

Earnings Management around CEO Turnovers

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Abstract

We find evidence that new CEOs manipulate real business activities – but not accounting accruals – to manage earnings downward relative to established CEOs. This earnings “bath” occurs as early as the CEO transition quarter. Further, we find that the degree of real earnings management is positively correlated with new CEO “time at the helm” in the transition quarter. Real earnings management is significant following both routine and non-routine CEO turnovers; this stands in contrast to earlier findings that accruals earnings management is more pronounced for non-routine CEO turnovers.

JEL classifications: C23, G14, M40

Keywords: CEO Turnover, Routine and Non-routine CEO Change, Discretionary Accruals, Accrual-based Earnings Management, Real Earnings Management.

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1. Introduction

Anecdotal evidence suggests that new CEOs have strong incentives to give earnings a “big bath” (manage earnings downwards), blaming the initial losses on their predecessors and enjoying a clean run of future earnings growth. Earnings can be managed through both accruals and real business activities (Graham et al. (2005)². In the post-SOX environment, managers increasingly manage earnings through real business activities instead of accruals because the former is more difficult to detect (Cohen et al. 2008). A number of studies have investigated accruals-based earnings management around CEO changes (Pourciau 1993; Wells 2002; Reitenga and Tearney 2003; Geiger and North 2011). To the best of our knowledge, no study to date has considered real earnings management around CEO changes in US firms. Our study investigates both real and accruals-based earnings management around CEO changes in all CRSP/Compustat firms from 2005 to 2012 using quarterly data. We obtain CEO turnover information from Audit Analytics, which record all executive and officer change information in 8-k filings from 2005 onwards. We compare earnings management variables in CEO change firm-quarters with those in normal firm-quarters (hereafter established CEO firm-quarters) and present evidence that new CEOs use real activities, but not accrual-based methods, to manage earnings downwards. Controlling for firm characteristics we find that evidence of real earnings management appears as early as the transition quarter. Consistent with the notion that managers can manage earnings by manipulating business activities continuously throughout a fiscal period, we show that the degree of real earnings management in the transition quarter is positively related to the number of days a new CEO is at the helm in that quarter.

² Accelerating sales via discounting or delaying discretionary expenditure are examples of upward earnings management through real business activities. Examples of accrual-based earnings management include over-provision for restructuring costs or bad debts; these provisions can be reversed in the future to give a boost to earnings.

Previous studies find that earnings management is more pronounced for non-routine CEO changes (Pourciau 1993; Wells 2002). Both Pourciau (1993) and Wells (2002) note that their findings in relation to non-routine CEO turnover may be due to differences in firm performance between routine and non-routine CEO turnovers; however their small samples precludes directly controlling for firm performance. We find that the difference in earnings management between routine and non-routine CEO changes are no longer significant once we control for firm performance. Similar to earlier studies, we find that non-routine CEO change firms have significantly lower market capitalisations and ROAs than firms experiencing routine CEO changes. In addition, non-routine CEO change firms are more conservative in financial reporting (as measured by the CSCORE measure of Khan and Watts, 2009) than firms experiencing routine CEO changes.

The above discussion compares new and outgoing CEO firm-quarters to established firm-quarters. When we compare new CEO firm-quarters directly against outgoing CEO firm-quarters, we find that new CEOs use more earnings decreasing discretionary accruals than outgoing CEOs. This difference is driven by routine CEO changes and may well be a result of upward earnings management by outgoing CEOs in anticipation of their retirement (consistent with Reitenga and Tearney, 2003). Nonetheless, neither upwards accruals earnings management by outgoing CEOs nor downwards accruals earnings management by new CEOs are significantly different from the established CEO benchmark. Hence statistically speaking, we cannot attribute the difference in accruals earnings management between new CEOs and outgoing CEOs specifically to either group. Turning to real earnings management, new CEOs record more earning decreasing abnormal production costs and abnormal discretionary expenditures, but in this case the difference can be traced to non-routine CEO changes rather than routine CEO changes.

Dechow et al. (2010) point out that measures of earnings management are noisy. Noisy measures constrain the power of statistical tests. One solution to this problem is to enlarge the sample size. Our sample includes 2,495 executive turnover events and averages over 300 per annum, and thus covers a wider range of U.S. firms than any of the prior studies on CEO turnover and earnings management. We also use

a number of different models to estimate earnings management. The main results in this paper are based on earnings management measures estimated from industry-quarter cross-sectional regressions. However our main findings remain qualitatively the same when we use time-series models to estimate earnings management variables.

The remainder of the paper is structured as follows: Section 2 discusses the literature. In section 3 we develop hypotheses. Section 4 introduces data and methodology. Section 5 presents our results and section 6 concludes.

2. CEO turnover, earnings management and firm performance: existing literature

We focus on CEO turnover, an event which creates an environment with strong incentives for earnings management for both outgoing and incoming CEOs. In the past decade, a number of studies has shown that managers use both accrual-based and real activity-based methods to manage earnings (for example, Graham et al. 2005; Cohen and Zarowin 2010; Zang 2012). Managers manipulate accruals to achieve certain earnings target (Healy 1985; Dechow et al. 1996; Burgstahler and Dichev 1997; Payne and Robb 2000; Degeorge et al. 1999). Managers also manage the operational activities of the firm to reach certain earnings targets (Roychowdhury 2006; Barua et al. 2010; Gunny 2005). Since the passage of Sarbanes-Oxley legislation (SOX) in 2002, the incidence of real earnings management have increased while accrual earnings management has declined (Cohen et al. 2008). This may be because real earnings management is often more difficult to detect than accrual earnings management (Graham et al. 2005). Given that accrual and real earnings management may act as substitutes (Zang 2012) it seems prudent to consider both when investigating earnings management. To our knowledge, no other study has previously included real activity-based earnings management when considering CEO turnover events in the U.S. Our study aims to contribute to the literature by investigating both accrual and real earnings management around CEO turnovers from 2005 to 2012 in US firms. Since our data covers the post-SOX period we are able to revisit some of the existing findings in the earnings management literature that pre-dates the change in the regulatory environment due to SOX.

Incentives to manage earnings may differ between outgoing and incoming CEOs. For example, outgoing CEOs may be more likely to engage in income increasing accounting practices to disguise poor performance or to increase their final bonuses (Reitenga and Tearney 2003). Incoming CEOs can blame losses occurring early in their tenure on their predecessor and so may be more likely to engage in a “big bath” – for instance by engaging in excessive accounting write-downs in order to create hidden reserves that can be used to manage earnings upwards in future years.

The measurement of earnings management around CEO changes is confounded by the fact that firms tend to perform poorly during the period surrounding executive turnovers, particularly if the executive change is non-routine (Coughlan and Schmidt 1985; Warner et al. 1988; Weisbach 1988; Jensen and Murphy 1990). Measurement errors in earnings management variables are positively correlated with factors correlated with firm performance (Dechow et al. 1995, 1996; Roychowdhury 2006; Guay et al. 1996). For example, a poorly performing firm may delay discretionary expenditure out of economic necessity rather than to meet an earnings target. Thus, controlling for factors related to firm performance when investigating earnings management is important.

Our study is most closely related to Dechow and Sloan (1991), Pourciau (1993), Murphy and Zimmerman (1993), and most recently Geiger and North (2011). Our study differs from these studies in three main aspects. *First*, our study is the first to investigate real earnings management around CEO changes in the U.S. As discussed earlier, in this post-SOX environment, examining real earnings management surrounding CEO changes is particularly relevant.

Second, we investigate earnings management around a total of 2,495 CEO changes (for an average of c. 312 per annum). The U.S. study with the largest number of CEO turnover events prior to our study is an influential work from two decades ago by Murphy and Zimmerman (1993). They examine around 1,000 routine and non-routine CEO changes from 1971 to 1989 (on average about 50 per year) and attribute changes in R&D, advertising, capital expenditures and accounting accruals to poor performance rather than earnings management. As pointed out by Dechow et al.

(2010), all measures of earnings management are noisy and subject to significant type I and type II errors. The work by Murphy and Zimmerman (1993) and Dechow et al. (2010) demonstrate the importance of controlling for firm performance and related variables in earnings management research. Our larger CEO turnover dataset is significantly more heterogeneous than those of earlier studies which have tended to focus on larger firms only. The wide variety of firms included in our sample allows us to controls for firm performance in a robust manner. Our larger sample size also enhances the statistical power of our tests; an important consideration given that earnings management measures are often noisy. After controlling for ROA, market-to-book, size and CSCORE, we find that new CEOs tend to use operational activities to manage earnings downward.

Third, while previous studies use annual data, we use quarterly data which mitigates the misclassification issue identified by both Pourciau (1993) and Murphy and Zimmerman (1993). If a CEO is appointed in the first month of the fiscal year, the new CEO can have significant influence over the financial results of the *previous* year (for which results will not yet have been announced at the time of new CEO's appointment). Evidence outlined by Murphy and Zimmerman (1993) suggests that financial results prior to CEO turnover would be sensitive to this classification. In our study, only the first quarter following a new CEO appointment is a transition quarter. We define new CEO firm-quarters as the first four quarters following a CEO change and outgoing CEO firm-quarters as the last four quarters prior to a CEO change. In this way, the potential misclassification between outgoing CEO quarters and new CEO quarters is limited to observations in the first quarter following CEO changes. In addition, U.S. executives in listed companies have incentives to manage earnings quarterly rather than annually because domestic issuers are required to report quarterly earnings. If new CEOs wish to manage earnings downward and blame the bad results on their predecessors, shifting the blame in this manner is likely to be more credible in the early months of their tenure. Hence new CEOs may be incentivised to give earnings a bath at the earliest opportunity. Using the higher frequency afforded by quarterly data can thus help us identify behaviour that might not be apparent at the annual frequency.

3. Hypotheses

Both departing and new CEOs may have strong incentives to manage earnings. Our first research question is whether new CEOs and outgoing CEOs manage earnings differently from established CEOs.

H1A. *Measures of earnings management differ between new CEOs and established CEOs, and between outgoing CEOs and established CEOs, after controlling for ROA, size, market-to-book and financial reporting conservatism.*

Incentives to manage earnings may differ between outgoing CEOs and incoming CEOs. For example, outgoing CEOs are more likely to engage in income increasing accounting practices to increase their final bonus or disguise poor performance. Incoming CEOs may engage in a “big bath” to create secret reserves to draw on in future years. Therefore, our second question is whether new CEOs manage earnings differently from outgoing CEOs. In order to answer this research question, we formulate **Hypothesis 2A** as below:

H2A. *Measures of earnings management differ between new CEOs and outgoing CEOs, after controlling for ROA, size, market-to-book and financial reporting conservatism.*

Most prior studies on earnings management surrounding CEO changes use annual data. However, it is reasonable to assume that executives of the U.S. public companies have incentives to manage earnings quarterly because domestic U.S. issuers are required to report earnings quarterly. If the environment in CEO change firms incentivises new CEOs to manage earnings downwards (because they can blame the poor performance on their predecessors), we would expect to see downward earnings management in the first one or two quarters immediately following a CEO change. Real business activity occurs continuously through a fiscal period. Therefore a new CEO’s ability to engage in real earnings management in the transition quarter should correlate positively with the time from his appointment to the end of the first quarter balance sheet date. By contrast, a new CEO may still be able to manipulate earnings using accruals in the period between the first balance sheet date and the first

earnings announcement. Hence, we would not expect accrual-based earnings management by new CEOs to correlate significantly with the gap between his appointment and the first quarterly earnings announcement date. This difference in the mechanics of real earnings management versus accrual-based earnings management motivates the following hypothesis:

H3A. *Measures of real earnings management in the CEO transition quarter are positively related to the gap between the date of appointment as CEO and the first balance sheet date. By contrast, measures of accruals-based earnings management do not exhibit this relationship.*

A change in CEO at a firm can take many forms. At the one extreme, a firm may appoint a new CEO who has been groomed for the role over many years in a well-planned and executed hand-over. At the other extreme, a firm may have to appoint a new CEO at short notice due to an unexpected event such as corporate fraud or the sudden resignation of the current CEO. Hence a distinction is often made between routine and non-routine CEO changes (see Vancil (1987) as cited by Pourciau (1993)). One might expect that a routine CEO change would result in greater continuity of strategy and less earnings management than a non-routine CEO change.

However, non-routine CEO changes tend to be prompted by poor performance and following non-routine executive changes, strengthening of corporate governance can result in more conservative financial reporting. This motivates our next two hypotheses:

H1B. *Non-routine CEO change firms have lower ROA, size, market-to-book ratios than routine CEO change firms and financial reporting conservatism increases more after non-routine CEO changes than after routine CEO changes.*

H2B. *Earnings management of new and outgoing CEOs is more pronounced for non-routine changes than for routine changes, after controlling for ROA, size, market-to-book and financial reporting conservatism.*

4. Data and methodology

4.1. Data

We identify CEO turnover events using the Directors and Officers changes over the 2005–2012 period as provided by Audit Analytics. Audit Analytics covers all director and CEO changes of SEC registrants from 01 January 2005 onwards. To qualify for inclusion in our dataset, the incoming CEO must be appointed as a sole CEO on a permanent basis. In other words, co-CEO appointments or appointments lasting less than 12 months are excluded from our CEO turnover dataset. We also exclude CEO turnovers due to mergers, acquisitions and bankruptcies as well as CEO turnovers in financial institutions (SIC code between 6000 and 6999) and regulated industries (SIC codes between 4400 and 4999). Audit Analytics records 5,917 unique permanent CEO appointments in non-financial and unregulated industries from 2005 to 2012. Approximately half of the CEO appointments, or 2,429 CEO turnover events, can be matched with firm-quarters in the Center for Research in Security Prices (CRSP) and the Compustat Merged file. Panel A in Table 1 describes the filtering process used to obtain the CEO turnover dataset. On average 7.9% of firms experience a change in CEO each year (see Panel B in Table 1), implying an average CEO tenure of approximately 12 years in the CRSP/Compustat universe of SEC filers from 2005 to 2012³. Moving to CEO changes by industry (Panel C of Table 1), firms in the low-competition agriculture, forestry and fishing industry group have the lowest CEO turnover ratio of 4.5%, or the longest implied CEO tenure of about 22 years. The highly competitive retail industry exhibits the highest CEO turnover rate of 10.5%, implying an average CEO tenure of 9.5 years.

³ As a point of comparison, Bushman et al. (2010) use ExecuComp which cover S&P1000 large companies and the average CEO tenure of turnover firms is approximately 10 years, close but two years shorter than the average CEO tenure in our sample. CEO tenure tends to be shorter for larger companies. For example, CEO tenure in Fortune 500 companies average round 7-8 years during the same period.

[Insert Table 1 about here.]

The CEO turnover events enable us to create CEO change dummies. We define new CEO firm-quarters as firm-quarters where the CEO has been at the helm for no more than four quarters since the cut-off date (defined below). Outgoing CEO firm-quarters are firm-quarters where the CEO leaves the firm within four quarters from the cut-off date. Established CEO firm-quarters are those firm-quarters that are neither new CEO firm-quarters nor outgoing CEO firm-quarters. The cut-off date represents the last date at which earnings management could theoretically take place. For accrual earnings management, the cut-off date is the earnings announcement date. For measures of real earnings management (REM Index, Ab_Prod and Ab_DiscExp) the cut-off date is the balance sheet date. Figure 1 depicts the cut-off dates for accruals and real earnings management. Some firm-quarters between two consecutive CEO changes can be classified as either outgoing CEO firm-quarters or new CEO firm-quarters; our analysis exclude these ambiguous firm-quarters.

[Insert Figure 2 about here.]

In order to estimate earnings management variables and related control variables, we sample all firm-quarters in the CRSP/Compustat Merged database from 2005 to 2013. Appendix A summarises variables used in this study. Financial institutions (SIC 6000–6999) and firms in regulated industries (SIC 4400–4900) are excluded.

4.2. Methodology: earnings management measures

Motivated by recent findings that firms use both accruals and real business activities to manage earnings we consider both types of earnings management. Our analysis groups firms into three categories: a) new CEO firm-quarters, b) outgoing CEO firm-quarters and c) established CEO firm-quarters (the benchmark group).

Accrual-based earnings management

Following recent literature (Cohen et al. 2008; Zang 2012; Hazarika et al. 2012), we use discretionary accruals to proxy for accrual-based earnings management. Discretionary accruals are the difference between a firm's total accruals and the

normal level of accruals. We use the modified Jones model⁴ (Jones 1991) as described in Dechow et al. (1995) to estimate the normal level of accruals. Specifically, we run the following cross-sectional model for each industry-quarter⁵:

$$\frac{Accruals_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{\Delta S_t}{A_{t-1}} + \alpha_3 \frac{PPE_t}{A_{t-1}} + \epsilon_t \quad (1)$$

$Accruals_t$ is the earnings before extraordinary items and discontinued operations minus the operating cash flows in quarter t , A_{t-1} is the total assets in quarter $t - 1$, ΔS_t is the change in revenues from the preceding quarter and PPE_t is gross property, plant, and equipment⁶. We require at least 15 observations for each cross-sectional estimate. (A summary of the estimation results of equation (1) is included in Appendix B.) Normal levels of accruals are then estimated as follow:

$$Norm_accruals_t = \hat{\alpha}_0 + \hat{\alpha}_1 \frac{1}{A_{t-1}} + \hat{\alpha}_2 \frac{\Delta S_t - \Delta AR_t}{A_{t-1}} + \hat{\alpha}_3 \frac{PPE_t}{A_{t-1}} \quad (2)$$

where ΔAR_t is the change in accounts receivable. Discretionary accruals (DA_t) is the difference between total accruals and the fitted normal accruals.

Real activity-based earnings management

Prior studies guide our choice of proxies for real earnings management. Dechow et al. (1998) and Roychowdhury (2006) introduce measures to estimate levels of real earnings management. Later studies (Zang 2012; Cohen et al. 2008; Gunny 2005) demonstrate that these proxies capture real earnings management in various contexts. Following Zang (2012), we focus on earnings management through two types of real

⁴ In addition to the modified Jones model used in the main text we also considered the original Jones model estimated in the cross-section as well as in time-series. Our main findings remain qualitatively the same. We require a minimum of 15 observations for each estimate in all tests.

⁵ Industries are classified by two-digit SIC codes.

⁶ Missing quarterly gross PPE values are filled in by linear interpolation.

business activity, namely overproduction and delay of discretionary expenditures, that temporarily inflate earnings (or, under-production and front-loading discretionary expenditures that temporarily deflate earnings)⁷. We discuss each of these two components of real earnings management in more detail below:

(1) Overproduction: Overproduction results in fixed overheads being allocated to a larger number of units and hence has the effect of reducing the cost of goods sold on a per unit basis. The lower cost of goods sold translates into increased earnings in the period that overproduction takes place. However, inventory capacity is limited and this upward earnings management will eventually reverse as running down excess inventory leads to a period of under-production. Conversely, a firm can also under-produce so as to lower earnings in the current period. We estimate the normal level of production cost from operations using the following equation:

$$\frac{Prod_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{S_t}{A_{t-1}} + \alpha_3 \frac{\Delta S_t}{A_{t-1}} + \alpha_4 \frac{\Delta S_{t-1}}{A_{t-1}} + \varepsilon_t \quad (3)$$

where $Prod_t$ is the sum of cost of goods sold in quarter t and the change in inventory from quarter $t - 1$ to t . We estimate the normal level of production cost in the cross-section by industry and quarter⁸. The abnormal level of production costs (Ab_Prod_t) are the regression residuals from estimating equation (3). Low levels of abnormal of production costs indicate that a firm manipulates earnings downwards through underproduction.

⁷ Like Zang (2012), this study does not examine abnormal cash flows from operations. As pointed out by Roychowdhury (2006), inflation of earnings through channel stuffing, price discounts and overproduction leads to decreases in cash flows while delaying discretionary expenditures results in increases in cash flows. Thus, the net effect of abnormal cash flows on real earnings management is ambiguous.

⁸ Our main findings remain qualitatively the same if we use time-series models to estimate real earnings management variables.

(2) Delaying discretionary expenditure: Discretionary expenditure include R&D, advertising and selling, general and administrative (SG&A) expenditure. Temporarily reducing discretionary expenditure can inflate earnings in the current period; similarly, front-loading discretionary expenditure can temporarily decrease earnings in the current period. We estimate the normal level of discretionary expenditure from operations using the following equation:

$$\frac{DiscExp_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{S_t}{A_{t-1}} + \varepsilon_t \quad (4)$$

where $DiscExp_t$ is discretionary expenditure in quarter t , which include R&D and SG&A⁹. Abnormal discretionary expenditure ($Ab_DiscExp_t$) is the regression residuals from equation (4) multiplied by -1 for ease of interpretation. Thus, lower abnormal discretionary expenditure (as defined) corresponds to downward earnings management through an abnormal increase in discretionary expenditure.

The real earnings management index (REM), is simply the sum of abnormal production costs (Ab_Prod_t) and abnormal discretionary expenditure ($Ab_DiscExp_t$).

4.3. Methodology: Two-way clustered standard errors

Unless otherwise indicated, all panel regressions in this study report p -values calculated from standard errors clustered by firm and by quarter, as described by Thompson (2011) and Cameron et al. (2011). Our use of two-way clustered standard errors are motivated by the findings in Petersen (2009), and subsequently corroborated by Gow et al. (2010), that two-way standard errors are generally robust to time and firm dependence in panel data. By contrast, a range of alternative approaches previously employed in finance and accounting applications are shown to

⁹ We do not include advertising expenditure in discretionary expenditures because COMPUSTAT does not provide quarterly advertising expenditure. Quarterly R&D is calculated using year-to-date R&D expenditures for each quarter. Appendix A provides a detailed description of all the variables used.

give rise to biased standard errors when confronted with panel data that exhibit both time and firm dependence.

5. Results

5.1. Summary statistics

Table 2 reports the summary statistics for the key variables used in this study. The available firm-quarter observations for each variable ranges from 23,382 for restructuring cost to 114,878 for return on assets (ROA). All variables are winsorised at 1% (on both tails) to mitigate the influence of outliers.

[Insert Table 2 about here.]

The first four variables in Panel A of Table 2 are measures of accrual-based and real activity-based earnings management¹⁰. Note, the means of these variables do not equal zero because they have been winsorised at 1% on both tails. At the 25th percentile, the real earnings management index is -0.0504 (that is -5.04% of total assets). At the 25 percentile, quarterly discretionary accruals, abnormal production cost and abnormal discretionary expenditures are -1.87% , -3.26% and -2.12% of total assets respectively. At the 75th percentile, the quarterly real earnings management index is 0.0510 (or 5.10% of total assets) and discretionary accruals, abnormal production cost and abnormal discretionary expenditures are 2.41% , 2.78% and 3.45% of total assets respectively. Once annualised the levels of these measures are comparable to those of other studies (for example, Table 1, Zang, 2012).

The second group of variables in Panel A of Table 2 are control variables that has been identified (for example, see Dechow et al. 1995, 1996; Roychowdhury 2006) as being correlated with the measurement error in earnings management variables. Size,

¹⁰ Appendix B contains a summary of estimation results for the normal levels of accruals, production costs and discretionary expenditures. These estimation results are comparable to those from existing studies and coefficients have the signs as predicted by Dechow et al. (1998).

market-to-book ratio and ROA are all standardized by industry-quarter. This is to make them consistent with earnings management measures that are themselves estimated as residuals from industry-quarter regressions. Throughout our analysis, we also control for conservatism in financial reporting, or CSCORE. Some CEO turnovers may be the result of breaches of debt covenants and as such may be followed with increases in financial reporting conservatism, as noted in Tan (2013). Since earnings management may be confounded with financial reporting conservatism, we include a measure of conservatism as a control. The degree of financial reporting conservatism, or CSCORE, is estimated as in Khan and Watts (2009), using quarterly cross-sectional regressions as specified below:

$$\begin{aligned}
 Earnings_i = & \beta_0 + \beta_1 D_i + R_i(\mu_1 + \mu_2 Size_i + \mu_3 MB_i + \mu_4 Lev_i) \\
 & + D_i R_i(\lambda_1 + \lambda_2 Size_i + \lambda_3 MB_i + \lambda_4 Lev_i) \\
 & + (\sigma_1 Size_i + \sigma_2 MB_i + \sigma_3 Lev_i + \sigma_4 D_i Size_i + \sigma_5 D_i MB_i + \sigma_6 D_i Lev_i) + \varepsilon_i
 \end{aligned}
 \tag{5}$$

where D_i is a dummy variable equal to 1 if the quarterly cumulative stock return (R_i) for firm i is negative, and 0 otherwise. $Size_i$ is the natural log of market value of equity of firm i . MB_i is the market-to-book ratio. Lev_i is the leverage, defined as total debt over book equity. Following Khan and Watts (2009), we delete firm-quarters with negative total assets or book value of equity and firm-quarters with price per share less than \$1. A firm-quarter CSCORE is calculated as $\hat{\lambda}_1 + \hat{\lambda}_2 Size_i + \hat{\lambda}_3 MB_i + \hat{\lambda}_4 Lev_i$. An increased CSCORE indicates more conservative financial reporting. Appendix C reports the summary of CSCORE estimation results.

The last four rows in Panel A of Table 2 summarizes selected line items related to earnings management, including special items, gains from PPE sales, cash flows from discontinued operations and restructuring cost, all scaled by sales. The negative means of these variables represent losses or expenses.

Panel B of Table 2 reports pairwise correlation coefficients between key variables. Firms tend to use accruals and real activities to manage earnings in the same direction in a given quarter, as shown by the positive and significant correlation coefficients between REM and DA and between each of Ab_Prod and Ab_DiscExp and DA.

Control variables are not highly correlated, with correlation coefficients ranging between -0.57 between CSCORE and MB_norm, to 0.02 between MB and size.

5.2. Earnings management by outgoing CEOs and new CEOs – univariate analysis

Is there a change in the level of earnings management around CEO turnovers? Do outgoing CEOs and incoming CEOs manage earnings in different directions? Panel A in Table 3 presents descriptive statistics comparing new CEO and outgoing CEO firm-quarters to established CEO firm-quarters. Results from the univariate analysis in Table 3 appears to suggest that both outgoing CEOs and new CEOs deflate earnings through decreasing discretionary accruals and accelerating discretionary expenditure (the CEO group differences for abnormal production are not significant). The differences in means for the first four rows show that both new and outgoing CEOs on average have significantly lower discretionary accruals (DA) and higher abnormal levels of discretionary expenditures (lower Ab_DiscExp)¹¹ than established CEOs. For example, the mean DA of established CEOs is about 0.0015 or 0.15% of total assets while the mean DA of firms with new CEOs is -0.0035 . The difference in mean is -0.0050 or -0.50% of total assets and significant at the 1% level. Similarly, real earnings baths by new CEOs are on average larger than those by established CEOs. The mean difference of the real earnings management index (REM) between new CEOs and established CEOs is -0.0087 (or -0.87%) of total assets and is significant at the 1% level. Interestingly, the means of these earnings management variables are also lower in outgoing CEO quarters than established CEO quarter. This result suggests that outgoing CEOs also manage earnings downward, just like new CEOs, but that the size of the downward earnings management by outgoing CEOs tends to be smaller than new CEOs. This result is contrary to the common sense

¹¹ Recall that Ab_DiscExp is defined as the *negative* of the residual from the estimating regression. This means positive values indicates upward earnings management while negative values indicate downwards earnings management.

intuition that resigning CEOs would, on the whole, prefer to manage earnings upwards rather than downwards. By contrast, the difference between outgoing and new CEOs earnings management variables are not significantly different, except for discretionary accruals, suggesting that before controlling for other factors, outgoing CEOs and new CEOs do not appear to manage earnings in opposite directions.

The results in Table 3 also demonstrate some salient features of firms experiencing executive turnovers. First, during periods prior to CEO changes, firms tend to have lower market-to-book ratios (MB) and poorer returns on assets (ROA) than firms with established CEOs. MBs of outgoing CEO firm-quarters are on average 0.0927 standard deviations smaller than their industry peers during the same quarter, while ROA's are on average 0.1843 standard deviations lower than their industry peers during the same quarter (both with p -value <0.01). Interestingly, post CEO turnover the sizes, MBs and ROAs are all lower on average than in quarters prior to the CEO turnover. The difference in means of MB's between new CEO quarters and outgoing CEO quarters is the most negative (-0.0337) and is significant at the 5% level.

We also find that new CEOs are on average more conservative in financial reporting than either outgoing or established CEOs. Conservatism is measured using the CSCORE metric of Khan and Watts (2009). The average CSCORE of new CEO firm-quarters is 0.0305, which is significantly higher than the average CSCORE of either established or outgoing CEO firm-quarters (see the last row of Table 3).

Since we are interested in how measures of earnings management evolve around CEO turnover events, it is useful to add a time dimension to our analysis. Panel A in Figure 2 plots the mean of each earnings management variable, for the period beginning four quarters before and ending eight quarters after a CEO change event. All four charts exhibit a common U-shaped pattern despite some volatility in the quarterly measures. A firm's discretionary accruals, abnormal discretionary expenditures and abnormal production costs all tend to deteriorate in the four quarters prior to a CEO change, followed by a further drop in the first or second quarter immediately after, before reversing somewhat in the subsequent quarters.

We also examine the line items related to accrual-based earnings management. The first chart in Panel B of Figure 2 provides an overview of the special items around the CEO change event. Special items are relatively stable in the four quarters preceding the CEO change, but large losses from special items occur in the first and second quarter after the CEO change. By contrast, restructuring costs gradually increase before the CEO change and keep increasing for two quarters after the CEO change, before suddenly reversing drastically afterwards. Cash flows from extraordinary and discontinued operations around CEO changes display a pattern similar to that of restructuring costs. In contrast with special items, gains from sales of PPE and investments increase in the first two new CEO quarters, so this line item does not appear to be driving the decreases in discretionary accruals in new CEO quarters. These plots suggest that new CEOs make large write-offs using special items after they take control of the organisation. On the other hand, restructuring efforts may already be underway at the time of CEO turnover.

In Panel C of Figure 2 we consider firm characteristics around CEO turnover. In particular, we plot the mean of firm size, market-to-book ratio, ROA and CSCORE around CEO changes. Firm size, market-to-book ratio and ROA deteriorate quickly in the run-up to a change in CEO and then continue to drop further in the first few quarters after the CEO change event. By contrast the mean of CSCORE gradually rises in the four quarters prior to the CEO change and stabilizes thereafter.

[Insert Table 3 about here.]

[Insert Figure 2 about here.]

The results of our univariate analysis are consistent with the findings by Pourciau (1993). Given that CEO turnover is often associated with poor contemporaneous firm performance, it can be difficult to disentangle the impact of CEO turnover from that of firm performance, as also noted by Pourciau (1993) and others. In much of the prior literature the ability to control for firm performance has been constrained by small sample sizes (for instance, Pourciau (1993) considers a sample of 73 non-routine turnover events in her study). The overall size and cross-sectional depth of our

dataset allows us to consider a more heterogeneous set of firms while at the same time specifically controlling for firm performance and financial reporting conservatism. The results from this multivariate analysis are presented in the next section.

5.3. Earnings management by outgoing CEOs and new CEOs – multivariate analysis

According to Dechow et al. (1995, 1996), measurement errors in measures of earnings management are correlated with firm characteristics and performance. The presence of measurement error correlated with omitted variables can be a source of bias; in the following analysis we propose to deal with this issue by explicitly controlling for a range of firm characteristics. We test the difference in earnings management levels (H1A and H2A) using panel regressions that incorporate firm-level controls. The general specification for the panel regression is:

$$Y_t = \beta_0 + \beta_1 D_t^{new} + \beta_2 D_t^{out} + \boldsymbol{\gamma} \mathbf{Z} + \varepsilon_t \quad (6)$$

where Y_t , the dependent variable, is one of the earnings management measures (that is DA, REM, Ab_DiscExp and Ab_Prod; see Appendix A for further detail). \mathbf{Z} is a vector of control variables that includes the log market value of equity in quarter $t - 1$ ($Size_norm_{t-1}$), the market-to-book ratio in quarter $t - 1$ (MB_norm_{t-1}), the return on assets in quarter t (ROA_norm_t) (following Roychowdhury, 2006 and Zang, 2012) and CSCORE in quarter t . Changes in CEO are indicated by dummy variables: D_t^{new} is 1 for new CEO firm-quarters, and 0 otherwise while D_t^{out} is 1 for outgoing CEO firm-quarters, and 0 otherwise. Established CEO firm-quarters (those that are neither new CEO firm-quarters nor outgoing CEO firm-quarters) form the omitted or reference category. Hence the intercept in the panel regression measures the average level of earnings management measures for established CEO firm-quarters.

Our main interest is in the slope coefficients on the CEO change dummies; these coefficients may be interpreted as measuring the marginal impact of new and outgoing CEOs on earnings management measures, after controlling for firm characteristics. Significant slope estimates on the CEO change dummies will support

H1A, where we posit that earnings management differ between CEO change firm-quarters and established CEO firm-quarters. Significant differences between new CEO dummies and outgoing CEO dummies will provide support for **H2A** that departing CEOs and incoming CEOs manage earnings differently. The four control variables ($Size_{norm_{t-1}}$, $MB_{norm_{t-1}}$ and ROA_{norm_t}) are all standardised¹² by industry-quarter to be consistent with the earnings management measures (which are also estimated in the cross-section by industry-quarter). Significant coefficient estimates are indicated by stars – three stars indicate significance at the 1% level, two stars indicate significance at the 5% level and a single star indicates significance at the 10% level. Unless otherwise indicated, panel regressions in this study use standard errors clustered by firm and by calendar quarter (Petersen 2009; Thompson 2011; Gow et al. 2010).

[Insert Table 4 about here.]

Table 4 reports the estimation results of equation (6) for all four earnings management measures. For each earnings management measure we consider two regression specifications: first without controlling for CSCORE and then again with CSCORE added as an additional control, resulting in a total of eight separate regression specifications. After controlling for size, MB, ROA and CSCORE a different picture of earnings management emerges – it differs from the univariate analysis in three ways. *First*, the differences in discretionary accruals documented in the univariate analysis are not robust to the above controls. The slope estimates on the new CEO dummy (D_t^{new}) and the outgoing CEO dummy (D_t^{out}) are insignificant (see column (1) and (2) in Table 4). This suggests that neither outgoing nor new CEOs record discretionary accruals that are significantly different from those of established CEOs after controlling for firm characteristics (thus rejecting **H1A**). *Second*, after

¹² The control variables are standardised by subtracting the industry-quarter mean and then dividing by the industry-quarter standard deviation.

accounting for firm performance and financial reporting conservatism, we still have evidence that new CEOs, but not outgoing CEOs, engage in downward real earnings management (thus lending support to **Hypothesis 1A**). The new CEO dummy coefficients for the real earnings management index, abnormal discretionary expenditures and abnormal production costs are -0.0070 , -0.0042 and -0.0034 , all with p -values below 0.01 (see the last three columns in Table 4). The results are similar when we do not control for CSCORE (see column (3), (4) and (5) in Table 4). *Third*, while the univariate analysis do not support the notion that outgoing and new CEOs manage earnings in different directions (except for discretionary accruals), after controlling for firm characteristics and conservatism we have strong evidence supporting the hypothesis that outgoing and new CEOs manage earnings in opposite directions (thus lending support to **Hypothesis 2A**). This is evidenced by the last row of Table 4, in which we consider the differences between the slope estimates of the new CEO dummies and the outgoing CEO dummies. All the differences are negative and seven of the eight differences are significant at the 10% level (five out of eight are significant at the 5% level).

For a finer-grained understanding of earnings management we turn to an analysis of individual quarters surrounding the CEO change event. We consider the four quarters leading up to the CEO change as well as the eight quarters following, for a total of twelve quarters. As before, we control for firm characteristics and conservatism – the panel regression is outlined in equation (7) below:

$$Y_t = \gamma_0 + \sum_{i=-4}^{-1} \theta_i D_t^{is-Qi} + \sum_{i=1}^8 \theta_i D_t^{is-Qi} + \gamma_2 Size_norm_{t-1} + \gamma_3 MB_norm_{t-1} + \gamma_4 ROA_norm_t + \gamma_5 CSCORE_t + \varepsilon_t \quad (7)$$

where Y_t is a vector of earnings management variables; D_t^{is-Qi} takes the value of 1 if the financial result cut-off date is i quarter(s) away from the date of new CEO change and 0 otherwise.

We plot the slope estimates on the individual quarter dummies in Figure 3. Other than discretionary accruals, the lines in Figure 3 continue to exhibit U-shapes similar to those in Figure 2. The discretionary accrual line exhibits a U-shaped curve in Figure 2 but not in Figure 3, which is consistent with the regression results in Table 4

where discretionary accruals in new CEO quarters are not significantly lower than those of established CEO quarters after controlling for other factors. The most interesting result in Figure 3 is that, after accounting for ROA, MB, size and CSCORE, the real earnings management measures all show dramatic drops when moving from the quarter prior to the CEO change (quarter -1) to the quarter following the CEO changes (quarter 1). The pattern in Figure 3 suggests that new CEOs manage earnings downward as early as in the first quarter after taking control. In our research design a quarter is marked as the first new CEO quarter even if the new CEO was only appointed partway through the quarter. This motivates our next research question: how do measures of earnings management in the first new CEO quarter relate to the number of days the new CEO had control in that quarter?

[Insert Figure 3 about here.]

5.4. The transition quarter: time at helm and levels of earnings management

If a new CEO is incentivised to manage earnings downward (because he can blame poor performance on his predecessor thus giving him a clean run of earnings growth in the future), then we would expect the new CEO to give earnings a bath at the earliest possible opportunity. Our quarterly results in Figure 3 suggest that the new CEO earnings bath can occur as early as the transition quarter. In developing **Hypothesis 3A**, we posit that the ability of new CEOs to engage in downward real earnings management in the first quarter should increase in line with the number of days they are in control in that quarter. By contrast, a new CEO's ability to engage in accrual-based earnings management in the first quarter do not necessarily correlate with their time as CEO, because accrual-based earnings management can be effected close to or even after the balance sheet date, rather than throughout the fiscal quarter as is the case for real earnings management. In order to test **Hypothesis 3A**, we estimate the following regressions:

$$Y_i = \theta_1 Days_i + \omega Z + \varepsilon_t \quad (8)$$

where Y_i are measures of accrual-based earnings management and of real earnings management in the first quarter following the CEO change, as defined in Appendix A.

Z is a vector of control variables that include $Size_{norm_{t-1}}$, $MB_{norm_{t-1}}$, ROA_{norm_t} and $CSCORE_t$. Equation (8) does not have an intercept because the ability of earnings management is zero if the new CEO takes over on the financial cut-off date (the quarterly balance sheet date). The sample includes all new CEO first quarter observations, from 2005 to 2012, for which we have the necessary variables to estimate the earnings management measures and controls. Table 5 reports the estimation results for equation (8).

[Insert Table 5 about here.]

The coefficient of interest is the slope estimate on the number of days remaining (the first row in Table 5). After accounting for the difference in performance and conservatism, REM, Ab_DiscExp and Ab_Prod are all significantly and negatively related to days remaining (column (6) to (8)). By contrast, DA is not significantly related to days remaining. The slope estimate on days remaining in column (6) is -0.0002 , suggesting that if the new CEO has 30 more calendar days in his first quarter, the REM on average is -0.0038 lower, or on average there is more downward real earnings management equal to 0.38% of total assets (corresponding to 0.04 of a standard deviation in REM). Thus, the effect of new CEO time at the helm during his first quarter on downward real earnings management is economically significant. These results lend support to our **Hypothesis 3A**.

5.5. Earnings management for routine and non-routine CEO changes

In order to test **Hypothesis 1B** and **2B**, we categorize CEO turnovers into routine changes and non-routine changes following Pourciau (1993). We rely on the type of executive change and the reasons given in 8-K filings to classify each turnover as either non-routine or routine. Non-routine CEO turnovers are those for which (1) the CEO is recorded to have retired from the company at an age below 60 and retained no position within the company (2) the CEO resigned and did not retain any position within the company (3) the CEO died (4) the CEO was dismissed (5) the CEO left the company due to corporate restructuring, policy disagreement, investigation or suspected wrong-doing; or (6) the CEO change is followed by a temporary

arrangement involving a co-CEO, interim CEO or a CEO that stays for less than a year.

[Insert Table 6 about here.]

We compare the means of earnings management measures and firm characteristics of routine outgoing CEO quarters with non-routine outgoing CEO quarters. We also conduct a similar analysis for new CEOs. The results are summarised in Panel A of Table 6.

The results of this univariate analysis suggest that accruals-based earnings management by outgoing CEOs are significantly more negative for non-routine changes than for routine changes. Routine outgoing CEO's have a mean DA of 0.0003 while non-routine outgoing CEOs have a mean DA of -0.0038 (the difference of -0.0041 is significant at the 5% level). For new CEOs the difference between non-routine and routine turnovers are also negative (-0.0015), but not significant. None of the real earnings management measures differ significantly between routine and non-routine changes for either new or outgoing CEOs.

In Table 6 Panel A we also consider the difference in firm characteristics between routine and non-routine changes. Firms experiencing non-routine CEO turnovers have lower market capitalisation, market-to-book ratios and ROAs on average than firms experiencing routine CEO turnovers. These differences in firm characteristics are significant at the 1% level in every case (save for the market-to-book ratio in the case of outgoing CEOs which is significant at the 10% level). These results support **Hypothesis 1B** that non-routine CEO change firms have lower ROA, size, market-to-book but higher CSCORE. Such differences again underscore the need to control for firm performance rather than relying only on univariate analyses.

Consistent with the approach of the previous sections we use a panel regression to investigate earnings management around routine CEO changes and non-routine CEO changes while controlling for size, market-to-book ratio, ROA and CSCORE. Specifically, we run panel regressions for each earnings management measure using equation (9) below:

$$Y_t = \beta_0 + \beta_1 D_t^{new} \times D^{routine} + \beta_2 D_t^{out} \times D^{routine} + \beta_3 D_t^{new} \times D^{non-routine} + \beta_4 D_t^{out} \times D^{non-routine} + \omega Z + \varepsilon_t \quad (9)$$

where Y_t are measures of accrual-based earnings management and of real earnings management in the first quarter following CEO changes, as defined in Appendix A. Z is a vector of control variables consisting of $Size_norm_{t-1}$, MB_norm_{t-1} , ROA_norm_t and $CSCORE_t$. Each of the new and outgoing CEO dummy variables are interacted with each of the routine and non-routine dummy variables ($D^{routine}$ and $D^{non-routine}$) for a total of four interaction terms in the regression.

Panel B in Table 6 reports the results for regressions as specified in equation (9). We have three interesting findings regarding earnings management around routine and non-routine CEO changes after controlling for firm performance.

First, the positive slope estimate of 0.0016 (significant at the 10% level) on the routine outgoing CEO dummy provides weak evidence supporting the **Hypothesis 2A** that outgoing CEOs use accruals to manage earnings upward. This result corroborates the findings in Reitenga and Tearney (2003) that outgoing CEOs prior to routine executive changes tend to use accruals to manage earnings upwards. In addition, slope estimates on both routine new CEO dummies and non-routine new CEO dummies are negative but insignificant (column (1) and (2) in Panel B of Table 6), which suggest that new CEOs, regardless of whether they take over following routine or non-routine executive changes, do *not* systematically use accruals to manage earnings downward. This result stands in contrast to the findings of earlier studies that downward earnings management by new CEOs are stronger in non-routine CEO change firms than they are in routine CEO change firms (Pourciau 1993; Wells 2002). In addition to a later sample period and a larger sample size, our study employs a different research design that employs quarterly data and controls for ROA, MB, size and CSCORE using panel regressions. We believe that our research design addresses the concern, noted by Pourciau (1993), that early results may be influenced by poor firm performance around CEO turnovers. In addition, our use of quarterly data mitigates to some extent a concern associated with using annual financial data, which is the potential miss-

classification of annual financial results as being influenced by the new CEOs rather than the outgoing CEO or vice versa.

Second, regardless of whether the executive change is routine or non-routine, new CEOs (but not outgoing CEOs) use real activities to manage earnings downward, as suggested by the significant and negative slope estimates on routine new CEO dummies and on non-routine new CEO dummies in column (3) to (8) in Panel B of Table 6. For example, the slope estimate on the non-routine new CEO dummy is -0.0102 in column (6), suggesting that REM in non-routine new CEO quarters averages 0.0102 (or, 1.02% of total assets) less than those in established CEO quarters. Similarly, REM in routine new CEO quarters on average is 0.0055 (or 0.55% of total assets) less than those in established CEO quarters.

Finally, in non-routine CEO change quarters and routine CEO change quarters, discretionary accruals, abnormal production costs and abnormal discretionary expenditures are very similar and *not* significantly different. The differences between slope coefficients on the non-routine new CEO dummies ($D^{non-routine} \times D_t^{new}$) and those on the routine new CEO dummies ($D^{routine} \times D_t^{new}$), shown on the last two rows in Panel B of Table 6, are consistently insignificant at conventional significance levels. Results from multivariate panel regressions suggest that, after controlling for firm performance, we have no evidence to support the hypothesis that levels of earnings management around non-routine executive changes differ from those around routine executive turnovers.

The last two rows in Panel B of Table 6 report differences in means of DA and REM in new CEO quarters and outgoing CEO quarters. New CEOs following routine changes tend to incur significantly more negative DA but not REM than outgoing CEOs. This finding does not support the **Hypothesis 2B** that downward earnings management is stronger among non-routine new CEOs than among routine new CEOs. However, this result is consistent with Reitenga and Tearney (2003) who also find upward earnings management before CEOs retire according to plan. By contrast, new CEOs after non-routine changes tend to record significantly more negative REM,

Ab_Prod and Ab_DiscExp (but not DA) than outgoing CEOs. This result supports **Hypothesis 2B**.

6. Conclusion

Our study is the first to provide evidence that new CEOs in U.S. companies manage earnings downwards through real earnings management, both in comparison to established CEOs and outgoing CEOs, after controlling for firm performance. By contrast we do not find significant evidence that outgoing CEOs engage in real earnings management after controlling for firm performance. There is a statistically significant difference in discretionary accruals between new CEOs and outgoing CEOs after controlling for firm characteristics; however neither new nor outgoing CEOs engage in significant accruals earnings management in comparison to established CEOs (again after controlling for firm performance). As such we cannot specifically attribute the difference in discretionary accruals between new and outgoing CEOs to accruals earnings management by either new or outgoing CEOs. Another novel finding in our study is that downwards real earnings management by new CEOs start very early in the new CEO's tenure, and is significant even in the transition quarter. We demonstrate statistically and economically significant linear relationship between the degree of downwards real earnings management and the length of new CEO tenure in the transition quarter. Our study benefits from a much larger and more diverse sample of CEO change firms than has been the norm in earlier studies. This allows us to control for firm performance without causing a significant loss of power in our tests. In addition, we make use of quarterly data instead of annual data – this allows us to make a much sharper distinction between earnings influenced by new versus outgoing CEOs.

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Figure 1 Financial results cut-off dates for accrual-based and real-activity-based earnings management

This figure depicts financial results cut-off dates for accrual-based earnings management and real activity-based earnings announcement along a time line. The cut-off date represents the last date at which earnings management could theoretically take place. For accrual-based earnings management, the cut-off date is the earnings announcement date. For measures of real-activity-based earnings announcement (the REM index, abnormal production costs and abnormal discretionary expenditures) the cut-off date is the balance sheet date. Appendix A includes a detailed description of variables.

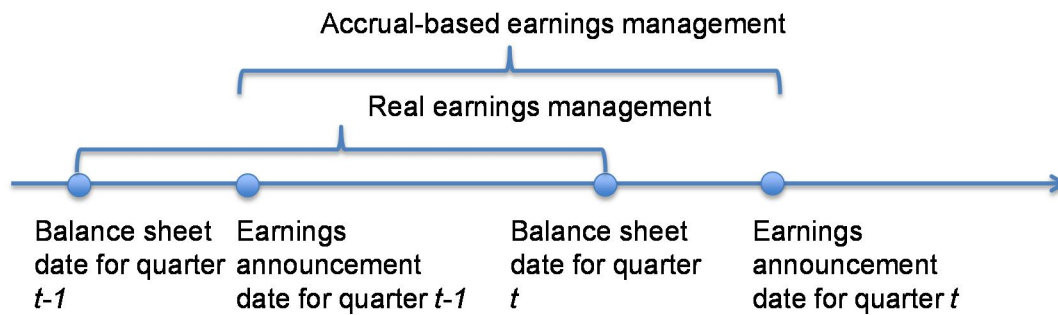
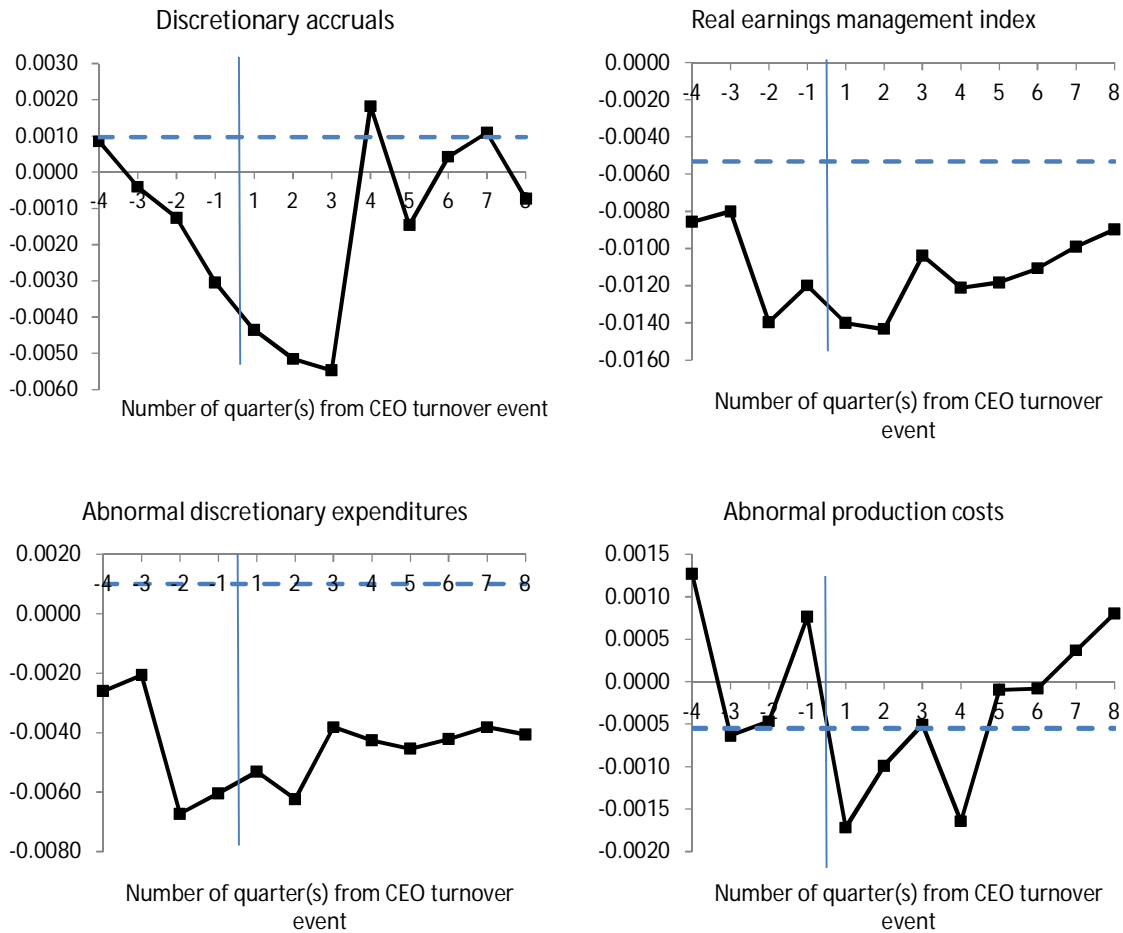


Figure 2 Time-series of key variables around CEO turnovers: univariate means

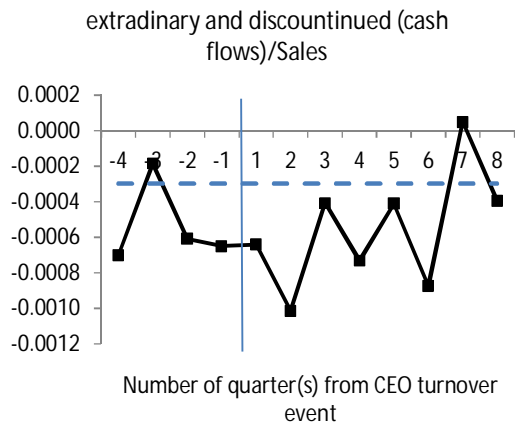
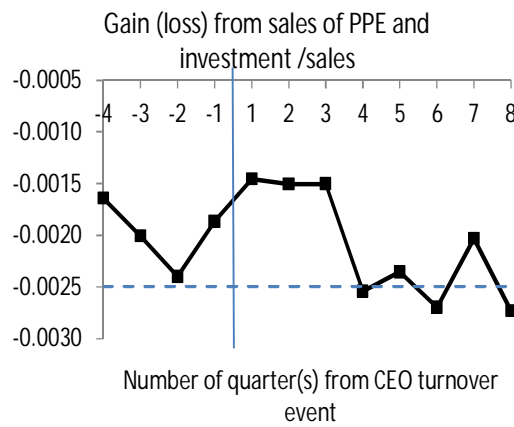
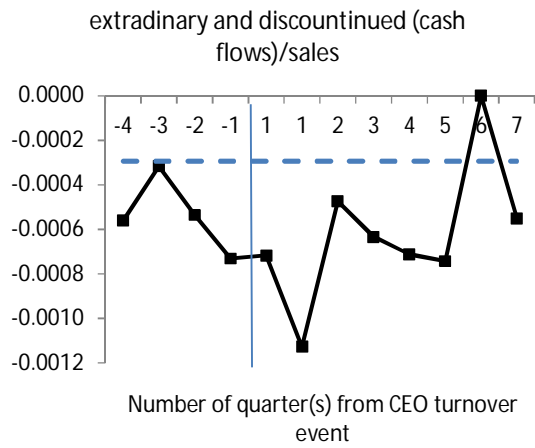
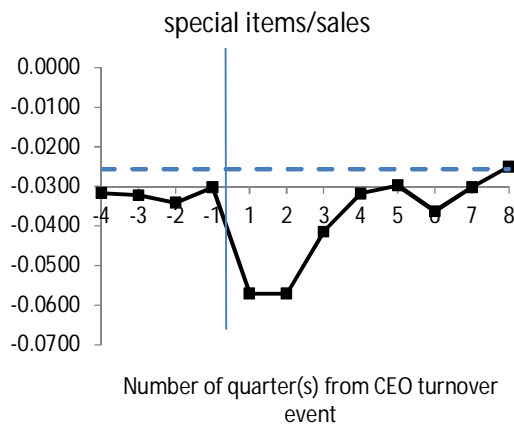
This figure plots time-series of key variables around CEO turnovers (solid lines) and means of these variables in established CEO firm-quarters (dashed lines), before controlling for any other variables. Panel A contains plots of key earnings management variables. Panel B contains plots of line items. Panel C contains plots of firm characteristics. Quarter one (1) on the horizontal axis refers to variables estimated from the first quarterly financial results cut-off date. Quarter minus one (-1) on the horizontal axis refers to variables estimated from the last quarterly financial results cut-off date prior to the appointment of a new CEO. Variables are winsorised at 1% on both tails by quarter. Please refer to Figure 1 for definitions of financial results cut-off date. Appendix A includes a detailed description of variables.

A. Earnings management variables

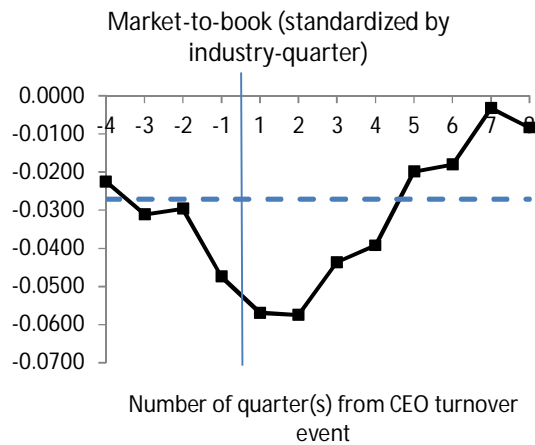
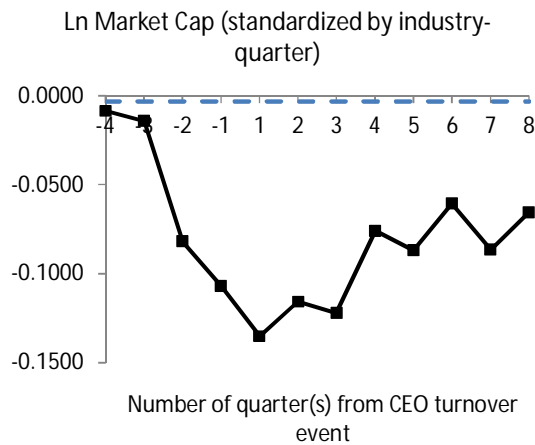


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B. Line items



C. Firm characteristics (standardised by industry-quarter) and CSCORE



Earnings Management around CEO Turnovers

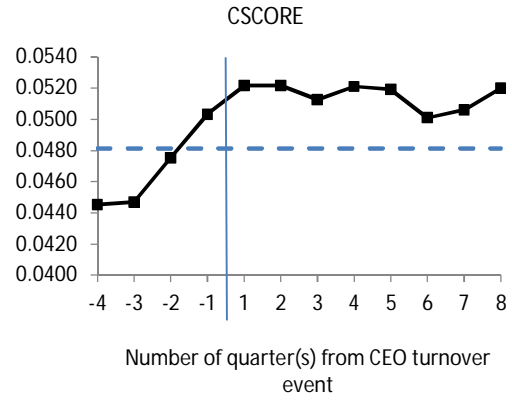
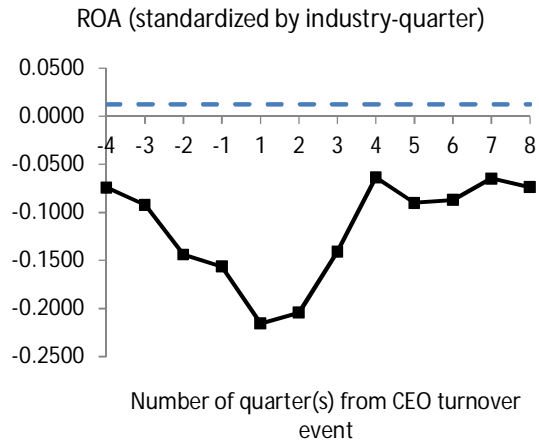


Figure 3 Time-series of earnings management variables around CEO turnovers: slope estimates on quarter dummies after controlling for firm performance and characteristics

This figure plots slope estimates for quarterly dummies around CEO turnovers (solid lines) and means of these variables in established CEO firm-quarters (dashed lines), after controlling for ROA, MB, Size and CSCORE. Appendix A includes a detailed description of variables. The slope estimates for quarter dummies are from regressions specified in the equation below:

$$Y_t = \gamma_0 + \sum_{i=-4}^{-1} \theta_i D_t^{is-Qi} + \sum_{i=1}^4 \theta_i D_t^{is-Qi} + \gamma_2 Size_norm_{t-1} + \gamma_3 MB_norm_{t-1} + \gamma_4 ROA_norm_t + \gamma_5 CSCORE_t + \varepsilon_t$$

where Y_t is a vector of earnings management variables; D_t^{is-Qi} takes the value of 1 if the financial result cut-off date is i quarter(s) away from the date of new CEO change and 0 otherwise. The financial result cut-off date for DA is the earnings announcement date and for REM, Ab_Prod and Ab_DiscExp is the balance sheet date. Appendix A contains detailed descriptions of all variables.

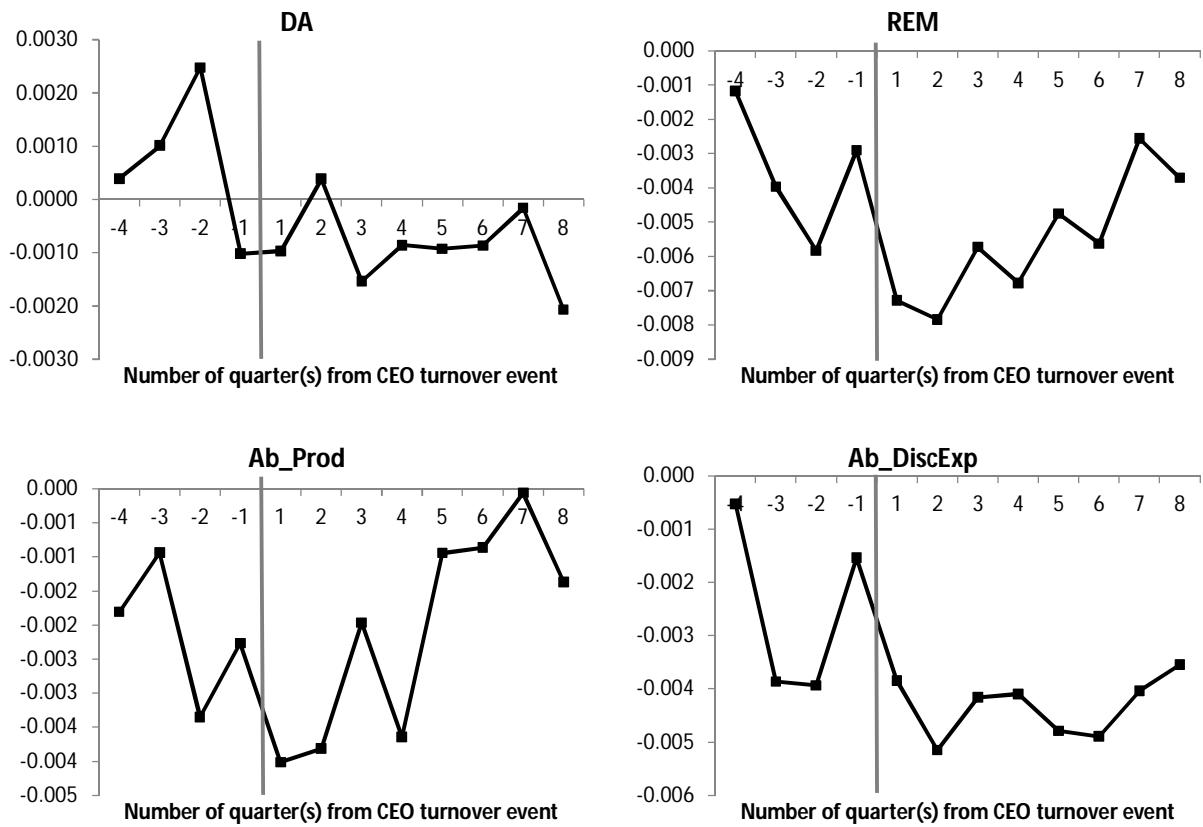


Table 1 CEO turnover events

Panel A summarises the process of obtaining CEO turnover events data from Audit Analytics and the process of merging the CEO turnover data with CRSP/Compustat.

The sample spans 2005-2012. Audit Analytics records all director and officer changes reported in the SEC 8-k filings from 01 January 2005 onwards. We start with a sample that includes all “CEO” officer appointment events from Audit Analytics. In order to obtain the sample used in this study, we implemented the following steps:

- (1) The sample excludes appointments of a CEO to additional positions on the board, appointments of CEOs in a subsidiary only and a CEO returning to previous positions after a short leave. After step one, we have 11,367 CEO appointment events.
- (2) CEO appointments due to bankruptcy and mergers and acquisitions are deleted from the sample.
- (3) Co-CEO appointments are usually temporary arrangements before the company finds a permanent CEO; hence, all co-CEO appointments are deleted from the sample.
- (4) Repeat appointment of the same person to the CEO position after the previous contract expires is also filed in 8-K and recorded in Audit Analytics. Our sample excludes these repeat appointments of the same person.
- (5) Analysis of the effects of CEO turnovers rely on data through four quarters before and through four quarters after the CEO change; therefore, in order to obtain a clear effect of CEO turnovers, we exclude incoming CEOs who did not stay in the position at least for one year.
- (6) We eliminate firms in regulated industries (SIC codes between 4400 and 4900) and banks and financial institutions (SIC codes between 6000 and 6999).
- (7) We merge CEO turnover events from Audit Analytics with merged CRSP/Compustat file on CIK.

Panel B summarises CEO turnover events by year. Panel C summarises CEO turnover events by industry group as defined by 11 first-level SIC industry groups.

A.

(1)	CEO turnover events	11,367
(2)	- M&A / bankruptcy	-859
(3)	- Co-CEOs	-203
(4)	- Repeat appointment of the same person	-684
(5)	- Other CEOs with tenure shorter than a year	-1,779
(6)	- CEO turnovers in finance and regulated industries	-1,925
		5,917
(7)	Merged with CRSP/Compustat	2,429

Earnings Management around CEO Turnovers

B.

Calendar year	CEO turnover events (merged with CRSP/Compustat)	% of unique firms
2005	336	7.8%
2006	339	8.1%
2007	352	8.4%
2008	377	9.6%
2009	272	7.4%
2010	222	6.2%
2011	248	7.1%
2012	283	8.3%
Total (average)	2,429	7.9%

C.

Industry	SIC head	CEO turnover events (merged with CRSP/Compustat)	% of unique firms
Agriculture, Forestry, Fishing	01-09	6	4.5%
Mining	10-14	148	5.5%
Construction	15-17	36	8.9%
Manufacturing	20-39	1,316	7.9%
Transportation	40-43	29	8.3%
Public utilities	44-49	NA	NA
Wholesale trade	50-51	93	8.2%
Retail trade	52-59	233	10.5%
Finance, insurance, real estate	60-69	NA	NA
Services	70-89	568	8.3%
Public administration	91-99	0	0.0%
Total (average)		2,429	6.9%

Table 2 Summary statistics

Panel A in this table presents summary statistics for the full sample of all Compustat/CRSP non-financial and unregulated firms from 2005 to 2012. Variables are estimated by firm-quarter using data from CRSP/Compustat. All variables are winsorised at 1% on both tails. Appendix A includes a detailed description of all variables.

Panel B in this table contains correlations between earnings management variables and their control variables. Asterisks ***, ** and * next to a correlation coefficients indicate significance levels of 1%, 5% and 10% , respectively.

A.

	N	Mean	SD	25th Pctile	Median	75th Pctile
<i>Earnings management variables</i>						
DA	92,284	0.0009	0.0589	-0.0187	0.0027	0.0241
REM	87,312	-0.0053	0.1004	-0.0504	0.0027	0.0510
Ab_Prod	95,476	-0.0005	0.0614	-0.0326	-0.0021	0.0278
Ab_DiscExp	89,611	0.0010	0.0610	-0.0212	0.0067	0.0345
<i>Control variables (1% winsorised)</i>						
Size_norm	113,791	-0.0270	0.7336	-0.3738	-0.1620	0.0153
MB_norm	109,091	-0.0006	0.9784	-0.7150	-0.0296	0.6717
ROA_norm	114,878	0.0131	0.7685	-0.1329	0.1532	0.3657
CSCORE	89,258	0.0283	0.0554	-0.0030	0.0237	0.0585
<i>Scaled line items (quarterly, 1% winsorised)</i>						
Special items / Sales	106,746	-0.0277	0.1428	-0.0047	0.0000	0.0000
Gains from sales of PPE / Sales	98,309	-0.0025	0.0185	0.0000	0.0000	0.0000
Cash flow from discontinued ops / Sales	102,675	-0.0003	0.0071	0.0000	0.0000	0.0000
Restructuring costs / Sales	23,382	-0.0176	0.0586	-0.0110	-0.0031	-0.0002

B.

	DA	REM	Ab_Prod	Ab_DiscExp	Size_norm	MB_norm	ROA_norm	CSCORE
DA	1.00							
REM	0.11***	1.00						
Ab_Prod	0.01**	0.81***	1.00					
Ab_DiscExp	0.13***	0.87***	0.43***	1.00				
Size_norm	-0.02***	-0.19***	-0.11***	-0.18***	1.00			
MB_norm	-0.01***	-0.02***	-0.08***	0.02***	0.19***	1.00		
ROA_norm	0.33***	0.05***	-0.20***	0.19***	0.02***	0.34***	1.00	
CSCORE	0.04***	0.03***	0.06***	0.00	-0.16***	-0.57***	-0.17***	1.00

Table 3 Earnings management around CEO turnovers: univariate analysis

This table presents the mean of earnings management variables and firm characteristics for established CEO firm-quarters, outgoing CEO firm-quarters and new CEO firm-quarters.

Variables are estimated by firm quarter using data from CRSP/Compustat ranging between 2005 and 2012. DA measures accrual-based earnings management. New CEO firm-quarters are firm-quarters with CEOs who have been at the helm for no more than four quarters before the financial cut-off date. Outgoing CEO firm-quarters are firm-quarters with CEOs who are no longer CEOs within four quarters from the financial cut-off date. The final cut-off date for DA is the earnings announcement date and for REM, Ab_Prod and Ab_DiscExp it is the balance sheet date. Log of equity value (Size_norm), Market-to-book ratio (MB_norm) and returns on assets (ROA_norm) are all standardised by industry-quarter. All variables are winsorised at 1% on both tails. Appendix A includes a detailed description of all variables.

Asterisks ***, ** and * next to a coefficient estimate indicate significance levels of 1%, 5% and 10% , respectively, for the difference in means test with unequal variance.

	CEO turnover group means (firm-quarters)						Differences in means		
	Established CEOs		Outgoing CEOs		New CEOs				
	N	Mean	N	Mean	N	Mean	Out - Est	New - Est	New - Out
DA	77,616	0.0015	7,004	-0.0011	7,428	-0.0035	-0.0026***	-0.0050***	-0.0024**
REM	74,005	-0.0042	6,412	-0.0107	6,680	-0.0129	-0.0065***	-0.0087***	-0.0022
Ab_Prod	80,852	-0.0006	7,038	0.0001	7,341	-0.0008	0.0007	-0.0002	-0.0009
Ab_DiscExp	75,925	0.0021	6,601	-0.0045	6,861	-0.0051	-0.0065***	-0.0071***	-0.0006
Size_norm	93,175	-0.0248	7,934	-0.0353	7,704	-0.0479	-0.0105	-0.0231***	-0.0126
MB_norm	96,817	0.0165	8,442	-0.0762	8,236	-0.1100	-0.0927***	-0.1264***	-0.0337**
ROA_norm	97,937	0.0411	8,434	-0.1432	8,212	-0.1469	-0.1843***	-0.1880***	-0.0037
CSCORE	76,597	0.0282	6,287	0.0273	6,162	0.0305	-0.0009	0.0023***	0.0032***

Table 4 Earnings management around CEO turnovers: multi-variate analysis

This table reports the coefficient estimates and their significance levels from running the following regressions:

$$Y_t = \beta_0 + \beta_1 D_t^{new} + \beta_2 D_t^{out} + \gamma Z + \varepsilon_t$$

where Y_t are measures of accrual-based earnings management and of real earnings management, as defined in Appendix A. Z is a vector of control variables that include the log market value of equity in quarter $t - 1$ ($Size_norm_{t-1}$), the market-to-book ratio in quarter $t - 1$ (MB_norm_{t-1}), the return on assets in quarter t (ROA_norm_t) and CSCORE in quarter t . D_t^{new} is a dummy that takes the value of 1 for new CEO firm-quarters, and 0 otherwise. $D_t^{outgoing}$ is a dummy variable that takes the value of 1 for outgoing CEO firm-quarters, and 0 otherwise. New CEO firm-quarters are firm-quarters with CEOs who have been at the helm for no more than four quarters before the financial cut-off date. Outgoing CEO firm-quarters are firm-quarters with CEOs who are no longer CEOs within four quarters from the financial cut-off date. The final cut-off date for DA is the earnings announcement date and for REM, Ab_Prod and Ab_DiscExp is the balance sheet date. The intercept measures the average level of these earnings management variables for firm-quarters with established CEOs. The sample period runs from 2005 to 2012. Asterisks ***, ** and * next to a coefficient estimate indicate significance levels of 10%, 5% and 1%, respectively. p -values are calculated from standard errors clustered by firm and by quarter (Thompson, 2011).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	DA	DA	REM	Ab_DiscExp	Ab_Prod	REM	Ab_DiscExp	Ab_Prod
New CEO	-0.0007	-0.0004	-0.0067***	-0.0036***	-0.0034***	-0.0070***	-0.0042***	-0.0034***
Out CEO	0.0010	0.0008	-0.0035	-0.0027**	-0.0018	-0.0028	-0.0019	-0.0018
MB_norm	0.0011**	0.0004	-0.0270***	-0.0156***	-0.0082***	-0.0303***	-0.0175***	-0.0101***
Size_norm	-0.0081***	-0.0055***	-0.0003	-0.0009	0.0002	0.0058***	0.0032***	0.0021**
ROA_norm	0.0290***	0.0210***	0.0065***	0.0160***	-0.0167***	0.0055***	0.0188***	-0.0208***
CSCORE		0.0203**				0.0613	0.0322	0.0275**
Const	0.0003	0.0001	-0.0045***	0.0011	0.0000	-0.0080***	-0.0020*	-0.0007
Adj R-sqr	0.12	0.06	0.04	0.07	0.05	0.04	0.07	0.06
N	88,063	74,560	83,378	85,448	90,736	70,788	72,355	76,215
Coeff. New - Coeff. Out	-0.0017**	-0.0012*	-0.0033***	-0.0009	-0.0016**	-0.0042***	-0.0022***	-0.0016*

Table 5 The transition quarter: time at helm and levels of earnings management

This table reports the coefficient estimates and their significance levels from running the following regressions:

$$Y_i = \theta_1 Days_i + \omega Z + \varepsilon_t$$

where Y_i are measures of accrual-based earnings management and of real earnings management in the first quarter following CEO changes, as defined in Appendix A. Z is a vector of control variables that include the log market value of equity in quarter $t - 1$ ($Size_norm_{t-1}$), the market-to-book ratio in quarter $t - 1$ (MB_norm_{t-1}), the return on assets in quarter t (ROA_norm_t) and CSCORE in quarter t . The equation does not have an intercept because we expect earnings management levels to be zero if the new CEO takes over on the financial cut-off date. The sample includes all new CEO first quarter observations, from 2005 to 2012, for which we have the necessary inputs to estimate earnings management variables. Asterisks ***, ** and * next to a coefficient estimate indicate significance levels of 1%, 5% and 10%, respectively. p -values are calculated from heteroskedasticity robust standard errors.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	DA	DA	REM	Ab_DiscExp	Ab_Prod	REM	Ab_DiscExp	Ab_Prod
Days remaining	0.0000	0.0000	-0.0001***	0.0000	-0.0001**	-0.0002***	-0.0001**	-0.0001*
MB_norm	0.0074***	0.0032	-0.0191***	-0.0117***	-0.0063***	-0.0208***	-0.0134***	-0.0071**
Size_norm	-0.0129***	-0.0069***	-0.0002	-0.0010	0.0006	0.0061	0.0048**	0.0014
ROA_norm	0.0345***	0.0274***	0.0031	0.0113***	-0.0133***	0.0036	0.0153***	-0.0165***
CSCORE		0.0775**				0.0678	0.0502	0.0366
Adj R-sqr	0.20	0.12	0.02	0.05	0.05	0.03	0.06	0.05
N	1,818	1,447	1,674	1,716	1,825	1,331	1,363	1,438

Table 6 Earnings management around routine and non-routine CEO changes

Panel A in this table reports the results of a difference in mean analysis where we compare the means of size, MB, ROA and CSCORE in outgoing CEO quarters prior to routine executive changes with those prior to non-routine executive turnovers. We conduct a similar analysis for new CEO quarters.

Panel B presents the results from running the following regressions:

$$Y_t = \beta_0 + \beta_1 D_t^{new} \times D_t^{Routine} + \beta_2 D_t^{out} \times D_t^{Routine} + \beta_3 D_t^{new} \times D_t^{Non-routine} + \beta_4 D_t^{out} \times D_t^{Non-routine} + \omega Z + \varepsilon_t$$

where Y_t are measures of accrual-based earnings management and of real earnings management in the first quarter following CEO changes, as defined in Appendix A. Z is a vector of control variables that include $Size_norm_{t-1}$, MB_norm_{t-1} , ROA_norm_t and $CSCORE_t$. The sample runs from 2005 to 2012. Asterisks ***, ** and * next to a coefficient estimate indicate significance levels of 1%, 5% and 10%, respectively. p -values are calculated from standard errors clustered by firm and by quarter (Thompson, 2011).

Panel A

	Routine		Non-routine		Difference
	N	Mean	N	Mean	
Outgoing CEO					
DA	4,566	0.0003	2,438	-0.0038	-0.0041**
REM	4,229	-0.0101	2,183	-0.0118	-0.0017
Ab_Prod	4,615	-0.0006	2,423	0.0015	0.0021
Ab_DiscExp	4,337	-0.0038	2,264	-0.0058	-0.0020
Size_norm	5,520	0.0230	2,922	-0.2637	-0.2867***
MB_norm	5,225	-0.0231	2,709	-0.0588	-0.0357*
ROA_norm	5,516	-0.0867	2,918	-0.2500	-0.1633***
CSCORE	4,229	0.0237	2,058	0.0347	0.0110***
New CEO					
DA	4,903	-0.0030	2,525	-0.0045	-0.0015
REM	4,485	-0.0116	2,195	-0.0155	-0.0039
Ab_Prod	4,866	-0.0011	2,475	-0.0003	0.0007
Ab_DiscExp	4,589	-0.0044	2,272	-0.0063	-0.0019
Size_norm	5,486	-0.0124	2,750	-0.3046	-0.2923***
MB_norm	5,170	-0.0240	2,534	-0.0967	-0.0727***
ROA_norm	5,475	-0.0891	2,737	-0.2624	-0.1733***
CSCORE	4,232	0.0271	1,930	0.0379	0.0108***

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Table 6 (Continued)

Panel B

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	DA	DA	REM	Ab_DiscExp	Ab_Prod	REM	Ab_DiscExp	Ab_Prod
Routine New CEO	-0.0011	-0.0003	-0.0059**	-0.0038**	-0.0030*	-0.0055**	-0.0034**	-0.0032**
Routine Outgoing CEO	0.0016*	0.0013	-0.0028	-0.0025	-0.0016	-0.0033	-0.0024	-0.0019
Non-routine New CEO	-0.0001	-0.0007	-0.0085**	-0.0033	-0.0042**	-0.0102**	-0.0060**	-0.0038*
Non-routine Outgoing CEO	-0.0001	-0.0004	-0.0048	-0.0031	-0.0023	-0.0016	-0.0011	-0.0017
MB_norm	0.0011**	0.0004	-0.0270***	-0.0156***	-0.0082***	-0.0303***	-0.0175***	-0.0101***
Size_norm	-0.0081***	-0.0055***	-0.0003	-0.0009	0.0002	0.0058***	0.0032***	0.0021**
ROA_norm	0.0290***	0.0210***	0.0065***	0.0160***	-0.0167***	0.0055***	0.0188***	-0.0208***
CSCORE		0.0203**				0.0614	0.0323	0.0275**
Const	0.0003	0.0001	-0.0045***	0.0011	0.0000	-0.0080***	-0.0020*	-0.0007
Adj R-sqr	0.12	0.06	0.04	0.07	0.05	0.04	0.07	0.06
N	88,063	74,560	83,378	85,448	90,736	70,788	72,355	76,215
Routine New CEO - Out CEO	-0.0027***	-0.0017**	-0.0031*	-0.0013	-0.0015	-0.0022	-0.0010	-0.0014
Non-routine New CEO - Out CEO	0.0000	-0.0003	-0.0037***	-0.0002	-0.0020**	-0.0086***	-0.0049***	-0.0021
Out CEO Non-routine - Routine	-0.0017	-0.0018	-0.0020	-0.0006	-0.0007	0.0017	0.0013	0.0001
New CEO Non-routine - Routine	0.0010	-0.0003	-0.0027	0.0005	-0.0012	-0.0047	-0.0026	-0.0006

Appendix A. Variable definitions

Variable	Definition
D^{new}	A dummy variable equal to 1 if the financial cut-off date is within four quarters from the beginning of CEO tenure, and 0 otherwise. The financial cut-off date for DA is the earnings announcement and for REM, Ab_Prod and Ab_DiscExp is the balance sheet date.
D^{out}	A dummy variable equal to 1 if the financial cut-off date is within four quarters prior to the end of CEO tenure, and 0 otherwise. The financial cut-off date for DA is the earnings announcement and for REM, Ab_Prod and Ab_DiscExp is the balance sheet date.
$D^{routine}$	A dummy variable equal to 1 if the CEO change firm-quarter is related to a routine CEO change, and 0 otherwise. Non-routine CEO change is defined in section 5.5.
$D^{non-routine}$	A dummy variable equal to 1 if the CEO change firm-quarter is related to a non-routine CEO change, and 0 otherwise. Non-routine CEO change is defined in section 5.5.
DA	Discretionary accruals estimated from the modified Jones Model (Dechow et al. 1995). DA is the residual from the regression specified in equation (1).
Ab_Prod	Abnormal production costs measure the level of earnings management through overproduction, as in Roychowdhury (2006). Ab_prod is the residual from the regression specified in equation (3). A higher residual indicates a larger amount of inventory overproduction and a greater increase in reported earnings through reducing the cost of goods sold.
Ab_DiscExp	Abnormal discretionary expenses measure the level of earnings management through accelerating or delaying discretionary expenses, as in Roychowdhury (2006) Ab_DiscExp is the residual from regression specified in equation (4) multiplied by -1 . A higher Ab_DiscExp indicates a larger cut in discretionary expenditures to increase earnings.
REM	Real earnings management index equal to the sum of Ab_prod and Ab_DiscExp.
Size_norm	Logarithm of market value of a firm, standardised by industry-quarter, by deducting the industry-quarter mean and then dividing by the industry-quarter standard deviation.
MB_norm	Market value of equity (prcc \times cshoq) to book equity value of a firm (ceqq), standardised by industry-quarter.
ROA_norm	Return on assets (niq/atq) standardised by industry-quarter.
CSCORE	A firm-quarter measure of CSCORE as in Khan and Watts (2009).
Operating cash flows	Year-to-date cash flow from operations (oancfy).
Gains from PPE sales	Quarterly gain(loss) from sales of property, plant and equipment and investment, derived from year-to-date gains from PPE sales (sppivy).
Special items	Special items in each quarter, derived from year-to-date special items (spiy).
Restructuring costs	Quarterly restructuring costs, derived from year-to-date restructuring costs (rcay).
Discontinued operations (cashflow)/	Quarterly cash flows from discontinued operations, derived from year-to-date cash flows from discontinued operations (xidocy).
A	Total assets at the end of each quarter (atq).
S	Quarterly sales (revtq).
AR	Receivables at the end of each quarter (rectq).
CFO	Quarterly cash flow from operations in the second, third and fourth fiscal quarter is the difference between year-to-date cash flow from operations ended in each quarter (oancfy) and that ended in the previous quarter; quarterly cash flow from operations in the first fiscal quarter equals to the year-to-date operating cash flow.
Accruals	Total accruals, equal to income before extra. items minus CFO.
PPE	Gross book value of property, plant and equipment (ppegqtq). We assume

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Variable	Definition
	a linear growth rate of PPE and fill in the missing PPE observations if needed
Prod	Production costs, the dependent variable in the regressions specified as question (3). $Prod_t$ is the sum of the cost of goods sold in quarter t (cogsq) and the change in inventory (invtq) from $t - 1$ to t .
DiscExp	Discretionary expenditures, the dependent variable in the regressions specified as question (4). $DiscExp$ the sum of R&D and SG&A expenditures (xsgaq).
R&D	Research and development expenditures in the second, third and fourth fiscal quarter is the difference between year-to-date R&D ended in each quarter (xrdy) and that ended in the previous quarter; quarterly R&D in the first fiscal quarter equals to the year-to-date R&D.
Lev	Leverage is the ratio of total debt (dlcq+dlttq) to market value of equity (prcc \times cshoq).
Size	Size is the natural logarithm of the market value of equity (prc).
MB	Market value of equity (prcc \times cshoq) to book equity value of a firm (ceqq).

Appendix B. Estimation of normal level of accruals, normal level of production costs and normal level of discretionary expenditures

This table reports the estimation results from following cross-sectional industry-quarter regressions for the period between 2005 and 2012. We use the two-digit head of SIC code to group industries and exclude regulated industries and financial institutions from our analysis. Each industry-quarter regression requires a minimum of 15 observations.

The first equation estimates normal level of accruals using a modified Jones Model, as in Dechow et al. (1995). The second, third and fourth equations estimate normal levels of cash flows, normal levels of production costs and normal levels of discretionary expenditures as in (Roychowdhury (2006)).

Reported coefficients are the average of coefficient estimates across all industry-quarter regressions. p – values are against the null that the average of coefficient estimates is insignificant. p -values at 10% or better levels are shown in bold fonts.

$$\frac{Accruals_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{\Delta S_t}{A_{t-1}} + \alpha_3 \frac{PPE_t}{A_{t-1}} + \varepsilon_t \quad (1)$$

$$\frac{Prod_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{S_t}{A_{t-1}} + \alpha_3 \frac{\Delta S_t}{A_{t-1}} + \alpha_4 \frac{\Delta S_{t-1}}{A_{t-1}} + \varepsilon_t \quad (3)$$

$$\frac{DiscExp_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{S_t}{A_{t-1}} + \varepsilon_t \quad (4)$$

<i>Accruals_t/A_{t-1}</i>		
	avg. estimates	p –value
Intercept	-0.0091	<0.001
$1/A_{t-1}$	0.0019	0.981
$\Delta S_t/A_{t-1}$	0.0605	<0.001
PPE_t/A_{t-1}	-0.0094	<0.001
Avg. \bar{R}^2	14.06	
Avg. # of obs	86.9	
# of industry quarters	1,156	

<i>Prod_t/A_{t-1}</i>			<i>DiscExp_t/A_{t-1}</i>		
	avg. estimates	p –value		avg. estimates	p –value
Intercept	-0.0297	<0.001	Intercept	0.0378	<0.001
$1/A_{t-1}$	0.1114	0.368	$1/A_{t-1}$	1.7514	<0.001
S_t/A_{t-1}	0.7822	<0.001	S_{t-1}/A_{t-1}	0.0900	<0.001
$\Delta S_t/A_{t-1}$	-0.0856	<0.001			
$\Delta S_{t-1}/A_{t-1}$	-0.0773	<0.001			
Avg. \bar{R}^2	56.62		Avg. \bar{R}^2	29.96	
Avg. # of obs	86.4		Avg. # of obs	82.4	
# of industry quarters	1,109		# of industry quarters	1,094	

Appendix C. Estimation of CSCORE

This table reports mean coefficients from quarterly cross-sectional regressions of quarterly earnings (ibq) on the variables listed below from 2005 to 2012, as specified in question (5) and following Khan and Watt (2009). D_i is a dummy variable equal to 1 if quarterly cumulative stock return (R_i) for firm i is negative, and 0 otherwise. $Size_i$ is the natural log of market value of equity of firm i . MB_i is the market-to-book ratio. Lev_i is the leverage, defined as total debt over book equity. Following (Khan and Watts (2009)), we delete firm-quarters with negative total assets of book value of equity and firm quarters with price per share less than \$1. A firm-quarter CSCORE is calculated as $\hat{\lambda}_1 + \hat{\lambda}_2 Size_i + \hat{\lambda}_3 MB_i + \hat{\lambda}_4 Lev_i$. p -values are against the null that mean coefficient estimates is not different from zero. p -values at 10% or better levels are shown in bold fonts.

$$\begin{aligned}
 Earnings_i = & \beta_0 + \beta_1 D_i + R_i(\mu_1 + \mu_2 Size_i + \mu_3 MB_i + \mu_4 Lev_i) \\
 & + D_i R_i(\lambda_1 + \lambda_2 Size_i + \lambda_3 MB_i + \lambda_4 Lev_i) \\
 & + (\sigma_1 Size_i + \sigma_2 MB_i + \sigma_3 Lev_i + \sigma_4 D_i Size_i + \sigma_5 D_i MB_i + \sigma_6 D_i Lev_i) + \varepsilon_i \quad (5)
 \end{aligned}$$

	estimates	p -value
β_0	-0.012	0.003
β_1	0.003	0.392
μ_1	-0.037	0.002
μ_2	0.006	0.000
μ_3	-0.001	0.000
μ_4	-0.009	0.111
λ_1	0.192	0.000
λ_2	-0.023	0.000
λ_3	-0.003	0.026
λ_4	0.034	0.000
σ_1	0.003	0.000
σ_2	-0.001	0.000
σ_3	0.000	0.687
σ_4	0.000	0.426
σ_5	0.000	0.085
σ_6	0.001	0.598
\bar{R}^2	10.90	
Avg. # of obs	4,006	
# of quarters	31	