Real Earnings Management

around CEO Turnovers

Paul G. Geertsema[a], David H. Lont[b], Helen Lu[a*]

(This Version: 5 Nov 2018)

[a] Department of Accounting and Finance, the University of Auckland, Auckland, New Zealand
[b] Department of Accountancy and Finance, the University of Otago, Dunedin, New Zealand

[*]Corresponding author. Address: Owen G. Glenn Building, 12 Grafton Road, Auckland, New Zealand. Phone: +64 9 373 7599. E-mail address: Helen.lu@auckland.ac.nz

Real Earnings Management around CEO Turnovers

Abstract

Following CEO turnovers, US firms adjust real business activities to manage earnings downward (REM bath). This effect is most pronounced in firms with low levels of institutional ownership. REM baths early in CEOs' tenure can be confounded with legitimate adjustments to business activities. However, we show that they are not accompanied by increases in R&D or capital expenses, nor are they explained by restructuring expenses. CEOs with short tenure record more negative REM measures in their first year of tenure, when compared with CEOs with long tenure.

1. Introduction

Anecdotal evidence suggests that new CEOs have strong incentives to give earnings a "bath" by managing earnings downwards early in their tenure. Downward earnings management allows them to blame initial losses on their predecessors and to enjoy a clear run of future earnings growth. Prior research finds that new CEOs record income-decreasing accruals (Choi, Kwak, and Choe 2014; Geiger and North 2011b; Pourciau 1993; Reitenga and Tearney 2003; Wells 2002), while outgoing CEOs inflate earnings (Dechow and Sloan 1991; Hazarika, Karpoff, and Nahata 2012). In addition to manipulating accruals (discretionary accruals, DAs), firms can also manage earnings by adjusting real business activities (Graham, Harvey, and Rajgopal 2005).[1] Cohen, Dey, and Lys (2008) show that following adoption of the Sarbanes-Oxley Act (SOX), managers have increasingly managed earnings through real business activities instead of accruals. Adoption of SOX may encourage new CEOs to use real-activity-based earnings management (REM) instead of DAs. However, strengthened board oversight may deter CEOs from actually doing so. Thus, new CEOs may not employ REM to manage earnings downward, particularly when the firm has strong governance in place. To date, no study has considered whether new CEOs use real business activities to deflate earnings in the United States. Our study fills this gap.

---

[1] Delaying sales and accelerating discretionary expenditure are examples of downward 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.

We show that US firms tend to use REM to temporarily decrease earnings after CEO turnovers in the sample period of our study (2005–2012). Our CEO turnover events are obtained from Audit Analytics, and they cover all firm-quarters in the Compustat/CRSP universe running from 2005 to 2012. In the full sample, we find that the scale of downward REM in the first four fiscal quarters of a CEO's tenure (new CEO firm-quarters) averages -0.22 percent of total assets. By contrast, in this sample period new CEOs do not tend to use accruals to manage earnings downward. Neither do we find that outgoing CEOs manage earnings upwards through either accruals or real business activities. This finding is robust to rank regressions and the exclusion of observations with extreme earnings management measures (absolute values exceeding 10% of total assets).

Our study uses institutional shareholding data from Thomson Reuters and quarterly accounting data from the Center for Research in Security Prices (CRSP)/Compustat merged files. The quarterly window is narrower than the annual window used in other studies of CEO turnovers and earnings management. Quarterly data allow us to conduct finer-grained analyses than annual data. In our study, the misclassification of CEO change during the transition year, as mentioned in Pourciau (1993) and Murphy and Zimmerman (1993), is reduced to one quarter.

We posit that strong corporate governance deters downward earnings management through real business activities (REM) in periods immediately following CEO turnovers. Using the level of institutional ownership as a proxy for corporate governance, we find

evidence consistent with this hypothesis. The evidence for downward REM in new-CEO firm-quarters is strong and significant in firms with low levels of institutional ownership but insignificant in those with high levels of institutional ownership. If the firm's institutional ownership level is above the median level of institutional shareholding percentages across all firms in a given quarter (HIGHIO), the REM measure in the new-CEO quarters averages -0.40 percent of total assets below the benchmark firm-quarters. [2] This downward real earnings management is achieved through accelerating discretionary expenses. By contrast, we do not find strong evidence for new-CEO REM baths in firms with low levels of institutional ownership. This finding is also robust to rank regressions and the exclusion of observations with extreme earnings management measures.

In addition to governance, the nature of succession can also affect earnings management behavior. Vancil (1987) and Pourciau (1993) suggest that new CEOs who are externally hired are more likely to manipulate earnings downward than those who are internally promoted. They argue that external new CEOs are less restrained in blaming initial losses on their predecessors, as they are not selected and groomed by the retiring CEOs. It is also more convenient for them to justify real-activity manipulation as common business conduct while implementing changes (Parrino 1997). These prior studies motivate us to consider whether earnings baths are more prevalent among external new CEOs than among internal new CEOs. We show

---

[2] Earnings management measures in this study are constructed so that a negative number suggests downward earnings management and a positive number suggests upward earnings management.

that earnings management appears to be concentrated among externally hired new CEOs. Firms with internally promoted new CEOs do not significantly manage earnings downward any more than established firms. For firms with externally hired new CEOs, the size of real earnings baths averages -0.33 percent of total assets but is only marginally significant at a 10 percent level. This finding is robust to rank regressions. However, once we exclude observations with extreme earnings management measures, we no longer find that externally hired new CEOs tend to manage earnings downward through REM.

Business strategies implemented by new CEOs could incur changes in expenses and production costs, resulting in decreases in earnings management measures. Thus, evidence for REM baths early in CEOs' tenure may be confounded with legitimate adjustments to business. We address this concern in two ways. *First*, we examine the levels of restructuring expenses, R&D expenses, and capital expenditure (Capex) in the periods around CEO turnovers. Firms on average spend *less* on Capex and R&D in the first four fiscal quarters immediately following CEO turnovers than in outgoing CEO firm-quarters. If abnormal levels of discretionary expenses (R_DISX) and production costs (R_PROD) early in CEOs' tenure result from legitimate adjustments to businesses, we expect to see increases in R&D and Capex in tandem with the increases in abnormal expanses and costs. However, we find exactly the opposite, suggesting that abnormal levels of R_DISX and R_PROD are likely to be related to earnings baths instead of legitimate business activities. *Second*, our findings are robust to including restructuring expenses in our main

regressions as a control variable. Hence, restructuring expenses do not explain the negative REM measures early in CEOs' tenure.

Since firms inflate earnings by delaying R&D expenses before CEO turnovers (Dechow and Sloan 1991) and earnings management triggers CEO turnovers (Hazarika, Karpoff, and Nahata 2012), a reversal of effects from earnings management activities by outgoing CEOs could be detected as real-activity-based earnings baths in periods after appointments of new CEOs. If this alternative explanation is true, the likelihood of REM baths early in CEOs' tenure should increase with upward earnings manipulation in the last four fiscal quarters in CEOs' tenure. However, we find that upward earnings manipulation through real business activities late in CEOs' tenure is associated with *lower* chances of downward REM activities. In short, new CEOs' earnings baths do not appear to be related to outgoing CEOs' real business activities in managing earnings upward.

We summarize our contribution below.

First, we show that new CEOs in US firms change real business activities to manage earnings downward early in their tenure. Prior literature has found that retiring CEOs inflate earnings by manipulating real business activities, such as cutting research and development expenditures (Dechow and Sloan 1991). Choi, Kwak, and Choe (2014) study accrual-based and real-activity-based earnings management around CEO turnovers in South Korea. Our evidence for real earnings baths early in CEOs' tenure in the United States is new. This finding adds to the existing evidence for new-CEO's downward

earnings management through accruals by Pourciau (1993), Geiger and North (2011a), and Wells (2002).

Second, we find that earnings baths through real business activities early in CEOs' tenure do not appear to be associated with legitimate changes implemented by new CEOs. Murphy and Zimmerman (1993) point out that CEO turnovers are often prompted by poor performance. Parrino (1997) shows that firms tend to hire outsiders as new CEOs in bad times to implement changes. Thus, disentangling real earnings baths from poor performance, restructuring, and well-intentioned changes made by new CEOs presents a challenge to researchers. We gather evidence to address this issue from a few different angles. We find that firms with weak corporate governance, but not those with strong governance, engage in downward REM baths early in CEOs' tenure. This result suggests that REM measures in the context of CEO turnovers does capture opportunistic behaviors closely monitored by institutional shareholders. In addition, abnormal levels of discretionary expenses and production costs early in CEOs' tenure are not accompanied by increases in R&D or Capex. Our findings of new-CEO REM baths are also robust to restructuring expenses. In short, we contribute to the literature on earnings management and CEO turnovers by showing that negative REM measures in periods managed by new CEOs do not seem to be related to legitimate adjustments of business activities.

Third, we examine the relation between CEO tenure, earnings management following CEO turnovers, and future firm performance. While real earnings management can harm the firm in the long run

8

(Graham, Harvey, and Rajgopal 2005; Cohen and Zarowin 2010), it can also be used to attain benefits for the firm. Gunny (2010) finds that upward real earnings management to meet and beat analyst forecasts is associated with outperformance in the long run. In the context of CEO turnovers, the relation between earnings management and long-term performance suffers from survival bias. CEOs with long subsequent tenure are more likely to perform well and behave less opportunistically early in their tenure. In fact, we find CEOs with tenure of four years or longer record noticeably higher levels of discretionary accruals and REM measures in the first year of their tenure – suggesting that CEOs with long subsequent tenure engage in less downward earnings management in the first year after taking office. This could explain why we do not find that the size of earnings baths in the first year of a CEO's tenure is significantly associated with the improvement or deterioration of performance over the long run.

2. Hypotheses

New CEOs have incentives to manage earnings downward in order to better manage future expectations, reach long-term performance goals, and blame initial losses on their predecessor (Vancil 1987; Pourciau 1993). New CEOs may also engage in a big bath due to career concerns – for instance, by engaging in excessive accounting write-downs in order to create hidden reserves that can be used to manage earnings upward in future years. Earnings can be manipulated through both accruals and real business activities (Graham, Harvey, and Rajgopal 2005; Zang 2011). The literature provides substantial evidence of accrual-based baths by new CEOs

(Geiger and North 2011b; Pourciau 1993; Reitenga and Tearney 2003; Wells 2002), but little evidence exists regarding real earnings baths by new CEOs. We test whether new CEOs manipulate *real activities* to manage earnings.

H1. New CEOs engage in downward real-activity-based earnings management relative to established CEOs.

Effective board oversight and strong governance mechanisms deter myopic earnings manipulation behaviors (Bushee 1998; Hossain et al. 2011; Qiang, Jimmy, and Shevlin 2016). A large number of studies (e.g., see (Cremers and Nair 2005; Dittmar and Mahrt-Smith 2007; Gillan and Starks 2000) use institutional shareholder ownership to measure corporate governance because institutional investors have incentives to monitor managers' actions. Motivated by this strand of literature, we use institutional shareholder ownership from Thomson Reuter's 13F filings to proxy for corporate governance to test whether strong governance deters downward earnings management through real business activities early in CEOs' tenure. Thus, our second hypothesis is the following:

H2. Downward earnings management through real business activities are more pronounced among new CEOs in firms with low levels of institutional ownership than among those in firms with high levels of institutional ownership.

Like Pourciau (1993), we hypothesize that smooth CEO successions in which the new CEO is selected and groomed internally leave fewer opportunities for earnings management behaviors among

new CEOs. Internally promoted new CEOs are likely to have fewer conflicts of interest with their predecessor and therefore less incentive to manipulate earnings downward (and blame it on their predecessor). In addition, firms tend to appoint outsiders as new CEOs to implement changes (Parrino 1997). In a situation in which changes need to be made, it is convenient to justify real earnings management activities as normal adjustments to business Mao and Renneboog (2013). Thus, we test the following hypothesis:

H3. Downward earnings management through real business activities is more pronounced among externally-hired than among internal-hired new CEOs.

Cohen and Zarowin (2010); (Graham, Harvey, and Rajgopal 2005); Bhojraj et al. (2009)) show that real earnings management is costly and can reduce firms' value over the long run. Managers can also employ real earnings management to obtain benefits for shareholders through signaling (Gunny 2010)r meeting debt covenants (DeFond and Jiambalvo 1994). Thus, whether real earnings management destroys value or creates value is an empirical question. We examine the relation between real earnings management in the first year of a CEO's tenure and future long-run performance. Specifically, we test the following hypothesis:

H4. The extent of real earnings management in the first year of a CEO's tenure is associated with the CEO's total tenure and the firm's future operating performance.

3. Data and methodology

As in Geertsema, Lont, and Lu (2018), we identify CEO turnover events using director and officer changes filings over the 2005–2012 period as provided by Audit Analytics.[3] CEO appointments and CEO departures as a result of mergers, acquisitions, bankruptcies, spin-offs, and asset sales are excluded from this study because the discontinuation in business could confound our findings. In addition, as in Roychowdhury (2006) and Pourciau (1993), we exclude firms in financial institutions and regulated industries because models to detect earnings management are not designed for finance firms, and CEOs in regulated firms have different incentives from those in other firms. CEOs need to have tenure that covers at least four consecutive fiscal quarters to be included in our study. After applying these filters and merging CEO appointment and departure events with firm-quarters in the CRSP/Compustat file, we obtain 1,901 CEO appointment events (or, CEO turnovers) between 2005 and 2012. On average, in a given year, 6.2 percent of firms experience a change in CEO (see Panel A in Table 1), implying an average CEO tenure of approximately 16.1 years.[4] More CEOs are appointed in the first calendar quarter than in any other quarter (33.5 percent in Q1 in Panel A of Table 1). Moving to CEO changes by industry (Panel B of Table 1), the mining industry firms have the lowest CEO turnover ratio of 4.0 percent. The highly competitive retail industry exhibits the highest

---

[3] We match CIKs in Audit Analytics with historical CIKs obtained from the historical file in CRSP/Compustat at each point of time.

[4] As a point of comparison, Bushman *et al.* (2010) use ExecuComp, which covers the S&P 1000 large companies, and the average CEO tenure of turnover firms is approximately 10 years. Coates *et al.* (2010) find that CEOs' tenure in Fortune 500 firms averages approximately 7 years. It appears that CEOs in smaller firms have longer tenure.

CEO turnover rate of 8.9 percent, implying an average CEO tenure of 11 years.

[Insert Table 1 about here.]

In addition, we have taken the following steps to assign CEO turnover time-event indicators to firm-quarters in the CRSP/Compustat merged file. *First,* because accruals management for quarterly accounts can take place up to the earnings announcement date, but real-activity-based earnings management can only occur before the balance sheet date, we use different cutoff dates in the matching process for these two types of earnings management measures. For accruals earnings management, the cutoff date is the earnings announcement date. For measures of real earnings management, the cutoff date is the balance sheet date. Figure 1 illustrates the cutoff dates for accruals and real earnings management. *Second*, we match the starting date of CEO tenure to a firm-quarter in CRSP/Compustat on the relevant cutoff date in order to identify the transition new-CEO quarter (q0_apt), the quarter partially managed by new CEOs. Similarly, we match the leaving date of a CEO to a firm-quarter in CRSP/Compustat on the relevant cutoff date in order to identify the *transition* outgoing-CEO quarter (q0_dpt). Matched firm-quarters are assigned to be transition quarters unless the CEO departs on the last day of a fiscal quarter or the CEO starts on the first day of a fiscal quarter – these two quarters are q1_dpt and q1_apt and there are no transition quarters in either of these two cases. Transition quarters are excluded from all our analyses. The first four consecutive fiscal quarters fully managed by a new CEO (q1_apt to q4_apt) are

13

new-CEO quarters (NEW). The last four consecutive fiscal quarters fully managed by an outgoing CEO (q1_dpt to q4_dpt) are outgoing-CEO quarters (OUT). We eliminate quarters that can be classified as both NEW and OUT as a result of short CEO tenure (or, *ambiguous* firm-quarters); thus, effectively we require that a CEO has been at the helm for a minimum of four consecutive fiscal quarters for CEO turnover events to be included in our analyses. Established-CEO firm-quarters (Established) are firm-quarters that are not new-CEO firm-quarters, outgoing-CEO firm-quarters, or ambiguous firm-quarters. Established-CEO firm-quarters are the reference category in our analyses.

[Insert Figure 1 about here.]

To estimate earnings management variables and related control variables, we use all available firm-quarters in the CRSP/Compustat Merged Database from 2005 to 2012. The quarterly window is narrower than the annual window used in other studies of CEO turnovers and earnings management. By using quarterly data, we mitigate the misclassification of CEO change during the transition year when annual data are used, as noted by both Pourciau (1993) and Murphy and Zimmerman (1993). Appendix A summarizes the variables used in this study.

Following recent literature (Cohen, Dey, and Lys 2008; Hazarika, Karpoff, and Nahata 2012; Zang 2011), we use the modified

Jones model[5] (Jones 1991) as described in Dechow, Sloan, and Sweeney (1996) to estimate the normal level of accruals. Discretionary accrual is the difference between total accruals and the fitted normal accruals. Prior studies guide our choice of proxies for real earnings management. Dechow, Kothari, and L Watts (1998) and Roychowdhury (2006) introduce measures to estimate levels of real earnings management. Following Zang (2011), we focus on earnings management through two types of real business activity, namely overproduction[6] and the delay of discretionary expenditures, which both temporarily inflate earnings (or equivalently, underproduction and front-loading discretionary expenditures that temporarily deflate earnings).[7] Our proxy for the extent of accrual manipulation is discretionary accruals (DAs). Our proxies for the extent of real earnings management include abnormal production costs (R_PROD), abnormal discretionary expenditure (R_DISX), and the real earnings management index (REM, or the sum of R_PROD and R_DISX). All earnings management measures are constructed such that negative numbers suggest downward earnings management activities. We estimate the normal levels of discretionary accruals, production costs, and discretionary expenditure by running cross-sectional regressions

[5] 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 are robust to these different models.

[6] Overproduction inflates earnings because the unit cost decreases if the firm overproduces.

[7] Like Zang (2011), 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.

for each two-digit SIC-quarter group.[8] Appendix B includes a detailed description of the earnings management models used in this study as well as a summary of estimation results.

Table 2 reports descriptive statistics for the main variables.

[Insert Table 2 about here.]

Panel A of Table 2 reports descriptive statistics of firm characteristics. The market capitalization of firm-quarters included in this study is on average $4.4 billion and the distribution is highly right-skewed towards a small number of large firms. Other raw variables such as total assets, sales, production expenses, and discretionary expenses display a similar skewness because the means of all variables exceed the medians. In Compustat, R&D expenses and Capex are recorded as positive numbers, but restructuring expenses are recorded as negative numbers. Thus, a higher R&D number or Capex number suggests a larger amount of expenses. By contrast, a lower level of (or, more negative) restructuring expenses suggest a larger amount of restructuring expenses.

Panel B of Table 2 reports summary statistics of earnings management variables, control variables, and important line items. The means of these variables do not equal zero because they have been winsorized at 1 percent on both tails. At the 25th percentile, the quarterly REM is −4.92 (−4.92 percent of total assets), while quarterly DA is −1.80 percent of total assets. At the 75th percentile, REM is 5.13

---

percent, while DA is 2.15 percent of total assets. Once annualized, the level of DAs and the REM components are comparable with those of other studies (e.g., Zang, 2011, Table 1). We also report the values of all variables at the 1st and 99th percentile on column (7) and (8) in Panel B of Table 2. These cut-off values at 1% tails of earnings management variables are well in excess of 10% of total assets. For example, the 1st percentile boundary value of DA is -26.52. Because our main results are based on estimates that contain extreme values of earnings management measures, we conduct robustness tests where we exclude earnings management measures whose absolute values exceed 10% of total assets. Panel A also summarizes control variables that have been identified as being correlated with the measurement error in earnings management variables (Dechow, Sloan, and Sweeney 1995, 1996; Roychowdhury 2006). $Size_{t-1}$, MB_{t-1}, and ROA_t are standardized[9] by industry-quarter to be consistent with the earnings management measures (which are also estimated in the cross section by industry-quarter).

4. Earnings management around CEO turnovers

Table 3 shows that both new and outgoing CEOs record significantly lower DAs, lower abnormal discretionary expenses (R_DISX),[10] and lower levels of aggregated REM than established CEOs on average. CEO-change firms also tend to have lower returns

---

[9] The control variables are standardized by subtracting the industry-quarter mean and then dividing by the industry-quarter standard deviation.

[10] R_DISX is defined as the *negative* of the residual from the estimating regression so that a negative value indicates downward earnings management, while a positive value indicates upward earnings management.

on assets (ROAs). ROAs in firm-quarters under outgoing CEOs average about a 0.14 standard deviation below those in firm-quarters with established CEOs (OUT-EST). These subpar average ROAs during the four quarters prior to a CEO turnover slightly improve to a 0.12 standard deviation below those during periods with established CEOs (NEW-EST). Firm-quarters under new CEOs also have a smaller market capitalization on average (SIZE, about a 0.03 standard deviation below the industry average) than firms with established CEOs. The significant differences between groups illustrates the importance of controlling for these variables in our regression analysis (Dechow, Sloan, and Sweeney 1995, 1996; Roychowdhury 2006; Guay, Kothari, and Watts 1996).

We test the difference in earnings management levels between firms with new CEOs and those with established CEOs (H1) using panel regressions that incorporate firm-level controls, year-quarter indicator variables, and firm fixed-effects, and standard errors clustered by firm (Petersen 2009)[11].

The general specification for the panel regression is

$$Y_t = \beta_0 + \beta_1 NEW_t + \beta_2 OUT_t + \gamma Control + \theta YQ + \zeta Firm + \varepsilon_t, \quad (1)$$

where Y_t, the dependent variable, is a vector of earnings management measures (i.e., DA, REM, R_DISX, R_PROD, or R_PROD_M; see Appendix A for further details). Changes in CEO are indicated by

---

[11] A sufficiently large number of clusters (more than 500) is required for a clustered standard errors estimate to be consistent. Our sample includes 40 quarters. Thus, we do not cluster the standard error by quarter and only cluster the standard error by firm.

binary variables: $NEW_t = 1$ for the first four new-CEO firm-quarters, and 0 otherwise, while $OUT_t = 1$ for the last four 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 reference category. Control variables ($Control$) include the log value of market capitalization ($Size_{t-1}$), market-to-book ratio in quarter $t - 1$ (MB_{t-1}), and firm performance (ROA_t) (following Roychowdhury, 2006 and Zang, 2011). Still, some firm characteristics and time effect are not captured in our model; thus, all our regressions include a firm fixed-effects ($\boldsymbol{Firm}$) and year-quarter indicator variables ($\boldsymbol{YQ}$). t-tests for significance in all regressions are clustered by firm (Gow, Ormazabal, and Taylor 2010; Petersen 2009; Thompson 2011).

We are interested in the coefficients on the out- and new-CEO indicator variable ($\boldsymbol{\beta_1}$ and $\boldsymbol{\beta_2}$); these coefficients may be interpreted as the marginal impact of new and outgoing CEOs on earnings management measures after controlling for firm characteristics. Negative estimates on $\boldsymbol{\beta_2}$ support H1.

[Insert Table 3 about here.]

Panel A of Table 4 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 the REM and DA, which is 0.87 and significant at a 5 percent level. Control variables are not highly correlated, with correlation coefficients

ranging from -0.14 between abnormal production cost (R_PROD) and ROA to 0.31 between ROA and $SIZE$. As expected, ROA is positively and significantly correlated with both DA and REM at 0.32 and 0.04, respectively, emphasizing the need to control for performance when measuring the extent of earnings management. Similarly, the other two control variables ($SIZE$ and MB) are also significantly correlated with REM.

Panel B in Table 4 reports the estimation results of equation (1) for all four earnings management measures. We find weak evidence that new CEOs engage in downward real-activity-based earnings management (thus lending tentative support to H1). The estimate for new-CEO coefficients is negative (-0.22 percent of total assets) for the REM index and significant at a 10 percent level. However, we cannot attribute the downward earnings management to either abnormally high discretionary expenses (R_DISX) or production costs (R_PROD) because estimates for coefficients on the new-CEO variable (NEW) are negative but insignificant in these two regressions. As expected, if we focus on manufacturing firms, the evidence for earnings baths in firms with new CEOs is even stronger. Manufacturing firms with new CEOs record production costs that average 0.15 percent lower compared with manufacturing firms with established CEOs (the estimate for the slope coefficient on NEW on the row titled "R_PROD_M" in Panel B of Table 4). By contrast, in the full sample the average extent of earnings baths through production cost is only -0.09 percent of total assets.

Negative REM measures in new-CEO firm-quarters found in results from panel regressions (Table 4) could be confounded with legitimate changes in business activities after CEOs take over the helm. If increases in discretionary expenses and abnormal production costs are indeed from well-intentioned changes made by new CEOs, we expect to see increases in R&D and Capex during the same period of time. Interestingly, in new-CEO firm-quarters R&D expenses/Revenue and Capex/Total Assets average 0.02 and 0.04 standard deviations lower than those in outgoing-CEO firm-quarters (Table 3). The difference is highly significant at a 5 percent level. The difference in means suggest that after appointing new CEOs, firms tend to cut R&D expenses instead of increasing them. Neither do capital expenses during the new CEO quarters increase in tandem with the discretionary expenses – suggesting that the abnormally low levels of REM measures in firms with new CEOs are likely to capture downward earnings management instead of legitimate changes to businesses. However, restructuring expenses are larger (or, more negative) in both outgoing- and new-CEO firm-quarters by −0.13 and −0.05 standard deviations on average when compared with those in established-CEO firm-quarters. In unreported robustness tests, we include restructuring expenses (scaled by total assets and standardized by industry and quarter to be consistent with all other control variables) in all regressions and our findings remain unchanged.

Although we do not find that firms engage in upward earnings management through adjusting real business activities in our sample, it is still reasonable to suspect that the finding of new CEOs' earnings

baths through real activities could be a reversal of effects from outgoing CEOs' actions. To address this issue, we use an indicator variable that is equal to 1 if the firm records a positive value in any of the real earnings management measures, and 0 otherwise, to signal upward REM by outgoing CEOs. Then, we use this indicator variable to predict downward earnings management by new CEOs. If new CEOs' earnings baths are associated with outgoing CEOs' upward earnings management activities, we expect to see a positive and significant predictive coefficient. However, in untabulated results we find a negative predicative relation between outgoing CEOs' upward REM activities and new CEO's downward REM activities. Thus, it is unlikely that new CEOs' earnings baths found in our study result from upward earnings management activities by outgoing CEOs.

In summary, after accounting for variables that affect the cross-sectional difference in earnings management measures, we find weak evidence consistent with the hypothesis that new CEOs tend to manage earnings downwards through a combination of activities that accelerate expenses and slow down production.

5. Institutional ownership

If the negative levels in REM measures in new-CEO firm-quarters discovered in our study indeed capture opportunistic earnings manipulation by new CEOs, institutional investor monitoring should reduce the scale of earnings baths (H2). We estimate equation (2) specified below to test H2:

$$Y_t = \alpha_0 + \alpha_1 OUT_t \times HIGHIO_t + \alpha_2 OUT_t \times LOWIO_t +$$

$$\alpha_3 NEW_t \times HIGHIO_t + \alpha_4 NEW_t \times LOWIO_t + \gamma Control +$$

$$\delta YQ + \zeta Firm + \varepsilon_t , \tag{2}$$

Equation (2) differs from equation (1) in that it splits each of the new- and outgoing-CEO firm-quarters into a group of firms with high levels of institutional ownership ($HIGHIO$) and a group with low levels of institutional ownership ($LOWIO$). To test H4, we are interested in the estimate of α_3 on $NEW \times HIGHIO$ and α_4 on $NEW \times LOWIO$. A positive and significant estimate for α_3 and an insignificant estimate for α_4 lend support to H4. Panel A in Table 5 reports the regression results. We find that new CEOs in firms with low levels of institutional ownership on average record REM measures lower than those in firms with established CEOs by 0.40 percent of total assets and the result is significant at a 5 percent or better level. This downward earnings management appears to be achieved through accelerating discretionary expenses (R_DISX) which amounts to 0.29 percent of total assets and is significant at a level better than 5 percent. By contrast, estimates of α_4 (on $NEW \times HIGHIO$) for all three REM measures are insignificant. The estimate of α_4 on $NEW \times HIGHIO$ is -0.17 and significant at a 5 percent level only for manufacturing firms. It is likely that if institutional investors closely monitor the firm, it is easier to manage earnings downward through slowing down production activities than accelerating expenses. Overall, our results are consistent with H4 where we hypothesize that downward earnings management through real activities is more pronounced in firms with low levels of institutional ownership.

6. External/internal CEO successions

H3 posits that externally hired CEOs have more incentives and better opportunities to manipulate earnings downwards. To test this hypothesis, we group new-CEO appointments as internal promotions and external appointments.

We examine the reason for a CEO appointment recorded in Audit Analytics to decide whether the new CEO is promoted internally or hired externally. If the new CEO is appointed to assume an additional position, as a result of a position change within the company or the executive was appointed to a different position within the same firm earlier, the new CEO is an internal hire; otherwise, the new CEO is an external hire. More than half of the appointments are internal promotions (53 percent of total appointments) and 47 percent of new CEOs are external hires.[12]

[Insert Table 5 about here.]

We use a panel regression similar to equation (1) to investigate earnings management for internal CEO successions and external CEO successions, specified in the equation below:

---

[12] In Parrino (1997), external new appointments account for 15 percent of CEO appointments in the Forbes sample from 1969 to 1989. This percentage is lower than the percentage of external appointments (35 percent) in our study. Parrino (1997, Table 3) also shows that large companies are more likely to promote internally to fill the CEO position. Our sample covers CEO changes in all CRSP/Compustat firms, while Parrino (1997) focuses on large firms. The inclusion of small firms could drive the higher percentage of external succession in our study.

$$Y_t = \pi_0 + \pi_1 OUT_t \times REMN_t + \pi_2 OUT_t \times LEFT_t + \pi_3 NEW_t \times$$
$$INT_t + \pi_4 NEW_t \times EXT_t + \gamma Control + \delta YQ + \zeta Firm + \varepsilon_t ,$$

(3)

Equation (3) differs from equation (1) in that it splits new-CEO firm-quarters (NEW) into two groups, namely new CEOs promoted internally ($NEW \times INT$) and new CEOs hired externally ($NEW \times EXT$). Equation (3) also splits outgoing-CEO firm-quarters (OUT) into two groups, namely the outgoing CEOs that retained positions ($OUT \times REMN$) and those that did not retain any positions ($OUT \times LEFT$). Panel B in Table 5 reports the regression results. These results suggest that downward earnings manipulation by new CEOs is more pronounced if the new CEO is appointed externally instead of through internal promotions (thus lending support to H3). Regression results for two REM measures (REM and R_DISX, shown as column heads) show negative slope estimates of -0.33 and -0.21 for $NEW \times EXT$, but only marginally significant at 10 percent levels. By contrast, internally promoted new CEOs do not manage earnings downwards on average – estimates on $NEW \times INT$ from all four regressions are not significantly different from zero. These results suggest that externally hired new CEOs instead of internally promoted new CEOs tend to use real-activity-based approaches to temporarily decrease earnings.

It is reasonable to suspect that outgoing CEOs who engage in aggressive upward earnings management may not be able to retain any position after they leave office. Thus, we also test whether upward earnings management is more pronounced in outgoing CEOs who do not remain in any position after leaving office ($OUT \times LEFT$).

However, we fail to find any evidence that this type of outgoing CEO engages in more aggressive upward earnings management activities compared with established CEOs.

The finding above provides weak evidence consistent with H3 in which we posit that externally hired new CEOs have better opportunities than internally promoted new CEOs to manage earnings downward.

7. Robustness tests

Because our main results supporting H1, H2 and H3 are based on estimates that contain extreme values of earnings management measures (exceeding 10% of total assets), we check whether our main findings are driven by extreme earnings management measures. We conduct two robustness tests. First, we re-run all analyses using rank regressions and all findings are robust to rank regressions. Second, we restrict the sample to firm-quarters where the absolute values of DA, R_DISX and R_PROD[13] are less than 10 (or, 10% of total assets) and re-run the regressions specified in equation (1), (2) and (3). We still find evidence for H1 (new CEOs' REM earnings baths) and H2 (new CEOs' REM baths are more pronounced in firms with low levels of institutional ownership). However, we no longer find that externally-hired new CEOs engage in more pronounced earnings baths through REM. Thus, the evidence supporting H3 appears to be concentrated in the tails but robust to rank regressions.

---

[13] We do not restrict the size of REM because it is the sum of R_PROD and R_DISX.

CEO turnover rates peaked in 2008 during the global financial crisis (GFC). Given the economic impacts of the GFC in the US, we test whether our main findings are concentrated in CEO turnovers during the GFC. We re-run our regressions specified in equation (1) through to (3) in a sample excluding firm-quarters in 2008 (and excluding 2008 and 2009 as an additional test). Our results are robust to the exclusion of firm-quarters in the GFC period. [14]

8. CEO tenure and future operating performance

Some studies find that real earnings management can harm a firm's performance in the long run (Graham, Harvey, and Rajgopal 2005; Cohen and Zarowin 2010), while others have discovered that real earnings management can benefit a firm. We investigate the consequences of earnings baths after a change in CEO by examining the relation between the size of the earnings baths in the first four quarters of a CEO's tenure and future operating performance (H4).

The measurement of performance in CEO-change firms is confounded by poor performance in these firms and the subsequent long-run reversal in performance. Thus, in order to study how firms performed after CEO turnovers, it is important to control for reversal in ROAs. Following the approach suggested by Barber and Lyon (1996) and implemented by Cohen and Zarowin (2010), we control for reversals in ROAs by matching firms experiencing CEO turnovers with firms with established CEOs in the same industry on ROAs. First,

[14] Results in the robustness tests section are untabulated but available upon request.

we aggregate four consecutive quarterly ROAs to obtain rolling four-quarter ROAs for all firms. Then, we match the rolling four-quarter ROAs in the first year of a CEO's tenure ($ROA(Y1)$) with a non-CEO-change firm in the same industry and during the same period of time on rolling four-quarter ROAs. To measure post-CEO-turnover performance, we estimate year-on-year changes in ROAs in a CEO's tenure. For example, $\Delta ROA(Y2)$ equates to $ROA(Y2)$ less $ROA(Y1)$. The last step is to control for reversals in performance by subtracting the change in ROA of the matched firm during the same period. The resulting $Adj.\Delta ROA(Y2)$ is the adjusted relative performance used in our analysis. In addition, we aggregate each of the earnings management measures (DA, REM, R_DISX, and R_PROD) in the first four quarters of CEOs' tenure to obtain corresponding earnings management measures in the first year of their tenure (DA_Y1, REM_Y1, R_DISX_Y1 and P_PROD_Y1).

To observe the relation between the levels of earnings management early in CEOs' tenure and future performance, we first group CEOs by the length of their tenure. Specifically, we allocate CEOs into three groups – one with tenure of one to two years, one with tenure of two to three years, and one with tenure of at least four years. Levels of earnings management activities are drastically lower among CEOs with long tenure (of four years or longer) than those with shorter tenure. Panel A in Figure 2 shows that discretionary accruals in the first year of CEOs' tenure average −0.33 percent of total assets among CEOs with long tenure (Tenure >=4), which is of a noticeably smaller scale than those recorded by CEOs with shorter tenure (−1.12 percent

of total assets if Tenure<2 and -0.96 of total assets if 2<Tenure<=3).

Panels B and C in Figure 2 show similar patterns in REM_Y1 and R_DISX_Y1.

As expected, CEOs with long tenure also deliver better performance than those with shorter tenure early on. The outperformance of CEOs with long tenure can be observed in the graph in Panel E of Figure 2. For CEOs with tenure of two to three years, their firms outperform industry-matched peers in year-on-year changes in ROA by 0.89 and 2.34 percentage points in the second and third year of their tenure, respectively. If we move to CEOs with tenure of four years or longer, levels of outperformance in the second and third year of CEOs' tenure increase to 2.32 and 4.34 percentage points, respectively.

To formally test H4, we regress adjusted changes in ROA in the second, third, and fourth year of CEOs' tenure on the measures of earnings management in their first year of tenure, as specified in equation (5) below:

$$adj. \Delta ROA(Yi) = \theta_0 + \boldsymbol{\theta_1 Yi} + \theta_2 adj. \Delta ROA(Yi-1) + \mu_t$$

$(i = 2, 3, 4)$ (5)

Yi is one of the earnings management measures. Because changes in ROAs are serially correlated, we control for this serial correlation by including the adjusted change in ROA in the previous year in the regression. Table 6 reports the estimation results for regressions specified in equation (5).

[Insert Table 6 about here.]

Results in Panel B in Table 6 suggest that the size of an accrual bath in the first year of a CEO's tenure (DA_Y1) is associated with an outperformance in the second year of the CEO's tenure ($adj.\Delta ROA(Y2)$) for CEOs with tenure of no more than two years (Tenure <= 2). For these CEOs, the slope estimate for DA_Y1 in explaining $adj.\Delta ROA(Y2)$ is −0.49 and significant at a 5 percent level. Similarly, the slope estimate for REM_Y1 and that for R_DISX_Y1 in explaining $adj.\Delta ROA(Y2)$ are also negative (−0.11 and −0.22) and significant at 5 percent levels for CEOs with tenure of at least four years (Tenure >-= 4). These negative coefficients suggest that low levels of accruals and REM measures in the first year of a CEO's tenure are associated with ROA outperformance in the following year. Although these patterns are consistent with reversals of downward earnings management activities in the first year of CEOs' tenure which enhance performance in the future, we cannot draw any conclusion because we do not observe such reversal of REM activities in short-tenure CEOs. The estimates for slope coefficients on all three REM measures in explaining $adj.\Delta ROA(Y2)$ for CEOs with tenure of two years (Tenure <= 2) and tenure of two to three years (2 <= Tenure < 3) are invariably insignificant. Neither do we find that REM measures in the first year of CEOs' tenure are significantly associated with long-run performance in the fourth year of CEOs' tenure. In summary, we fail to find evidence that supports H4, where we posit REM activities early in CEO's tenure affect firms' long-run performance. Because we show that CEOs with long tenure tend to record lower levels of earnings management measures and perhaps behave less opportunistically than CEOs with short tenure, the test of H4 is

affected by the survival bias where better-quality CEOs tend to stay longer in the office.

9. Conclusion

We investigate real-activity-based earnings management around CEO turnover in the United States. Prior studies have extensively examined accrual manipulation behaviors in firms experiencing CEO turnover. Real earnings management activities have also been studied in various contexts (e.g., meeting-and-beating analyst forecasts, management buyouts, and seasoned equity offerings). Our paper is the first to show that new CEOs, particularly CEOs in firms with low levels of institutional ownership, adjust real activities to manage earnings downward.

At first glance, it might be surprising that new CEOs are allowed to give earnings a bath while under the supervision of the board of directors. We show that institutional investor ownership (as a proxy for corporate governance) deters REM bath behaviors in firms with new CEOs, suggesting that REM measures in new-CEO firm-quarters are likely to capture earnings baths instead of strategic changes implemented by new CEOs.

REM baths early in CEOs' tenure do not significantly relate to long-run operating performance of the firm within their tenure. Thus, we do not find that REM baths early in CEOs' tenure are costly or beneficial to the firm over the long run. Instead, we find that CEOs with long tenure are very different from CEOs with short tenure. Long-tenure CEOs on average record fewer negative REM measures in the

first year of their tenure than short-tenure CEOs. In addition, they deliver better operating performance early on than those with short tenure. Thus, the test of the relation between earnings baths following CEO turnovers and long-run performance suffers from a survival bias. If we assume that CEOs with long tenure (>= 4 years) tend to be of better quality and less prone to opportunistic behaviors, the finding that long-tenure CEOs record fewer negative REM measures early in their tenure suggests that REM measures capture earnings baths after CEO turnovers. In this way, we shed more light on whether REM measures indeed reflect downward earnings management after CEO turnovers.
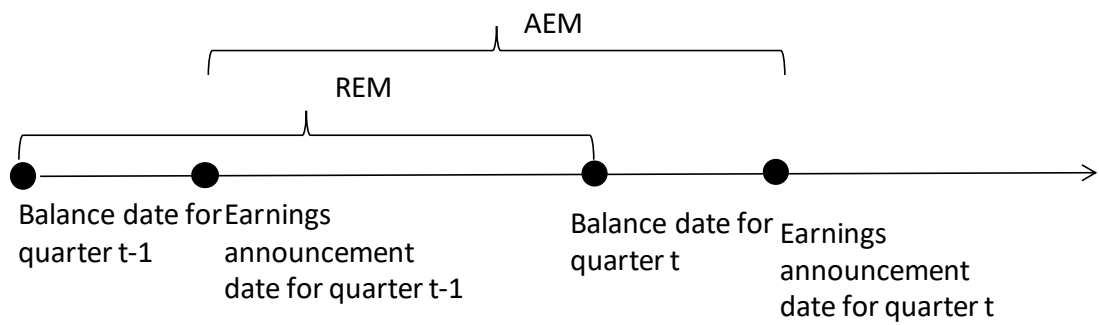
References

Barber, B. M., and J. D. Lyon, 1996, Detecting abnormal operating performance: The empirical power and specification of test statistics, *Journal of Financial Economics* 41, 359-399.

Bhojraj, S., P. Hribar, M. Picconi, and J. McInnis, 2009, Making sense of cents: An examination of firms that marginally miss or beat analyst forecasts, *The Journal of Finance* 64, 2361-2388.

Bushee, B. J., 1998, The influence of institutional investors on myopic R&D investment behavior, *The accounting review* 73, 305-333.

Choi, J.-S., Y.-M. Kwak, and C. Choe, 2014, Earnings Management Surrounding CEO Turnover: Evidence from Korea, *Abacus* 50, 25-55.

Cohen, D. A., A. Dey, and T. Z. Lys, 2008, Real and accrual-based earnings management in the pre-and post-Sarbanes-Oxley periods, *The accounting review* 83, 757-787.

Cohen, D. A., and P. Zarowin, 2010, Accrual-based and real earnings management activities around seasoned equity offerings, *Journal of Accounting and Economics* 50, 2-19.

Cremers, K. M., and V. B. Nair, 2005, Governance mechanisms and equity prices, *The Journal of Finance* 60, 2859-2894.

Das, S., P. K. Shroff, and H. Zhang, 2009, Quarterly earnings patterns and earnings management, *Contemporary accounting research* 26, 797-831.

Dechow, P. M., S. Kothari, and R. L Watts, 1998, The relation between earnings and cash flows, *Journal of accounting and Economics* 25, 133-168.

Dechow, P. M., and R. G. Sloan, 1991, Executive incentives and the horizon problem: An empirical investigation, *Journal of Accounting and Economics* 14, 51-89.

Dechow, P. M., R. G. Sloan, and A. P. Sweeney, 1995, Detecting earnings management, *The accounting review* 70, 193-225.

———, 1996, Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC, *Contemporary accounting research* 13, 1-36.

DeFond, M. L., and J. Jiambalvo, 1994, Debt covenant violation and manipulation of accruals, *Journal of Accounting and Economics* 17, 145-176.

Dittmar, A., and J. Mahrt-Smith, 2007, Corporate governance and the value of cash holdings, *Journal of Financial Economics* 83, 599-634.

Geertsema, P., D. H. Lont, and H. Lu, 2018, Stock Price Response to New CEO Earnings News, *Accounting and Finance*, 849-883.

Geiger, M., and D. North, 2011a, Do CEOs and principal financial officers take a" bath" separately or together?: an investigation of discretionary accruals surrounding appointments of new CEOS and PFOS.(appointment of Principal Financial Officers), *Academy of Accounting and Financial Studies Journal* 15.

Geiger, M. A., and D. S. North, 2011b, Do CEOs and principal financial officers take a" bath" separately or together?: An investigation of discretionary accruals surrounding appointments of new CEOs and PFOs, *Academy of Accounting and Financial Studies Journal* 15, 1-30.

Gillan, S. L., and L. T. Starks, 2000, Corporate governance proposals and shareholder activism: The role of institutional investors, *Journal of Financial Economics* 57, 275-305.

Gow, I. D., G. Ormazabal, and D. J. Taylor, 2010, Correcting for cross-sectional and time-series dependence in accounting research, *The accounting review* 85, 483-512.

Graham, J. R., C. R. Harvey, and S. Rajgopal, 2005, The economic implications of corporate financial reporting, *Journal of Accounting and Economics* 40, 3-73.

Guay, W. R., S. Kothari, and R. L. Watts, 1996, A market-based evaluation of discretionary accrual models, *Journal of accounting research* 34, 83-105.

Gunny, K. A., 2010, The Relation Between Earnings Management Using Real Activities Manipulation and Future Performance: Evidence from Meeting Earnings Benchmarks, *Contemporary accounting research* 27, 855-888.

Hazarika, S., J. M. Karpoff, and R. Nahata, 2012, Internal corporate governance, CEO turnover, and earnings management, *Journal of Financial Economics* 104, 44-69.

Hossain, M., S. Mitra, Z. Rezaee, and B. Sarath, 2011, Corporate Governance and Earnings Management in the Pre– and Post–Sarbanes-Oxley Act Regimes: Evidence from Implicated Option Backdating Firms, *Journal of Accounting, Auditing & Finance* 26, 279-315.

Jha, A., 2013, Earnings Management Around Debt-Covenant Violations–An Empirical Investigation Using a Large Sample of Quarterly Data, *Journal of Accounting, Auditing & Finance* 28, 369-396.

Jones, J. J., 1991, Earnings Management During Import Relief Investigations, *Journal of accounting research* 29, 193-228.

Mao, Y., and L. Renneboog, 2013, Do Managers Manipulate Earnings Prior to Management Buyouts?, *Journal of Corporate Finance* 35, 43-61.

Murphy, K. J., and J. L. Zimmerman, 1993, Financial performance surrounding CEO turnover, *Journal of Accounting and Economics* 16, 273-315.

Parrino, R., 1997, CEO turnover and outside succession a cross-sectional analysis, *Journal of Financial Economics* 46, 165-197.

Petersen, M. A., 2009, Estimating standard errors in finance panel data sets: Comparing approaches, *Review of financial studies* 22, 435-480.

Pourciau, S., 1993, Earnings management and nonroutine executive changes, *Journal of Accounting and Economics* 16, 317-336.

Qiang, C., L. Jimmy, and T. Shevlin, 2016, Internal Governance and Real Earnings Management, *The accounting review* 91, 1051-1085.

Reitenga, A. L., and M. G. Tearney, 2003, Mandatory CEO retirements, discretionary accruals, and corporate governance mechanisms, *Journal of Accounting, Auditing & Finance* 18, 255-280.

Roychowdhury, S., 2006, Earnings management through real activities manipulation, *Journal of Accounting and Economics* 42, 335-370.

Thompson, S. B., 2011, Simple formulas for standard errors that cluster by both firm and time, *Journal of Financial Economics* 99, 1-10.

Vancil, R. F., 1987, Passing the baton: Managing the process of CEO succession ((Harvard Business School Press).

Wells, P. A., 2002, Earnings management surrounding CEO changes, *Accounting and Finance* 42, 169-193.

Zang, A. Y., 2011, Evidence on the trade-off between real activities manipulation and accrual-based earnings management, *The accounting review* 87, 675-703.

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

This figure depicts the timeline of financial results cutoff dates for accrual-based earnings management and real-activity-based earnings announcements. The cutoff date represents the last date when earnings management can take place. For accrual-based earnings management, the cutoff date is the earnings announcement date. For measures of real-activity-based earnings announcements (the REM index, R_PROD and R_DISX), the cutoff date is the balance sheet date. Appendix A includes definitions of variables.

Figure 2 CEO tenure, earnings management measures in the first year of CEO tenure, and future ROAs

Figures in Panels A to D below present the means of earnings management measures in the first four fiscal quarters of CEO tenure for CEO groups with different lengths of tenure. Figure E summarizes changes in ROA relative to industry peers in the second, third, and fourth year of CEOs' tenure for CEO groups with different lengths of tenure.

A. DA_Y1 and CEO tenure
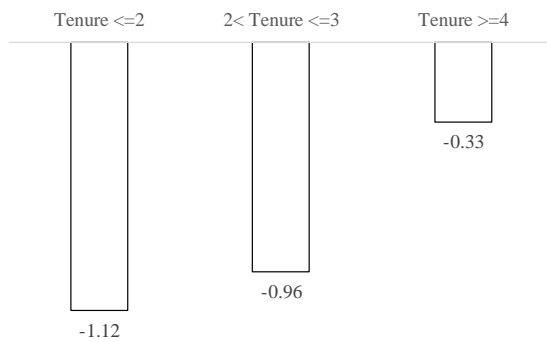
B. REM_Y1 and CEO tenure
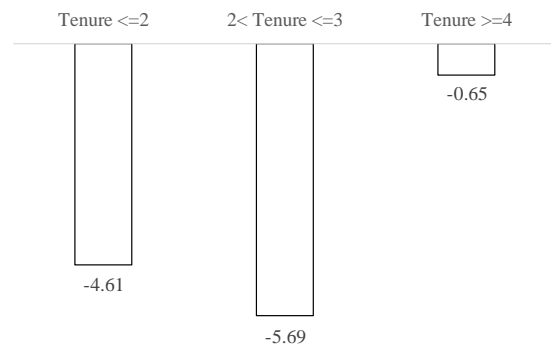
C. R_DISX_Y1 and CEO tenure
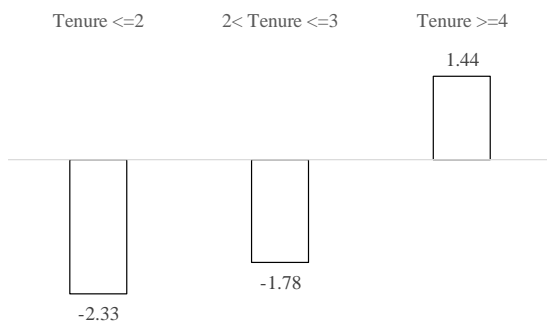
D. R_PROD_Y1 and CEO tenure
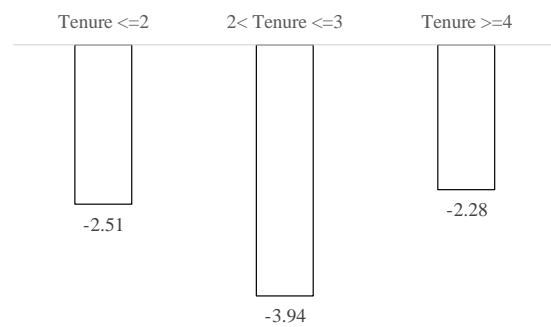
E. Adj.ΔROA(YRi) and CEO tenure
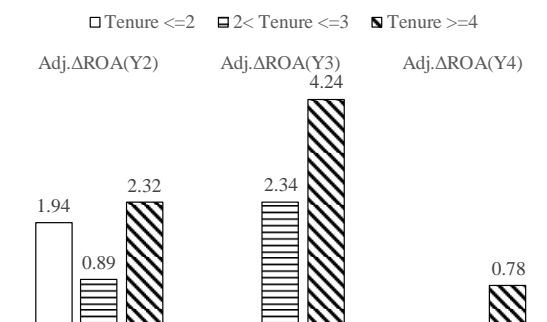
Table 1 CEO turnover events

A. CEO turnover events by year and by quarter

This panel summarizes CEO turnover events by year between 2005 and 2012 in the CRSP/Compustat universe. CEO turnover events data are collected from Audit Analytics. This sample excludes CEO turnovers as a result of mergers and acquisitions, bankruptcies, asset sales and spin-offs, and CEOs turnovers in finance and regulated industries (codes between 6000 and 6999 and between 4400 and 4900). CEOs with tenure shorter than four full fiscal quarters are excluded from this sample.

Calendar year	CEO turnover events	as % of unique firm observations in a year
2005	259	6.1%
2006	280	6.7%
2007	261	6.2%
2008	283	7.2%
2009	231	6.3%
2010	182	5.1%
2011	210	6.0%
2012	195	5.7%
Q1	637	33.5%
Q2	411	21.6%
Q3	449	23.6%
Q4	404	21.3%
Total (average)	1,901	6.2%

B. CEO turnover events by industry

This panel summarizes CEO turnover events by industry group as defined by 11 two-digit SIC industry groups.

Industry	SIC head	CEO turnover events	as % of unique firm-year observations in an industry
Agriculture, forestry, fishing	01-09	5	4.1%
Mining	10-14	107	4.0%
Construction	15-17	28	7.0%
Manufacturing	20-39	1,032	6.5%
Transportation	40-43	22	6.6%
Public utilities	44-49	NA	NA
Wholesale trade	50-51	75	6.9%
Retail trade	52-59	179	8.9%
Finance, insurance, real estate	60-69	NA	NA
Services	70-89	427	6.4%
Public administration	91-99	26	5.8%
Total (average)		1,901	6.2%

Table 2 Descriptive statistics

This table reports summary statistics of important firm-characteristics variables and variables used in main regression analyses. We use all firm-quarter observations with non-missing values from 2005 to 2012. All variables in Panel B are winsorised at 1% on both tails. Appendix A includes variable definitions.

A. **Summary of firm characteristics**

	(1)	(2)	(3)	(4)	(5)	(6)
	N	Mean	Median	SD	25th Pctile	75th Pctile
Market Value ($ mn)	81,360	4,412	469	19,197	114	1,885
SIZE (log of market value)	81,360	6.19	6.15	2.06	4.73	7.54
Market-to-book	81,360	4.25	2.11	120.62	1.32	3.53
Total Assets ($ mn)	81,360	4,140	411	22,354	102	1,779
Sales ($mn, Quarterly)	81,360	946	98	4,504	22	422
Total Accruals ($mn, Quarterly)	81,360	-53	-3	398	-23	1
Production Expenses ($mn, Quarterly)	81,360	651	54	3,479	10	251
Discretionary Expenses ($mn, Quarterly)	81,360	185	24	802	7	86
IO%	81,360	61	69	33	32	90
R&D ($mn, Quarterly)	81,360	28	0	185	0	5
Restructuring Expenses ($mn, Quarterly)	81,360	-2	0	28	0	0
Capex ($mn, Quarterly)	81,360	61	3	390	1	18

B. **Summary of key variables**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	N	Mean	Median	SD	25th Pctile	75th Pctile	1st Pctile	99th Pctile
Earnings management variables								
DA	81,360	0.10	0.24	5.47	-1.80	2.32	-26.52	20.74
REM	81,360	-0.44	0.29	10.06	-4.92	5.13	-41.40	27.27
R_DISX	81,360	0.18	0.73	6.00	-2.02	3.50	-27.33	14.91
R_PROD	81,360	-0.64	-0.53	5.66	-3.52	2.15	-20.07	25.78
Firm characteristics								
SIZE	81,360	0.07	0.05	0.98	-0.65	0.74	-2.07	2.44
MB	81,360	-0.03	-0.16	0.72	-0.37	0.01	-1.00	4.05
ROA	81,360	0.07	0.19	0.69	-0.05	0.39	-4.02	1.60
HIGHIO	81,360	0.46	0.00	0.50	0.00	1.00	0.00	1.00
Line items								
Restructuring expenses/Revenue	78,516	0.03	0.16	0.65	0.08	0.23	-4.36	0.51
R&D/Revenue	74,949	-0.06	-0.14	0.57	-0.22	-0.07	-0.62	4.24
Capex/Total Assets	81,360	0.04	-0.20	0.85	-0.47	0.25	-1.29	3.83

Table 3 Earnings management around CEO turnovers – univariate analysis

This table reports the difference in means of important variables for established CEO-firm-quarters, outgoing-CEO firm-quarters, and new-CEO firm-quarters. Appendix A includes variable definitions.

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

	(1) EST	(2)	(3) OUT	(4)	(5) NEW	(6)	(7)	(8)	(9)
	N	Mean	N	Mean	N	Mean	OUT-EST	NEW-EST	NEW-OUT
Earnings management variables									
DA	68,988	0.15	6,392	-0.07	5,977	-0.29	-0.22***	-0.44***	-0.21**
REM	68,936	-0.36	6,301	-0.72	6,123	-1.06	-0.36***	-0.71***	-0.35*
R_DISX	68,936	0.26	6,301	-0.23	6,123	-0.34	-0.49***	-0.60***	-0.10
R_PROD	68,936	-0.65	6,301	-0.52	6,123	-0.74	0.12*	-0.10	-0.22**
Control variables									
SIZE	68,936	0.07	6,301	0.08	6,123	0.04	0.01	-0.03**	-0.04**
MB	68,936	-0.03	6,301	-0.03	6,123	-0.04	0.00	-0.02	-0.01
ROA	68,936	0.09	6,301	-0.05	6,123	-0.03	-0.14***	-0.12***	0.03*
HIGHIO	68,936	0.53	6,301	0.56	6,123	0.57	0.03***	0.04***	0.01
Restructuring expenses/Revenue	66,442	0.05	6,130	-0.04	5,944	-0.09	-0.08***	-0.13***	-0.05***
R&D/Revenue	63,640	-0.06	5,730	-0.03	5,579	-0.06	0.02***	0.00	-0.02**
Capex/Total Assets	68,936	0.05	6,301	0.02	6,123	-0.02	-0.03***	-0.06***	-0.04**

Table 4 Earnings management around CEO turnovers

A. Correlation matrix

This panel contains correlations between earnings management variables and other important variables. Asterisks ***, **, and * next to a correlation coefficient indicate significance levels of 1%, 5%, and 10%, respectively.

	DA(t)	REM(t)	R_DISX(t)	R_PROD(t)	SIZE(t-1)	MB(t-1)	ROA(t)	HIGHIO(t)	Restructuring expenses /Revenue(t)	R&D /Revenue (t)
REM(t)	0.11***									
R_DISX(t)	0.13***	0.87***								
R_PROD(t)	0.04***	0.82***	0.45***							
SIZE(t-1)	-0.02***	-0.02***	0.02***	-0.04***						
MB(t-1)	0.00	-0.19***	-0.18***	-0.15***	0.20***					
ROA(t)	0.32***	0.04***	0.19***	-0.14***	0.31***	0.06***				
HIGHIO(t)	-0.02***	-0.01***	0.01*	-0.02***	0.44***	0.03***	0.16***			
Restructuring expenses/Revenue(t)	0.06***	0.03***	0.04***	0.01**	-0.06***	0.02***	0.12***	-0.06***		
R&D/Revenue(t)	-0.04***	-0.13***	-0.19***	-0.03***	-0.01**	0.09***	-0.16***	-0.03***	-0.06***	
Capex/Total Assets(t)	-0.04***	0.00	0.00	-0.01**	0.09***	0.10***	0.06***	0.02***	0.04***	-0.01***

B. Multivariate analysis (H1)

This panel reports the results from panel regressions specified in equation (1). Each row presents results from one regression using one earnings management measure as a dependent variable. All regressions include year-quarter indicator variables and firm fixed-effects (estimates omitted). Appendix A includes definitions of variables. Asterisks ***, **, and * next to a coefficient estimate indicate significance levels of 1%, 5%, and 10%, respectively. Two-tailed p-values are calculated from standard errors clustered by firm.

	N	Const.	OUT	NEW	MB	SIZE	ROA	Adj R-sqr
DA	81,360	-0.26	0.11	-0.08	0.16***	-0.70***	3.75***	17.3
REM	81,360	-0.08	0.10	-0.22*	-1.04***	1.37***	-0.44***	75.3
R_DISX	81,360	0.43	-0.01	-0.12	-0.67***	0.75***	0.62***	76.0
R_PROD	81,360	-0.51	0.09	-0.09	-0.37***	0.84***	-1.12***	63.7
R_PROD_M	45,865	-0.77	0.12	-0.15*	-0.31***	0.68***	-0.73***	65.9

Table 5 Earnings management around CEO turnovers: institutional ownership and external/internal successions

This table reports results from running panel regressions specified in equation (2) and equation (3), respectively. Each row presents results from one regression using one earnings management measure as a dependent variable. All regressions include year-quarter indicator variables and firm fixed-effects (estimates omitted). Appendix A includes definitions of variables. Asterisks ***, **, and * next to a coefficient estimate indicate significance levels of 1%, 5%, and 10%, respectively. Two-tailed p-values are calculated from standard errors clustered by firm.

A. NEW and OUT interacted with HIGHIO and LOWIO (H2)

	N	Est.	OUT * HIGHIO	OUT * LOWIO	NEW * HIGHIO	NEW * LOWIO	MB	SIZE	ROA	Adj R-sqr
DA	81,360	-0.26	0.06	0.18	-0.08	-0.09	0.16***	-0.70***	3.75***	17.32
REM	81,360	-0.08	0.17	0.01	-0.09	-0.40**	-1.04***	1.36***	-0.44***	75.28
R_DISX	81,360	0.43	0.10	-0.16	0.00	-0.29**	-0.67***	0.74***	0.61***	75.99
R_PROD	81,360	-0.51	0.06	0.14	-0.09	-0.09	-0.37***	0.84***	-1.12***	63.70
R_PROD_M	5,865	-0.77	0.09	0.17	-0.17**	-0.12	-0.31***	0.68***	-0.73***	65.92

B. OUT interacted with REMN and LEFT, NEW interacted with INT and EXT (H3)

	N	Est.	OUT * REMN	OUT * LEFT	NEW * INT	NEW * EXT	MB	SIZE	ROA	Adj R-sqr
DA	81,360	-0.26	0.12	0.11	-0.05	-0.12	0.16***	-0.70***	3.75***	17.32
REM	81,360	-0.08	0.12	0.09	-0.14	-0.33*	-1.04***	1.37***	-0.44***	75.28
R_DISX	81,360	0.43	0.00	-0.02	-0.05	-0.21*	-0.67***	0.75***	0.62***	75.98
R_PROD	81,360	-0.51	0.10	0.08	-0.08	-0.10	-0.37***	0.84***	-1.12***	63.70
R_PROD_M	45,865	-0.77	0.17*	0.05	-0.16	-0.14	-0.31***	0.68***	-0.73***	65.92

Table 6 Regress future relative change in ROA on earnings management measures in the first year of CEO tenure (H4)

This table reports results of pooled OLS regressions of $Adj.\Delta ROA(YRi)$ (t=2, 3, 4) in years two to four of a CEO's tenure on earnings management measures in the first year after the CEO changes (as specified in equation (5)). Earnings management variables in the first year of a CEO's tenure are calculated as the sum of four quarterly variables. Two-tailed p-values are calculated from heteroskedasticity robust standard errors. Asterisks ***, **, and * next to a coefficient estimate indicate significance levels of 1%, 5%, and 10%, respectively.

| | Dependent var = Adj.ΔROA(Yi) | | | | | | | | |
| | Tenure <=2 | | 2< Tenure <=3 | | | Tenure >=4 | | | |
	N	Y2	N	Y2	Y3	N	Y2	Y3	Y4
DA_Y1	599	-0.39**	361	-0.04	-0.31**	482	-0.36	-0.31	-0.22
REM_Y1	518	-0.06	315	0.00	0.00	426	-0.11**	-0.06	0.00
R_DISX_Y1	518	-0.13	315	-0.07	0.02	426	-0.22**	-0.06	0.07
R_PROD_Y1	518	-0.08	315	0.00	-0.05	426	-0.12	-0.08	-0.04

Appendix A Variable definitions

Variable	Definition (Compustat code)
A	Total assets at the end of each fiscal quarter (atq).
Accruals	Total accruals calculated as net income before extraordinary items minus CFO.
ROA(Yi) ($i = 1, 2, 3, 4$)	Sum of ROA (niq_t/atq_{t-1}) in four consecutive fiscal quarters in the corresponding year of a CEO's tenure. That is, using quarter 1 to 4 for the first year of tenure, 5 to 8 for the second year, 9 to 12 for the third year and 13 to 16 for the fourth year.
Adj.ΔROA(Yi) ($i = 2, 3, 4$)	Change in ROA from year $i-1$ to year i less change in ROA during the same period from a matched firm. The matched firm is from the same industry has the closest ROA(Y1). The adjustment is proposed by Barber and Lyon (1996) to control for long-run reversals in operating performance.
AR	Account receivables at the end of each fiscal quarter (rectq).
Capex/Total Assets	Quarterly capital expenditure (capxq) scaled by total assets (atq) standardized by industry-quarter.
DA	Discretionary accruals estimated by industry-quarter using the modified Jones Model as defined in Appendix B.
DA_Y1	Sum of DA in the first four fiscal quarters in a CEO's tenure.
DISX	Discretionary expenditures, the dependent variable in the regressions specified as question (4). DISX the sum of R&D and SG&A expenditures (xsgaq).
EXT	EXT equals to 1 if the new CEO is recruited externally and 0 otherwise.
HIGHIO	An indicator variable that takes the value of 1 if institutional ownership percentage is above the median in a quarter and 0 otherwise.
INT	INT equals to 1 if the new CEO is hired internally and 0 otherwise.
IO%	Institutional shareholding percentage.
LEFT	An indicator variable that takes the value of 1 if outgoing CEO does not remain any position in the company after leaving office and 0 otherwise.
LOWIO	An indicator variable that takes the value of 0 if institutional ownership percentage is below the median in a quarter and 0 otherwise.
MB	Market value of equity (prcc ×cshoq) to book equity value of a firm (ceqq), standardized by industry-quarter.
NEW	NEW equals 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, R_PROD and R_DISX is the balance sheet date.
OUT	OUT equals 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, R_PROD and R_DISX is the balance sheet date.
PPE	Gross book value of property, plant and equipment (ppegtq). We fit a linear growth model to fill in the missing quarterly PPE observations.
REMN	An indicator variable that takes the value of 1 if outgoing CEO retain a position in the company after leaving office and 0 otherwise.
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.
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.

Real Earnings Management around CEO Turnovers

Variable	Definition (Compustat code)
R&D/Revenue	R&D expenses (xrdq) scaled by revenue (revtq), standardized by industry-quarter.
R_DISX	Abnormal discretionary expenses measure the level of earnings management through accelerating or delaying discretionary expenses, as in Roychowdhury (2006). It is estimated cross-sectionally by industry-quarter. R_DISX is the residual from regression specified in equation (4) multiplied by -1. A higher R_DISX indicates a larger cut in discretionary expenditures to increase earnings.
R_DISX _Y1	Sum of R_DISX in the first four fiscal quarters in a CEO's tenure.
R_PROD	Abnormal production costs measure the level of earnings management through overproduction, as in Roychowdhury (2006). It is estimated cross-sectionally by industry-quarter. R_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.
R_PROD_Y1	Sum of R_PROD_Y1 in the first four fiscal quarters in a CEO's tenure.
R_PROD_M	R_PROD in manufacturing firms
REM	Real earnings management index equal to the sum of R_PROD and R_DISX.
REM_Y1	Sum of REM in the first four fiscal quarters in a CEO's tenure.
Restructuring expenses/Revenue	Restructuring expenses (rcaq) scaled by revenue (revtq), standardized by industry-quarter.
ROA	Quarterly return on assets niq_t/atq_{t-1} standardised by industry-quarter.
S	Quarterly sales (revtq).
SIZE	Logarithm of market value of a firm, standardized by industry-quarter, by deducting the industry-quarter mean and then dividing by the industry-quarter standard deviation.

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

Accrual-based earnings management

Following recent literature (Cohen, Dey, and Lys 2008; Hazarika, Karpoff, and Nahata 2012; Zang 2011), we use the modified Jones model (Jones 1991) as described in Dechow, Sloan, and Sweeney (1995) to estimate the normal level of accruals. We run the following cross-sectional model for each two-digit SIC-quarter group:

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

Coefficient estimates from (1) are used to estimate the normal levels of accruals as below:

$$Norm\_accruals_t = \hat{\alpha}_0 + \hat{\alpha}_1 \frac{1}{A_{t-1}} + \hat{\alpha}_2 \frac{\Delta S_t - \Delta AR_t}{A_{t-1}} + \hat{\alpha}_3 \frac{PPE_t}{A_{t-1}}, \tag{2}$$

All variables are defined in Appendix A. Discretionary accruals (DA_t) is the difference between accruals and the fitted normal accruals.

Real-activity-based earnings management

We follow Roychowdhury (2006) to construct measures to estimate levels of real earnings management. Following Zang (2011), we focus on earnings management through overproduction and the delay of discretionary expenditures. 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 in which 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 underproduction. 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:

$$\frac{PROD_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{S_t}{A_{t-1}} + \alpha_3 \frac{\Delta S_t}{A_{t-1}} + \alpha_4 \frac{\Delta S_{t-1}}{A_{t-1}} + \varepsilon_t \ , \tag{3}$$

where $PROD_t$ is the sum of the 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 costs in the cross section by industry and quarter.[16]

---

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

Real Earnings Management around CEO Turnovers

The abnormal levels of production costs (R_PROD_t) are the regression residuals from estimating equation (3) (i.e., the difference between $\frac{Prod_t}{A_{t-1}}$ and fitted level of production costs). Low levels of abnormal production costs indicate that a firm manipulates earnings downwards through under-production.

(2) Delaying discretionary expenditure: Discretionary expenditures include R&D, advertising, and selling, general, and administrative (SG&A) expenditure. Temporarily reducing discretionary expenditures 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:

$$\frac{DISX_t}{A_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{S_t}{A_{t-1}} + \varepsilon_t \qquad , \qquad\qquad\qquad (4)$$

where $DISX_t$ is discretionary expenditure in quarter t, which includes R&D and SG&A.[17] Abnormal discretionary expenditure (R_DISX_t) is the regression residual from (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_t) is the sum of abnormal production costs (R_PROD_t) and abnormal discretionary expenditure (R_DISX_t).

The table below 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 and second equations estimate normal level of accruals using a modified Jones Model, as in Dechow, Sloan, and Sweeney (1995). The third and fourth equations estimate 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.

---

[17] 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.

Real Earnings Management around CEO Turnovers

$Accruals_t/A_{t-1}$

	avg. estimates	$p-$value	Min	25th pctile	Median	75th pctile	Max
Intercept	-0.0091	**<0.001**	-0.1994	-0.0220	-0.0082	0.0050	0.4010
$1/A_{t-1}$	0.0019	0.981	-15.25	-0.5539	-0.0748	0.4587	7.96
$\Delta S_t/A_{t-1}$	0.0605	**<0.001**	-2.47	-0.0872	0.0560	0.2063	3.85
PPE_t/A_{t-1}	-0.0094	**<0.001**	-0.3694	-0.0276	-0.0102	0.0078	0.2893
Avg. $\bar{R}^2$	14.06		-26.08	0.07	7.59	22.25	98.29
Avg. # of obs	86.9		15	22	42	82	559
# of industry quarters	1,191						

$PROD_t/A_{t-1}$

	avg. estimates	$p-$value	Min	25th pctile	Median	75th pctile	Max
Intercept	**-0.0290**	**<0.001**	-0.2483	-0.0539	-0.0279	-0.0026	0.1052
$1/A_{t-1}$	-0.0956	0.337	-27.91	-0.7220	0.0099	0.5330	23.39
S_t/A_{t-1}	**0.7825**	**<0.001**	0.2674	0.7028	0.8083	0.8924	1.49
$\Delta S_t/A_{t-1}$	**-0.0921**	**<0.001**	-.2.51	-0.2626	-0.0872	0.0598	2.54
$\Delta S_{t-1}/A_{t-1}$	**-0.0704**	**<0.001**	-2.78	-0.2094	-0.0717	0.0493	1.91
Avg. $\bar{R}^2$	56.62		1.53	72.34	84.32	92.94	99.86
Avg. # of obs	88.0		15	22	43	81	582
# of industry quarters	1,167						

$DISX_t/A_{t-1}$

	avg. estimates	$p-$value	Min	25th pctile	Median	75th pctile	Max
Intercept	0.0385	**<0.001**	-0.1982	0.0123	0.0329	0.0684	0.3177
$1/A_{t-1}$	1.9752	**<0.001**	-8.50	0.6291	1.16	2.09	108.81
S_{t-1}/A_{t-1}	0.0878	**<0.001**	-3.33	0.0165	0.0684	0.1316	0.9433
Avg. $\bar{R}^2$	31.14		-15.00	14.19	27.30	44.65	99.61
Avg. # of obs	83.5		15	22	43	78	576
# of industry quarters	1,155						