routine), managerial compensation and corporate governance mechanisms. Ahmed and Duellman (2013) find that overconfident managers are generally less conservative in their accounting policies. I add to their paper by showing their results could partly be driven by big baths at CEO turnover.

The findings of the paper widen our understanding of how managerial traits, in particular overconfidence, affect accounting outcomes. My findings are relevant for investors assessing the financial situation around CEO turnover and for firms hiring a new CEO to understand the influence of managerial traits on financial reporting. In particular, investors should be aware that earnings are overstated when overconfident managers fail to report write-offs.

Acknowledgements

This paper is based on one part of my dissertation at Humboldt University Berlin. A previous version of this paper was co-authored with Valentin Burg and Tobias Scheinert, to whom I am especially grateful. I acknowledge comments and suggestions by Maria Correia (the editor) and two anonymous referees. I further would like to thank Tim R. Adam, Ulf Brüggemann, Joachim Gassen, Igor Goncharov, Urska Kosi, Beatriz García Osma, Caspar David Peter, Catherine Shakespeare, Jeroen Suijs, and seminar participants at Humboldt University Berlin, conference participants at the 2013 EAA Annual Meeting in Paris, and workshop participants at the EAA 29th Doctoral Colloquium for their helpful comments.

Disclosure statement

No potential conflict of interest was reported by the author.

References

Ahmed, A. S., and Duellman, S, 2013. Managerial overconfidence and accounting conservatism. *Journal of Accounting Research*, 51 (1), 1–30.
Bebchuk, L., Cohen, A., and Ferrell, A, 2009. What matters in corporate governance? *Review of Financial Studies*, 22 (2), 783–827.
Bergstresser, D., and Philippon, T, 2006. CEO incentives and earnings management. *Journal of Financial Economics*, 80 (3), 511–529.
Davis, A., Ge, W., Matsumoto, D., and Zhang, J, 2014. The effect of manager-specific optimism on the tone of earnings conference calls. *Review of Accounting Studies*, 20 (2), 639–673.
DeFond, M. L, and Jiambalvo, J, 1994. Debt covenant violation and manipulation of accruals. *Journal of Accounting and Economics*, 17 (1&2), 145–176.
DeFond, M. L., and Park, C. W, 1997. Smoothing income in anticipation of future earnings. *Journal of Accounting and Economics*, 23 (2), 115–139.
Doyle, J. T., Ge, W., and McVay, S, 2007. Accruals quality and internal control over financial reporting. *The Accounting Review*, 82 (5), 1141–1170.
Elliott, J. A., and Hanna, J. D, 1996. Repeated accounting write-offs and the information content of earnings. *Journal of Accounting Research*, 34 (Suppl.), 135–155.
Elliott, J. A., and Shaw, W. H, 1988. Write-offs as accounting procedures to manage perceptions. *Journal of Accounting Research*, 26 (Suppl.), 91–119.
Gompers, P., Ishii, J., and Metrick, A, 2003. Corporate governance and equity prices. *The Quarterly Journal of Economics*, 118 (1), 107–156.
Haggard, K. S., Howe, J. S., and Lynch, A. A, 2015. Do baths muddy the water or clear the air? *Journal of Accounting and Economics*, 59 (1), 105–117.
Hainmueller, J, 2012. Entropy balancing for causal effects: A multivariate reweighting method to produce balanced samples in observational studies. *Political Analysis*, 20 (1), 25–46.
Hazarika, S., Karpoff, J. M., and Nahata, R, 2012. Internal corporate governance, CEO turnover, and earnings management. *Journal of Financial Economics*, 104 (1), 44–69.
Hilary, G., and Hsu, C, 2011. Endogenous overconfidence in managerial forecasts. *Journal of Accounting and Economics*, 51 (3), 300–313.
Holthausen, R. W., Larcker, D. F., and Sloan, R. G, 1995. Annual bonus schemes and the manipulation of earnings. *Journal of Accounting and Economics*, 19 (1), 29–74.
Hribar, P., and Yang, H, 2016. CEO overconfidence and management forecasting. *Contemporary Accounting Research*, 33 (1), 204–227.
Hsieh, T.-S., Bedard, J. C., and Johnstone, K. M, 2014. CEO overconfidence and earnings management during shifting regulatory regimes. *Journal of Business Finance & Accounting*, 41 (9&10), 1243–1268.
Keating, A. S., and Zimmerman, J. L, 1999. Depreciation-policy changes: Tax, earnings management, and investment opportunity incentives. *Journal of Accounting and Economics*, 28 (3), 359–389.
Libby, R., and Rennekamp, K, 2012. Self-serving attribution bias, overconfidence, and the issuance of management forecasts. *Journal of Accounting Research*, 50 (1), 197–231.
Johnson, P. M., Lopez, T. J., and Sanchez, J. M, 2011. Special items: A descriptive analysis. *Accounting Horizon*, 25 (3), 511–536.
Malmendier, U., and Tate, G, 2005. CEO overconfidence and corporate investment. *The Journal of Finance*, 60 (6), 2661–2700.
Malmendier, U., and Tate, G, 2008. Who makes acquisitions? CEO overconfidence and the market's reaction. *Journal of Financial Economics*, 89 (1), 20–43.

Murphy, K. J., and Zimmerman, J. L, 1993. Financial performance surrounding CEO turnover. *Journal of Accounting and Economics*, 16 (1&3), 273–315.
Pourciau, S, 1993. Earnings management and nonroutine executive changes. *Journal of Accounting and Economics*, 16 (1–3), 317–336.
Press, E. G., and Weintrop, J. B, 1990. Accounting-based constraint in public and private debt agreements: their association with leverage and impact on accounting choice. *Journal of Accounting and Economics*, 12 (1–3), 65–95.
Schrand, C. M., and Zechman, S. L, 2012. Executive overconfidence and the slippery slope to financial misreporting. *Journal of Accounting and Economics*, 53 (1&2), 311–329.
Skinner, D. J, 1993. The investment opportunity set and accounting procedure choice: Preliminary evidence. *Journal of Accounting and Economics*, 16 (4), 407–445.
Skinner, D. J., and Sloan, R. G, 2002. Earnings surprises, growth expectations, and stock returns or don't let an earnings torpedo sink your portfolio. *Review of Accounting Studies*, 7 (2&3), 289–312.
Strong, J. S, and Meyer, J. R, 1987. Asset writedowns: managerial incentives and security returns. *The Journal of Finance*, 42 (3), 643–661.
Sweeney, A. P, 1994. Debt-covenant violations and managers' accounting responses. *Journal of Accounting and Economics*, 17 (3), 281–308.
Wells, P, 2002. Earnings management surrounding CEO changes. *Accounting & Finance*, 42 (2), 169–193.
Wong, M. H. F., and Zhang, S. F, 2014. CEO optimism and analyst forecast bias. *Journal of Accounting, Auditing & Finance*, 29 (3), 367–392.