Stock Price Response to New CEO Earnings News

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Abstract

New-CEO earnings news exhibits asymmetric effects on stock prices. Stock prices rise more on good earnings news announced by firms with new CEOs compared with those with established CEOs. By contrast, stock prices tend to fall by a smaller amount on bad earnings news for new CEOs. Both the new-CEO quality effect and the new-CEO honeymoon effect are more pronounced for CEOs appointed during challenging situations. The new-CEO quality effect is stronger for firms followed by fewer analysts, while the honeymoon effect is stronger for firms followed by more analysts – illustrating the importance of a transparent information environment.

JEL classifications: C23, G14, M40

Keywords: CEO Turnover, Unexpected Earnings, Earnings Response Coefficient, Meet and Beat Premium, Information Environment

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1. Introduction

A change in CEO is an important event in a firm's life. How well new CEOs can do their jobs is, to some extent, uncertain. The quality of new CEOs and the viability of their strategies are revealed over time. The new CEO often makes a public debut by attending earnings calls. Research analysts, investors and the financial media alike pay close attention to these earnings calls to assess whether the new CEO has the right talent and a suitable plan for the company. For example, Cisco promoted its senior vice president, Chuck Robbins, to CEO in July 2015. Less than one month into his job, Cisco beat analysts' forecasts and the company's stock price increased about 4 per cent during after-hours trading. Robbins had discussed his plan for future growth on his first earnings call – through this first public interaction with analysts Robbins "got off to a good start with investors" (August 12, 2015, Fortune). Many analysts issued research notes to endorse Robbins after this first earnings call.[2] The anecdotal evidence suggests that new CEOs manage short-term expectations downward but present optimistic long-term plans. By walking analysts down to a beatable forecast, new CEOs bring forward bad news and get investors to focus on the firm's long-term prospects. In a normal situation, giving downward guidance should make good earnings news less informative. However, in the context of CEO turnover, we hypothesize that the earnings news in the first year of a CEO's tenure is more informative compared with established CEOs because it reveals information on the new CEO's quality and long-term plans. We conjuncture that for such firms with new CEOs good earnings news indicates that the firm is on track and the good news is likely to persist in the future because outperformance due to CEO quality is likely to be more persistent over time than other transient factors. As a result, we expect good earnings news by new CEOs to be more informative about long-run outperformance. By contrast, good earnings news announced by non-CEO-turnover firms does not tend to contain as much new information

[2] Bank of America Merrill Lynch: "We believe new management led by Chuck Robbins is focusing on the right areas…", RBC Capital Markets: "There is a new sense of urgency at Cisco…", Robert W. Baird & Co: "it helps that Cisco set expectations that it could easily beat to make Robbins first few weeks on the job look successful…".

regarding the CEO's quality, since the market's perception of ability is already established for those CEOs. Thus, stock prices may respond more strongly to good earnings news from firms with new CEOs as compared with other firms. While good earnings news may serve as proof of the new CEO's ability and adds to the credibility of that CEO's strategy – potentially affecting share prices more than other positive earnings news – bad earnings news may not necessarily signal the opposite. The effect of a new CEO's "honeymoon" period can make bad earnings news less informative. If shareholders believe that new CEOs need time to organize resources and implement their strategies, they might infer that bad earnings news will be temporary. Consequently, share prices could under-react to initial bad earnings news. In addition to affecting the perception of the long-term earnings outlook by revealing their quality, new CEOs often outline their strategies to the investment community in the first few earnings calls, which could also help investors map out optimistic long-term expectations, resulting in stronger responses in stock prices to good earnings news but weaker responses to bad earnings new. This study investigates the asymmetric effect on stock prices from new CEO earnings news. Our study uses all firm-quarter observations from the Compustat, CRSP and Institutional Brokers' Estimate System (I/B/E/S) merged file and CEO turnover events recorded by Audit Analytics between 2005 and 2012. Using panel regressions, we compare responses in stock prices to good earnings news and bad earnings news for *new* CEOs and *outgoing* CEOs against a benchmark group consisting of *established* CEOs.

We find that earnings news in the first year of CEO tenure is more informative than that announced by firms with established CEOs, consistent with the new-CEO quality effect proposed by our study. Stock prices rise more (by 0.46 per cent on average and marginally significant at a level better than 5 per cent) on good earnings news for firms with new CEOs compared with firms with established CEOs. As for bad earnings news, we find that when firms announce such news, stock prices for new CEOs fall by 0.52 per cent less (marginally significant at a level better than 10 per cent) compared with established CEOs. This new-CEO honeymoon effect documented in

our study is not a result of earnings baths in the first year of CEO tenure because we control for discretionary accruals using various measures throughout our study. Both effects are also economically significant because the size of the abnormal return is about half a percent during the three-day window surrounding the earnings announcement day.

Evaluating new CEOs early in their tenure is not straightforward because the performance of a firm during this period may depend on their predecessors' decisions (Hannan and Freeman, 1984). If firms with good (bad) performance continue to perform well (poorly) after a change in CEO, the good (bad) performance can be easily attributed to the outgoing CEO and may convey little information regarding the new CEO's quality. However, if new CEOs take over the helm during a challenging time, the good (bad) earnings news early in their tenure cannot (can) easily be attributed to the outgoing CEO and can provide information about the new CEO's quality. Thus, we hypothesize that both the new-CEO quality effect and the new-CEO honeymoon effect is more pronounced if the CEO is appointed during a challenging situation. We define a CEO turnover in a challenging situation as one of six specific situations, as motivated by existing literature (Fredrickson, Hambrick, and Baumrin, 1988; Hazarika, Karpoff, and Nahata, 2012; Vancil, 1987). We find that the new-CEO quality effect is significantly stronger for new CEOs appointed when firms have underperformed its industry peers in the stock market when compared with new CEOs appointed as part of normal successions. Similarly, the new-CEO honeymoon effect is more pronounced for CEOs appointed in a challenging time than that following normal CEO successions.

We also find that the information environment influences both the new-CEO quality effect and the honeymoon effect. We expect that earnings news resolves more uncertainty about the new CEO's quality as the asymmetry of information increases. We use the number of analysts following a firm as a proxy for the information environment because research has shown that analyst coverage increases with the quality of accounting information, management presentation and institutional investors' holdings (Bhushan, 1989; R. M. Bushman, Piotroski, and Smith, 2005;

R. M. Bushman and Smith, 2001; Mark H Lang and Lundholm, 1996; Piotroski and Roulstone, 2004). As expected, we find that as the number of analysts following a firm increases, the new-CEO quality effect becomes weaker – stock prices rise more on the news of meet-and-beat analyst forecasts for new CEOs compared with established CEOs by 1.32, 0.31 and 0.05 per cent, respectively, if the firm has a low, medium or high level of its analyst following. The information environment also affects how investors interpret bad earnings news from new CEOs. In the face of news of missing analyst forecasts from firms with new CEOs, analysts seem to play a role in communicating the prospects of a firm to the investor community. For new CEO firms followed by a large number of analysts, bad earnings news is associated with a smaller drop in share price compared with firms with established CEOs by 1.41 per cent (significant at a level better than 1 per cent). However, this honeymoon effect does not exist among firms followed by a small number of analysts.

Our paper contributes to two areas in the literature: the market's learning about new CEOs and the information environment. With regard to the market's learning about new CEOs, we extend the work by Clayton et al. (2005) and show that good earnings news, but not bad earnings news, announced by firms with new CEOs is more informative than that announced by firms with established CEOs. Clayton et al. (2005) find that responsiveness in stock prices to earnings news is significantly stronger for firms with new CEOs compared with firms with outgoing CEOs. They argue that earnings announcements are more informative for firms with new CEOs, but we believe that firms managed by outgoing CEOs are abnormal and an inappropriate benchmark for analyzing the information content of earnings news from new CEOs. Using a complete dataset of all CEO turnover events in publicly listed companies in the United States, we are able to benchmark earnings news from new CEOs to that from established CEOs. Our finding suggests that good earnings announcements can resolve some uncertainty about a new CEO's quality, but bad earnings news does not have the same effect. While Ball and Shivakumar (2008) find that earnings

announcements only account for a small fraction of news impounded in stock prices, we show that in the context of a challenging CEO turnover, earnings announcements are an important channel through which information about the new CEO's quality is revealed.

Our paper contributes to the literature on the information environment by revealing that new CEOs can benefit from a more transparent information environment. A more transparent information environment helps to spread the news about the new CEO's talent and plans for the firm, thus making confirmation from good earnings news less necessary. In a transparent information environment, investors possess a substantial amount of information regarding the new CEO's quality and the plan of the firm under the CEO's direction before earnings announcements. We show that good earnings news does not have a significantly stronger impact on stock prices for new CEOs if a large number of analysts are covering their firm because their quality is already known to investors in a transparent informational environment. By contrast, new-CEO earnings announcements reveal information on the new CEO's quality for firms followed by fewer analysts. We also show that a good information environment is beneficial for firms that recently experienced CEO turnover because stock prices do not tend to drop as much on bad earnings news for these firms compared with firms with established CEOs. Perhaps a transparent environment helps investors understand that the new CEO has a plan and that the bad earnings news at the early stage of a CEO's tenure is likely to be transitory.[3]

2. Related literature and hypotheses development

Our paper expands the literature on the value relevance of CEOs and how the stock market learns about a new CEO's ability.

[3] However, we are unable to conduct a formal test because long-term forecasts are sparsely populated in I/B/E/S.

CEOs are an important determinant of a firm's value. Prior studies have confirmed the value relevance of CEOs by studying stock returns and operating performance following rare events, such as a CEO's death or hospitalization (Bennedsen, Pérez-González, and Wolfenzon, 2011; Johnson, Magee, Nagarajan, and Newman, 1985). Because CEOs are crucial for firms' direction and performance, a change in CEO, regardless of its nature, introduces a new source of uncertainty. This uncertainty leads to drastically increased volatility in stock returns over an extended period following a CEO turnover (Clayton et al., 2005). Results in Clayton et al. (2005) also suggest that earnings news reveals some information regarding the new CEO because stock prices react more strongly to earnings news in the first few years following a change in CEO, as compared with the years preceding the change in CEO. A related study by Pan, Wang, and Weisbach (2015) shows that as investors learn about the new CEO's ability, the volatility of stock returns drops rapidly, particularly in the first year of CEO tenure. They also demonstrate that the market achieves such learning through corporate news and that as news resolves uncertainty regarding the new CEO, the market reaction to corporate news weakens over CEO tenure.

Our paper also builds on the management literature concerning the honeymoon period by Fichman and Levinthal (1991), Morita, Lee, and Mowday (1989) and Peters and Sheridan (1988). This strand of literature demonstrates that various professional relations enjoy honeymoon periods during which they are protected from negative outcomes. During this honeymoon period, it is highly unlikely that a relationship is terminated as a result of negative events (for example, a manager or a consultant is fired due to poor performance). A similar honeymoon period enjoyed by new CEOs in the stock market is also often discussed in the financial media. During this honeymoon period, stock prices rise even if the new CEO has not delivered substantial improvements in operating or financial results.

While Clayton et al. (2005) and Pan et al. (2015) show that earnings news in the first year of CEO tenure should be more informative, the management literature suggests that new CEOs may be protected from bad earnings news. Taking their work further, we distinguish between good and bad earnings news and put forward the first pair of hypotheses as below:

H1A The new-CEO quality hypothesis posits that stock prices rise more on good earnings news from firms with new CEOs as compared with firms with established CEOs.

H2A The new-CEO honeymoon hypothesis states that stock prices fall by a smaller amount on bad earnings news from firms with new CEOs in comparison with firms with established CEOs.

The muted market reaction to bad earnings news in the first year of CEOs' tenure (or any evidence for **H2A**) can be a result of investors' anticipation of an earnings bath.[4] We measure and control for the size of earnings manipulation with a model based on the cross-sectional modified Jones model, with a control for contemporaneous performance (or performance-adjusted modified Jones model) (Dechow, Sloan, and Sweeney, 1995; Jones, 1991; Kothari, Leone, and Wasley, 2005).[5]

Earnings news is not always informative about the new CEO's quality and plan because it can result from decisions made by the departing CEO. To identify situations where earnings news is less likely to be attributed to the departing CEO, we develop the next pair of hypotheses based on the contrasting theory proposed by Hannan and Freeman (1984). The contrasting theory states

[4] Substantial evidence exists for earnings-decreasing accrual-management after a firm replaces its top executives; for example, see Pourciau (1993);Geiger and North (2011);Wilson and Wang (2010);J. S. Choi, Y. M. Kwak, and C. Choe (2014); Wells (2002).

[5] We thank the anonymous referee for pointing out the importance of controlling for performance in measuring discretionary accruals in the context of CEO turnover. Because poor performance often prompts a CEO turnover (Murphy & Zimmerman, 1993) and performance confounds the measurement of an earnings bath, it is necessary to control for performance to measure the size of the earnings bath (Kothari et al., 2005) and disentangle the price effect from the earnings bath and that from the honeymoon period. While performance-adjusted measures for discretionary accruals have their merits, they can introduce more noise and under-detect earnings manipulation (Keung & Shih, 2014; Kothari et al., 2005). As a robustness test, we estimate discretionary accruals with the modified Jones model. Then, we use a binary variable to indicate an earnings bath when the discretionary accrual is one standard deviation below the industry median in that quarter. Our findings are robust to different ways of identifying the earnings bath behaviour.

that a new CEO appointed following a star CEO is less likely to get the credit for good performance. Similarly, poor performance in the early stage of a CEO's tenure can be more easily blamed on the outgoing CEO if the firm has been in trouble under the reign of the departing CEO. Therefore, our second group of hypotheses are the following:

H1B The new-CEO quality effect is more pronounced if the CEO is appointed during a challenging situation.

H2B The new-CEO honeymoon effect is more pronounced for new CEOs appointed during a challenging situation.

In addition to the context in which the CEO turnover occurs, the transparency in the informational environment also affects learning about the new CEO's quality. As shown by Pan et al. (2015), investors learn faster about the new CEO in a more transparent environment. While Pan et al. (2015) focus on how firm transparency affects the rate at which return volatility drops, we examine how firm transparency affects the price effect of earnings news. In a transparent environment, the market already has some knowledge of the CEO's ability and the new strategy before the firm announces important news (for example, earnings news). Thus, we hypothesize that stock prices respond less to both good earnings news and bad earnings news from new CEOs in a more transparent environment. Following an extensive body of literature on analyst coverage and the information environment, we use the number of active analysts following a firm as a proxy for firm transparency.[6] Because stock prices rise more on good earnings news from new CEOs (the new-CEO quality effect) but decrease less on bad earnings news from new CEOs (the new-CEO honeymoon effect), we expect that firm transparency weakens the new-CEO quality effect

[6] Research analyst coverage improves the information environment and valuation for cross-listed firms (Mark H. Lang, Lins, & Miller, 2003), increases the dissemination of industry information (Piotroski & Roulstone, 2004) and reduces insider trading profitability (Frankel & Li, 2004).

but strengthens the new-CEO honeymoon effect. Thus, our third group of hypotheses are the following:

H1C The new-CEO quality effect weakens as the number of analysts following a firm increases.

H2C The new-CEO honeymoon effect is stronger for firms covered by more analysts.

3. Data and sample selection

We identify CEO turnover events using director and officer change filings during the 2005–2012 period, as provided by Audit Analytics.[7] Audit Analytics covers all director and CEO changes of SEC registrants from January 2005 onwards. Panel A in Table 1 describes the filtering process used to obtain the CEO turnover dataset. Audit Analytics records 12,742 unique CEO turnover events from 2005 to 2012. We excluded CEO turnover events due to mergers, acquisitions, bankruptcies, spin-offs and asset sales. Because many SEC registrants are not public companies, only 4,227 CEO turnover events can be matched with firm-quarters in the CRSP and the Compustat Merged file, of which 2,753 firms exist in the I/B/E/S database. In a given year, an average of 10.7 per cent of firms experience a change in CEO (see Panel B of Table 1), implying an average CEO tenure of approximately nine years in the universe of firms that exist in the CRSP, Compustat and I/B/E/S merged file from 2005 to 2012.[8] With regard to CEO changes by industry (Panel C of Table 1), firms in the finance, insurance and real estate industry group have the lowest CEO turnover ratio (6.8 per cent) in the CRSP, Compustat and I/B/E/S space, or equivalently the longest implied CEO tenure (about 15 years).

[Insert Table 1 about here.]

[7] Refer to Geertsema, Lont, and Lu (2015) for a detailed description of the process of obtaining CEO turnover events from Audit Analytics.

[8] As a point of comparison, Bushman et al. (2010) use ExecuComp, which covers S&P 1000 companies, and the average CEO tenure of turnover firms is approximately10 years.

The CEO turnover events enable us to create CEO-change indicator variables. As in Geertsema, Lont, and Lu (2015), we define new-CEO firm-quarters as firm-quarters in which the CEO has been at the helm for no more than 365 calendar days on the earnings announcement date. Outgoing-CEO firm-quarters are quarters in which the CEO leaves the firm within 365 calendar days from the earnings announcement date. Other firm-quarters are established-CEO firm-quarters. This study excludes ambiguous firm-quarters that could be classified as either outgoing-CEO firm-quarters or new-CEO firm-quarters.

We proxy for the expected earnings per share (EPS) with the I/B/E/S consensus forecast (the median forecast) and measure the size of earnings news (unexpected earnings) as the deviation in actual EPS from the expected EPS, scaled by the closing stock price five days before the announcement (as in DellaVigna and Pollet, 2009). The consensus forecast is the median of all valid analyst forecasts sourced from the I/B/E/S detailed history file as of the date of the earnings announcement. As in DellaVigna and Pollet (2009), a valid forecast has to be revised or confirmed to be valid during the 30-day period prior to the earnings announcement, and analyst forecast earnings per share are adjusted for share splits and other corporate events between the forecast date and the earnings announcement date. Specifically, we use split-adjustment factors from CRSP to adjust the forecast EPS made by each analyst, so that the forecast EPS and actual EPS are comparable even if the number of shares outstanding has changed between the forecast date and the earnings announcement date. In the context of CEO turnover, using expected EPS from a time-series model is noisier and less appropriate because a change in CEO is often prompted by poor performance (Fredrickson et al., 1988; Murphy and Zimmerman, 1993; Parrino, 1997). Thus, the change of CEO introduces a break in the time series of earnings, and using earnings during the outgoing CEO period to estimate the expected earnings for the period managed by the new CEO is inappropriate.

We measure the abnormal stock returns during the three-day window (−1 to +1) surrounding the earnings announcement as the accumulated difference between the actual daily stock return and the normal return from a portfolio matched on size and book-to-market ratio. We construct five size and five book-to-market value-weighted portfolios using the method in Fama and French (1992). As suggested by Daniel, Grinblatt, Titman, and Wermers (1997) and Barber and Lyon (1997), this approach generates less biased results than traditional approaches that use the market model or other factor-pricing models to estimate the normal return. [9] The cumulative abnormal return over the three-day period surrounding the earnings announcement date[10] is the sum of abnormal returns over the three event days.

4. Research design

When measuring the response in stock returns to earnings news, we consider both an intercept effect and asymmetric slope effects. The intercept effect is captured by an indicator variable for earnings miss (BAD) to account for the negative average stock returns in response to the news of missing analyst forecasts (Bartov, Givoly, and Hayn, 2002). Slope effects assess the response in stock returns to a unit of positive earnings news (GOOD × UE) and a unit of negative earnings news (BAD × UE) separately to account for an asymmetric earnings response coefficient (ERC) (Basu, 1997; Hayn, 1995). Similar to Bartov et al. (2002), we also find that the intercept effect dominates the slope effect. Hence, support for our hypotheses exists almost exclusively as an intercept effect. Therefore, for brevity and ease of interpretation of the main findings, we

[9] We also conduct our tests by estimating normal return with a market model in which we regress a stock's return on the return to a value-weighted (or an equal-weighted) portfolio for the window covering 250 trading days up to 10 days before the earnings announcement date ([−260, −10]). Results when we estimate abnormal returns from regressions are generally stronger than results included in the main text, but these results are potentially biased. Stock returns during CEO turnover tend to be low so that constant terms in the fitted models are small – leading to an underestimate of normal returns and an overestimate of abnormal returns.

[10] Following DellaVigna and Pollet (2009), we use the earnings announcement date (rdq) from Compustat and cross-check using the earnings announcement date (actanndats) from I/B/E/S when possible. If rdq and actanndats do not agree, we use the earlier date as the earnings announcement date. The date of after-hour earnings announcements as recorded in I/B/E/S are moved to the following trading day (Berkman & Truong, 2009). We also eliminate earnings announcements that are potentially contaminated by requiring that the first trading day after the earnings announcement occurs less than seven days after the earnings announcement.

present the results where we test our hypotheses on the intercept only. First, we test the new-CEO quality hypothesis (**H1A**) and the honeymoon hypothesis (**H2A**) by estimating the regression model specified in equation (1): [11]

$$\begin{aligned} CAR(-1,1) = {} & \beta_0 + \beta_1 \times GOOD \times OUT + \beta_2 \times GOOD \times NEW \\ & + \beta_3 \times BAD + \beta_4 \times BAD \times OUT + \beta_5 \times BAD \times NEW \\ & + \beta_6 \times GOOD \times UE + \beta_7 \times BAD \times UE \\ & + \boldsymbol{\theta} \times \boldsymbol{NONLINEAR} + \boldsymbol{\mu} \times \boldsymbol{CONTROL} + \boldsymbol{\tau} \times \boldsymbol{Yearquarter} + \varepsilon \end{aligned} \quad (1)$$

The constant term captures the average $CAR(-1,1)$ if a benchmark firm (or, the firm-quarters with established CEOs) just meets the earnings forecast (or UE equals to 0). The new-CEO quality hypothesis predicts a larger increase in the stock price on the news of meet-and-beat for new CEOs (**H1A**: $\beta_2 > 0$). The honeymoon hypothesis suggests a smaller drop in the stock price on the news of missing analyst forecasts for new CEOs (**H2A**:$\beta_5 > 0$). All regression analyses in this paper control for the nonlinear reactions to earnings news (***NONLINEAR*)** because ERCs are smaller for extreme earnings news (Das and Lev, 1994; Freeman and Tse, 1992). In order to control for the non-linear effect for good earnings news (GOOD×UE) and that for bad earnings news (BAD×UE), we separately include GOOD×UE× |UE| and BAD×UE× |UE|. We also control for important, well-known factors that affect stock returns' sensitivity to earnings news. The vector of control variables (***CONTROL***) includes growth (proxied for by the market-to-book ratio, or MB) (Collins and Kothari, 1989; Freeman and Tse, 1992), firm size (SIZE) (Atiase, 1985; Freeman, 1987), earnings volatility (EVOL) (Kormendi and Lipe, 1987) and earnings manipulation (DA_ROA, Kothari et al. (2005)), as well as interaction terms between each of these control variables and BAD because these variables affect stock prices differently depending on whether the earnings news is good or bad (Skinner and Sloan, 2002). Still, some firm characteristics and

[11] In our regressions, the earnings response coefficient (ERC) on good news is the slope estimate on $UE \times GOOD$ and the ERC for bad news is the slope estimate on $UE \times BAD$. A similar regression specification can be found in equation (2) in Mian and Sankaraguruswamy (2012). An alternative specification is to include UE, BAD and $UE \times BAD$ – in this case, the slope estimate on UE is the ERC for good earnings news and the sum of the slope estimate on UE plus that on $UE \times BAD$ is the ERC for bad earnings news. These two regressions render identical results.

the time effect are not captured in our model; thus, all our regressions include a firm-fixed effect and year-quarter dummies. The *t*-tests for significance in all regressions are clustered by quarter because many firms announce earnings quarterly, and returns in these announcing firms are cross-correlated (Gow, Ormazabal, and Taylor, 2010; Petersen, 2009; Thompson, 2011). Appendix I contains a description of all variables.

5. Empirical results

5.1. Summary statistics

The summary statistics of key variables are presented in Columns (1) to (6) in Table 2. In our sample period, approximately 33 per cent of firms miss the consensus forecast and deliver bad earnings news, as shown by the 0.33 average of BAD. The size of good earnings news averages at 0.34 cents for each dollar of share price with a standard deviation of 0.54 (UE if UE>=0). By contrast, bad earnings news can be more extreme because the average size of bad news is -0.59 cents for each dollar of share price with a standard deviation of 1.2 (UE if UE<0). Moving down the table, for readers' reference, we also summarize the interaction terms of earnings news and the direction of earnings news ($UE \times GOOD$ and $UE \times BAD$). These two variables include all observations used in regressions to generate the main result in this study. Because negative (positive) earnings news is set to zero in UE×GOOD (UE×BAD), the averages and standard deviations of these interaction terms are smaller than when we look at positive and negative earnings only. Likewise, the non-linear terms (as a control variable, per Das and Lev, 1994) are also summarized for positive and negative earnings news separately before we present the summary of the interaction terms between the non-linear earnings news and the direction of news. As expected, the average of decile numbers of market-to-book ratios (MB) and the average decile number of firm sizes in terms of market capitalization (SIZE) are between five and six.

Performance-adjusted quarterly discretionary accruals (DA_ROA)[12] average around zero for our sample firms and the standard deviation is approximately 7 per cent of total assets – these metrics are comparable to the statistics presented in Table 1 of Kothari et al. (2005).

Columns (7) to (15) in Table 2 present the means and the difference in means of these variables for three groups of observations, which are firm-quarters with established CEOs (EST), those with outgoing CEOs (OUT) and those with new CEOs (NEW). Firms are more likely to issue bad earnings news before a change in CEO. The percentage of firms that miss the consensus forecast (BAD) is 36 per cent in the four quarters prior to the CEO turnover event, significantly higher at a 1 per cent level than the 32 per cent level during established-CEO firm-quarters. The unexpected earnings are worse in these quarters with outgoing CEOs than normal (OUT-EST) by -0.08 cents for each dollar of share price and significant at the 1 per cent level. Sub-par earnings prior to a CEO change corresponds to lower cumulative abnormal returns, CAR(-1,1) for OUT averages 1.03 per cent less than those during established-CEO firm-quarters, with significance at the 1 per cent level (column OUT-EST).

[Insert Table 2 about here.]

The change of CEO introduces more uncertainty. Following CEO turnover, firms tend to deliver more extreme earnings news – positive earnings news (UE, if UE>0) averages 0.04 cents per dollar price higher (significant at the 1 per cent level) for new CEOs compared with outgoing CEOs (column NEW-OUT), while negative earnings news (UE × BAD) averages 0.10 cents per dollar price lower (significant at the 1 per cent level) for new CEOs compared with outgoing CEOs. Earnings also become more volatile after the CEO change than before the CEO change. Earnings volatility (EVOL) increases by 0.010 when moving from outgoing to new-CEO firm-quarters.

[12] We exclude firms in the finance industry (whose first two digits of SIC code range between 60 and 69) and firms in regulated industries (whose first two digits of SIC code range between 44 and 49) when estimating discretionary accruals with the modified Jones model.

Table 2 also shows that important control variables in our main regression are very different during the CEO-change periods, illustrating the importance of controlling for these variables in all regressions. CEO-change firms tend to have significantly lower market-to-book ratios and higher earnings volatility. We estimate discretionary accruals using a performance-adjusted modified Jones model (DA_ROA). Using this measure, neither outgoing CEOs nor new CEOs report earnings-decreasing discretionary accruals that are significantly below those reported by firms with established CEOs.

[Insert Table 3 about here.]

Table 3 reports the correlation coefficients between the three-day cumulative abnormal return around the earnings announcement date (CAR(−1,1)) and important explanatory variables. The explanatory variables are not highly correlated, suggesting that multicollinearity is not a concern. These correlation coefficients also have expected signs. For example, the size of cumulative abnormal return (CAR(-1,1)) is significantly and positively correlated with both the good earnings news (GOOD × UE) and the bad earnings news (BAD × UE). However, the correlation is stronger in the positive regime than that in the negative regime, suggesting positive earnings news is more informative than negative earnings news. Also, as expected the correlation coefficient between SIZE and EVOL is −0.16 because the earnings of small companies tend to be more volatile. Bad earnings news tends to be announced by small firms and firms with low market-to-book ratios, as shown by the significant and negative correlations between BAD and MB and between BAD and SIZE of -0.08 and -0.15, respectively. Finally, higher levels of performance-adjusted discretionary accruals (DA_ROA) relate to lower cumulative abnormal returns (CAR(-1,1)), suggesting that prices tend to rise less if good earnings are inflated by accruals and that prices tend to fall by a smaller amount if bad earnings are deflated by accruals.

5.2. The new-CEO quality effect and honeymoon effect

[Insert Table 4 about here.]

Table 4 reports the main regression results using equation (1). We find evidence for the new-CEO quality hypothesis (**H1A**) as well as evidence for the new-CEO honeymoon hypothesis (**H2A**). Results in Column (3) in Table 4 show that for a *typical firm*, or a firm with an average size, an average market-to-book ratio, an average level of earnings volatility and average performance-adjusted discretionary accruals that is managed by an established CEO, stock prices are estimated to rise slightly by 0.02 per cent on the news of a meet-and-beat the quarterly analyst consensus forecast.[13] If the firm is managed by a new CEO, stock prices tend to rise by about half a percent more on the news of meet-and-beat analyst forecasts because the estimate for β_2 (or the coefficient on $GOOD \times NEW$) is 0.46 and significant at a level better than 5 per cent. Next, we consider the meet-and-beat premium (or miss discount) uncovered by Bartov et al. (2002). If a firm misses the consensus forecast instead of barely meeting the forecast, on average the stock price drops by 3.52 per cent more (BAD) after controlling for the difference in important firm characteristics.[14] Before controlling for firm characteristics (results in Column (1) in Table 4), we find that if the earnings miss is announced by firms with new CEOs, stock prices fall by about 0.62 per cent less and significant at a 5 per cent level (shown as the coefficient on $BAD \times NEW$ in Column (1) in Table 4) than if it is from firms with established CEOs on average (lending support to **H2A**). As we control for firm characteristics and the direction of earnings news (in Column (2)), as well as the performance-adjusted discretionary accruals (in Column (3)), this new-CEO honeymoon effect (**H2A**) is weakened but still present. Including these control variables, the coefficient estimate on $BAD \times NEW$ drops from 0.62 to 0.52 and the significance decreases from

[13] The 0.02 per cent is the sum of the constant in Column (3) of Table 4 and the products of the means of MB, $SIZE$, $EVOL$ and DA_ROA in Table 2 and corresponding coefficient estimates in Column(3) in Table 4.

[14] The size of the average quarterly meet-and-beat premium is comparable to the 3.2 per cent in Bartov et al. (2002).

0.041 to 0.057 and 0.066, respectively. That is, the fact that firms who change CEOs tend to be smaller, with lower market-to-book ratios and more volatile earnings and are more likely to manage earnings downward does not fully explain the new-CEO honeymoon effect.

Consistent with Hayn (1995), we find asymmetric ERCs on good and bad earnings news – the slope estimate on $GOOD \times UE$ and $BAD \times UE$ are 8.16 and 1.17, respectively, and both are significant at a level better than 1 per cent. However, such slope effects are of less economic importance than the meet-and-beat premium, as only a dramatic increase in earnings per share can affect the stock price to an extent similar to simply meeting the analyst forecast. For a stock priced at one dollar, meeting the analyst forecast (regardless of the size of earnings news) is associated with an additional 3.52 per cent increase in stock price. After meeting the analyst forecast, this firm still needs to increase the size of its good earnings news by one standard deviation (or 0.54 cents for each dollar of share price, the standard deviation of UE(t) (if UE>=0) in Column (4) of Table 2) for the stock price to rise by another 3.52 per cent. If the size of good earnings news increases by one standard deviation (0.54), its total impact on the cumulative abnormal return (CAR(-1,1)) is 3.47 per cent, which is estimated jointly from the linear term and the nonlinear term in our model. The linear component is 4.41 per cent (or the product of the slope estimate of 8.16 on $GOOD \times UE$ and the change in earnings news of 0.54). The nonlinear component is a penalty of -0.94 per cent (the product of the slope estimate on $GOOD \times UE \times |UE|$ of -1.74 and 0.54) for being further away from just meet-and-beat. The nonlinearity in ERCs for bad earnings news is noticeably weaker with a slope estimate for $BAD \times UE \times |UE|$ of only -0.11. This smaller coefficient for extremely bad earnings news compensates for the higher frequency of extremely bad earnings (refer to the standard deviation of good earnings news and bad earnings news in Table 2).

New CEOs tend to record earnings decreasing accruals (J.-S. Choi, Y.-M. Kwak, and C. Choe, 2014; Geertsema, Lont, and Lu (2015); Pourciau, 1993; Wilson and Wang, 2010); therefore,

missing analyst forecasts may be a result of new CEOs giving earnings a bath. If so, it is possible that the new-CEO honeymoon effect (**H2A**) is simply an artifact of muted stock price responses to artificially low earnings. We show that the honeymoon effect uncovered in this paper cannot be fully explained by the new-CEO earnings bath. As mentioned earlier when discussing the summary statistics, we control for performance-adjusted discretionary accruals based on the modified Jones model (Dechow et al., 1995; Jones, 1991; Kothari et al., 2005) in all regressions used to generate the main results. Our findings are robust to different ways of measuring discretionary accruals and defining earnings baths.[15] As expected, we find that the stock price rises less if the good earnings news is inflated with earnings-increasing accruals and that the stock price drops less if the bad earnings news is deflated with earnings-decreasing accruals. The coefficient on DA_ROA (in Column (3) in Table 4) is -9.01 and significant at a level better than 1 per cent. The coefficient estimate suggests that for a firm that announces good earnings news, a one-standard-deviation increase (0.07, or 7 per cent of total assets) in accruals (DA_ROA) is associated with a reduction in price increase by 0.63 per cent in the abnormal stock returns surrounding the earnings announcement. The coefficient on $BAD \times DA\_ROA$ (in Column (3) in Table 4) is 6.59 and significant at a level better than 5 per cent. Using the previous two coefficient estimates together, we can estimate for a firm that announces bad earnings news, a one-standard-deviation decrease (0.07, or 7 per cent of total assets) in accruals (DA_ROA) is associated with a reduction in the price drop of 0.17 per cent surrounding the earnings announcement. In short, the discussed result suggests that investors regard discretionary accruals as less value relevant.

Estimates for coefficients on other control variables also have the expected signs. For example, the coefficient estimate on MB is positive, consistent with Collins and Kothari (1989). The coefficient estimate on $SIZE$ is significantly negative, suggesting that if good earnings news

[15] Our findings remain unchanged if we use a binary variable to identify firms that give an earnings bath based on the level of discretionary accruals measured from the modified Jones model. Please refer to the discussion of summary statistics for more details.

is announced by larger firms, stock prices tend to rise less in response (Freeman, 1987). Also, as expected, we find that more volatile earnings makes earnings news less informative, but the effect is more noticeable for bad earnings news. The adjusted R-squared statistic in regression (1) is 15.4 per cent, similar to those in comparable studies (for example, Table 4 of Chambers et al., 2005).

An important prior study by Clayton et al. (2005) finds that stock prices react to earnings announcements more strongly for new CEOs than for their predecessors. We take their work a step further and add two new insights. First, the stronger ERCs in the first year of the CEO's tenure is due to a stronger reaction to good earnings news. For bad earnings news from new CEOs, the response in stock price is, on average, weaker. Second, when we study how stock prices react to earnings news from firms with new CEOs, we see firms with established CEOs are a more appropriate benchmark group than firms with outgoing CEOs. Clayton et al. (2005) compare ERCs for new CEOs with those for outgoing CEOs. While they attribute their results to new CEOs and infer that new CEOs' earnings announcements convey information regarding their ability and strategy, it is also possible that investors interpret outgoing CEOs' earnings announcements differently from those of established CEOs – we show that it is indeed the case. Like Clayton et al. (2005), we find that prices tend to rise more on good earnings news from new CEOs as opposed to good earnings news from outgoing CEOs by 0.79 per cent, which is significant at a level better than 1 per cent ($GOOD \times NEW - GOOD \times OUT$). However, this difference is partially due to the outgoing-CEO effect. For outgoing CEOs, the price response to good earnings news is weaker by -0.33 and significant at a level better 5 per cent compared with that of established CEOs ($GOOD \times OUT$).

Under an integral accounting system, the market reaction to the last fiscal quarter's earnings news is potentially greater than for the first three quarters. Thus, we repeat our test in Table 4 in two subsamples: one contains observations in the last fiscal quarter and the other comprises those in non-last fiscal quarters. Contrary to our conjecture, we find strong evidence for

both the new-CEO quality hypothesis and the new-CEO honeymoon hypothesis in the subsample of fiscal quarters one to three only. The result is consistent with the pattern in learning about a CEO's quality shown in Pan et al. (2015). Because most of the learning of a new CEO occurs in the very early stage of CEO tenure and the speed of learning decreases rapidly, we expect and find that price responses to earnings news are stronger in the subsample with higher frequency of CEO turnover events (or the first to third quarter, as in Panel B of Table 1).[16] We expect and find the same for the new-CEO honeymoon effect because a honeymoon is more likely to be granted to bad earnings news announced immediately following the CEO turnover.

5.3. CEOs appointed in challenging times

Now we investigate whether the new-CEO quality effect and honeymoon effect depend on the context in which CEO successions take place (**H1B** and **H2B**). A CEO succession can be an uneventful and smooth "relay" process in which the CEO title passes to a selected heir when the incumbent retires according to plan (Vancil, 1987). Following Pourciau (1993), we refer to this type of CEO turnover as a *routine* CEO succession. Vancil (1987) also lauds many cases of inside CEO successions (or *internal* successions) as successful processes in which internal candidates are groomed and tested. We conjecture that both routine CEO turnover and internal successions tend to be smooth CEO succession processes and that good news in the early stage of CEO tenure is likely to be viewed as a continuation of the predecessor. By contrast, both *non-routine* CEO successions and *external* successions introduce discontinuity, and thus good news under the new CEO's reins is likely to be attributed to the new CEO, and stock prices respond more strongly to good earnings news after these two types of CEO successions. We use information from Audit Analytics to classify a CEO turnover as routine/non-routine and internal/external. Appendix III describes the criteria for classifying CEO turnover events. In addition to the information contained

[16] We do not have a significant problem with controlling for the difference in between fiscal quarters and calendar quarters because in the U.S. fiscal quarters and calendar quarters tend to overlap.

in 8-K filings from Audit Analytics, we also consider four performance variables during the 12-month period (or rolling four-quarter period) leading up to the CEO departure as proxied by whether the departing CEO is forced out due to poor performance (Fredrickson et al., 1988; Hazarika et al., 2012). During the 12-month period prior to the CEO turnover, if the firm's ROA falls in the lowest one-third among its industry peers (or companies sharing the same two-digit SIC header), we assume that the CEO turnover takes place in a challenging situation. Otherwise, the CEO turnover is classified as a normal turnover. Similarly, if during the 12-month period leading up to the CEO departure, the firm's stock return volatility and sales growth fall in the worst one-third within an industry, the CEO turnover is classified as challenging. As for stock returns, we use the same approach but look at returns from 24 months to 12 months prior the CEO change to mitigate the endogeneity issue.[17] For each of the six challenging situations described above, we create one indicator variable. The indicator variable $CHAL_i$ $(i = 1, \cdots, 6)$ takes the value of one (zero) if a firm-quarter is classified as a new-CEO firm-quarter following a challenging (normal) CEO turnover. Panel A of Table 5 reports the correlation coefficients among the six indicator variables. These six indicators are positively correlated, but the correlation coefficients are below 0.5, suggesting that they reflect different aspects of a challenging situation faced by CEO-change firms. However, it is likely that low stock return ("Low ret.") captures the collective effects of other proxies for a difficult time prior to the CEO turnover because in efficient capital markets expected poor future performance is impounded in stock prices.

[Insert Table 5 about here]

We first estimate equation (1) in subsamples containing firm-quarters with established CEOs and CEO-change firm-quarters (NEW and OUT) surrounding challenging CEO turnover

[17] Because stock returns during the 12 months leading up to the CEO change affect the CAR(-1,1) surrounding the date of earnings announcements in the last year of CEO tenure, there is an endogeneity problem if we measure challenging circumstances as low stock returns over the same period. We thank the referee for pointing this out.

events. If the new-CEO quality effect is stronger for new CEOs appointed during a difficult time (**H1B**), we expect that during the first year following a challenging CEO turnover (in Panel B of Table 5), stock prices tend to rise more on the news of meet-and-beat (β_2 on $GOOD \times NEW$ is greater than zero) than during periods with established CEOs because it reveals the quality of new CEOs. For new CEOs appointed as part of normal CEO successions (in Panel C of Table 5), we expect estimates for the slope coefficient on $GOOD \times NEW$ (β_2) to be insignificantly different from zero because good earnings news reveals little information about the new CEO's quality. If the CEO turnover is prompted by low stock returns (Low ret.), stock prices tend to rise more on good earnings news for new CEOs – and such an additional stock price increase is both large (0.63 per cent) and highly significant at a better than 1 per cent level. As for new CEOs appointed following a period of high stock returns, stock prices do not tend to rise more on good earnings news because the estimate for β_2 is -0.16 and insignificant. Similarly, using low sales growth and external appointment (External) as proxies for "challenging times", we also find some support for **H1B**. But we fail to find any evidence for **H1B** using low ROA (Low ROA) and high stock return volatility (High vol.) as proxies for "challenging times". We focus on the results where we use low stock return as a proxy for a challenging time because stock returns may aggregate the effect of other proxies. These results lend strong support for **H1B** where we posit that the new-CEO quality effect is more pronounced for CEOs appointed during a challenging time as compared with those appointed as part of a normal succession.

It is possible that "good earnings news" in new-CEO quarters could be partially a result of the reversal of the initial earnings bath if research analysts did not fully identify the extent of the bath or its impact on subsequent quarters' EPS. We find some weak evidence for this relation. In our sample, for a new CEO, a substantial bath in earnings in any of the previous four quarters[18]

[18] If the firm records a discretionary accrual that is a one standard deviation below the median of its industry peers in a given quarter, we flag this firm-quarter as a bath firm-quarter. We set the binary variable POSTBATH to 1 if any of the previous four quarters is a bath quarter, and 0 otherwise. Firms with the same two-digit SIC head belong

is significantly (at a level better than 1 per cent) associated with a larger size of good earnings news. However, the coefficient is small. The correlation coefficient of 0.035 suggests that a large earnings bath in any previous four quarters is, on average, associated with an increase in good earnings news by 0.035 cents for each dollar of share price. Unsurprisingly, our findings are not affected by including the control for earnings baths in previous quarters.

Turning to the new-CEO honeymoon effect, we expect this effect to also be more pronounced for CEOs appointed during a challenging time (**H2B**). That is, we expect that β_5 on $BAD \times NEW$ is positive for challenging CEO turnover events (in Panel B of Table 5) and around zero for normal CEO turnover events (in Panel C of Table 5). Regression results also lend some support to the new-CEO honeymoon effect during a difficult time (**H2B**). Similar to **H1B**, the evidence for **H2B** is present when we use low stock return (Low ret.), external appointment (External) or low sales growth as proxies for "challenging times". For example, stock prices, on average, drop by 0.67 per cent less and are significant at a 5 per cent level on bad earnings news announced by firms that recently appointed new CEOs following a period of stock price underperformance as compared with firms with established CEOs (in Panel B of Table 5). By contrast, if the firm's stock has performed well (High and mid stock ret.), the new-CEO honeymoon effect is insignificant at 0.10 per cent with a $p-$value of 0.35. These results suggest that investors appear to take into account the context of CEO turnover to assess whether bad earnings news in the early stage of a CEO tenure is less or more informative of the CEO's quality (thus lending support for **H2B**).

5.4. Information environment

In a less transparent informational environment, earnings news can resolve a significant amount of uncertainty regarding the new CEO's quality. Thus, we hypothesize that the new-CEO

to the same industry. We estimate the modified Jones model by industry for each quarter to obtain the normal amount of accruals. The difference from total accruals and normal accruals is discretionary accruals.

quality effect should increase in the asymmetry of the firm's informational environment, as proxied for by the level of analyst following (**H1C**). As for bad earnings news, we expect the honeymoon effect to be stronger among firms with more analyst coverage **(H2C**) because analysts can help investors focus on the firm's long-term prospects.

[Insert Table 6 about here]

In addition to the explanatory variables in equation (1), we include the number of analysts (ANALYST), an interaction term between ANALYST and good earnings news from new CEOs and that between ANALYST and bad earnings news from new CEOs to test **H1C** and **H2C**, using equation (2):

$$\begin{aligned} CAR(-1,1) = {} & \theta_0 + \theta_1 \times ANALYST + \theta_2 \times GOOD \times OUT \\ & + \theta_3 \times GOOD \times NEW + \theta_4 \times GOOD \times NEW \times ANALYST \\ & + \theta_5 \times BAD + \theta_6 \times BAD \times OUT \\ & + \theta_7 \times BAD \times NEW + \theta_8 \times BAD \times NEW \times ANALYST \\ & + \theta_9 \times GOOD \times UE + \theta_{10} \times BAD \times UE \\ & + \boldsymbol{\omega} \times \boldsymbol{NONLINEAR} + \boldsymbol{\tau} \times \boldsymbol{Yearquarter} + \boldsymbol{\rho} \times \boldsymbol{CONTROL} + \varepsilon \end{aligned} \quad (2)$$

Panel A in Table 6 presents the regression results. We find the estimate on $GOOD \times NEW \times ANALYST$ (θ_4) to be negative and significant as expected (lending support to **H1C**). If the firm managed by a new CEO is followed by one additional analyst, the new-CEO quality effect decreases by 0.08 per cent, which is significant at the 5 per cent level. We find that the estimate on $BAD \times NEW \times ANALYST$ (θ_8) is positive and significant as expected (lending support to **H2C**). If a firm managed by a new CEO is covered by one additional analyst, the stock price tends to fall by 0.08 per cent less on news of missing analyst forecasts, and this difference is significant at the 10 per cent level.

The number of analysts following a firm does not vary dramatically among firms, with 50 per cent of firms followed by one to four analysts and only 10 per cent of firms followed by more than 10 analysts. Thus, in order to ensure that our results are not driven by extreme observations,

we also estimate regressions specified in equation (1) in three subsamples with different analyst coverage. Specifically, at the end of each calendar quarter, we sort firms into terciles based on the number of analysts following the firm. We run the regression specified in equation (1) in subsamples with low, middle and high levels of analyst coverage to test the information environment hypotheses (**H1C** and **H2C**). Panel B in Table 6 presents the regression results. Again, we find support for both the information environment hypothesis for new-CEO quality (**H1C**) and for the honeymoon effect (**H2C**). As the level of analyst coverage increases, the slope estimate on $GOOD \times NEW$ decreases from 1.32 to 0.05. That is, when a new-CEO firm is followed by more analysts (a proxy for an environment with lower information asymmetry), its good earnings news is associated with a smaller increase in stock price as compared with new-CEO firms followed by fewer analysts because the good earnings news resolves less information asymmetry. By contrast, as the level of analyst coverage increases, stock prices react less strongly to bad earnings news announced during the early stage of a CEO's tenure – the slope estimate on $BAD \times NEW$ increases from −0.17 to 1.41 as the level of analyst coverage increases.

6. Conclusion

The first few earnings announcements following high-profile CEO successions tend to attract a great deal of attention from the financial media. It is possible that earnings news reveals important information regarding the new CEO's quality, as suggested by Clayton et al. (2005). Clayton et al. (2005) find that the response in stock price to earnings news is stronger for new CEOs compared with outgoing CEOs, and they attribute this result to the richer information content in new CEOs' earnings news. We show that the period preceding CEO turnover is an inappropriate benchmark because it is an abnormal period – stock prices tend to rise less on good earnings news and drop more on bad earnings news for outgoing CEOs compared with established CEOs. We find that the difference in ERCs between periods with new CEOs and those with outgoing CEOs is partially driven by a weaker response in stock prices to earnings news from

outgoing CEOs. When analyzing the information content of earnings news during the period following CEO turnover, firms with established CEOs are the appropriate benchmark group. Our study uses this benchmark group and finds an asymmetric response in stock prices to earnings news from new CEOs. Stock prices tend to rise more on the news of meet-and-beat from firms with new CEOs, and this new-CEO quality effect is slightly more pronounced if the CEO is appointed during a challenging situation. Stock prices tends to fall by a smaller amount after news of an earnings miss from firms with new CEOs, and this new-CEO honeymoon effect is stronger for new CEOs appointed during difficult times. Interestingly, as the information environment becomes less transparent (or as a firm's analyst following decreases), stock prices rise more on the news of meet-and-beat from new CEOs compared with established CEOs. This finding suggests that in a more transparent environment, earnings news is a less important channel in disseminating information regarding the new CEO's quality and plan to investors. Similarly, firm transparency seems to assist investors in understanding the transitory nature of bad earnings news in the first year of CEO tenure. If the CEO-change firm is followed by a large number of analysts, its stock price tends to drop less significantly on the news of missing analyst forecasts compared with firms with established CEOs.

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Table 1 CEO turnover events

A. CEO turnover events from Audit Analytics, exclusions and linking with CRSP/Compustat and I/B/E/S

(1)	CEO turnover events	12,742
(2)	Less: Mergers/acquisition, bankruptcies, asset sales/spin-offs	1,162
		11,580
(3)	Merged with CRSP/Compustat	4,227
(4)	Merged with IBES	2,753

B. CEO turnover events by year

Year (quarter)	CEO turnover events (CRSP/Compustat/IBES)	as % of firms
2005	365	10.9
2006	387	11.2
2007	380	10.9
2008	430	13.0
2009	322	10.2
2010	276	8.8
2011	307	10.3
2012	286	10.1
Q1	795	28.9
Q2	686	24.9
Q3	609	22.1
Q4	552	20.1
Total (average)	2,753	10.7

C. CEO turnover events by industry

Industry	SIC header	CEO turnover events (CRSP/Compustat/IBES)	as % of unique firms
Agriculture, Forestry, Fishing	01-09	4	7.5
Mining	10-14	108	8.6
Construction	15-17	33	10.2
Manufacturing	20-39	1,199	10.6
Transportation	40-43	29	10.7
Public utilities	44-49	188	8.3
Wholesale trade	50-51	66	10.2
Retail trade	52-59	271	14.9
Finance, insurance, real estate	60-69	344	6.8
Services	70-89	511	10.7
Public administration	91-99	NA	NA
Total (average)			2,753

Table 2 Summary statistics

This table presents the means of important variables for new-CEO firm-quarters, outgoing-CEO firm-quarters and established-CEO firm-quarters and their differences in means. Asterisks ***, ** and * next to a coefficient estimate indicate significance levels of 1%, 5% and 10%, respectively. Standard errors are calculated assuming unequal variance in two samples. Appendix I includes definitions of variables.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	N	Mean	Median	SD	25th Pctile	75th Pctile	EST		OUT		NEW		Differences in means		
							N	Mean	N	Mean	N	Mean	OUT-EST	NEW-EST	NEW-OUT
Cumulative abnormal return															
CAR(-1,1)	42,157	0.14	0.01	8.93	-4.66	5.00	34,932	0.21	3,605	-0.82	3,620	0.41	-1.03***	0.20	1.23***
CAR(-1,1) (if UE>=0)	28,421	2.10	1.54	8.86	-2.70	6.52	23,709	2.12	2,291	1.42	2,421	2.50	-0.70***	0.38*	1.08***
CAR(-1,1) (if UE<0)	13,736	-3.90	-3.25	9.22	-8.30	1.02	11,223	-3.80	1,314	-4.93	1,199	-3.73	-1.13***	0.07	1.21***
Unexpected earnings															
BAD(t)	42,157	0.33	0.00	0.47	0.00	1.00	34,932	0.32	3,605	0.36	3,620	0.33	0.04***	0.01	-0.03***
UE(t)	42,157	0.04	0.06	0.92	-0.04	0.24	34,932	0.05	3,605	-0.03	3,620	-0.01	-0.08***	-0.06***	0.02
UE(t) (if UE>=0)	28,421	0.34	0.16	0.54	0.06	0.38	23,709	0.33	2,291	0.35	2,421	0.40	0.00	0.04***	0.04***
UE(t) (if UE<0)	13,736	-0.59	-0.18	1.20	-0.56	-0.05	11,223	-0.55	1,314	-0.69	1,199	-0.83	-0.08***	-0.10***	-0.02
UE(t)×GOOD	42,157	0.23	0.06	0.47	0.00	0.24	34,932	0.23	3,605	0.22	3,620	0.26	0.00	0.04***	0.04***
UE(t)×BAD	42,157	-0.19	0.00	0.74	-0.04	0.00	34,932	-0.18	3,605	-0.25	3,620	-0.28	-0.08***	-0.10***	-0.02
UE(t)×|UE(t)| (if UE>=0)	28,421	0.40	0.02	1.60	0.00	0.14	23,709	0.38	2,291	0.45	2,421	0.54	0.06*	0.16***	0.10*
UE(t)×|UE(t)| (if UE<0)	13,736	-1.78	-0.03	8.57	-0.31	0.00	11,223	-1.58	1,314	-2.38	1,199	-3.06	-0.80***	-1.49***	-0.69
UE(t)×|UE(t)|×GOOD	42,157	0.27	0.00	1.32	0.00	0.06	34,932	0.26	3,605	0.29	3,620	0.36	0.02	0.10***	0.08**
UE(t)×|UE(t)|×BAD	42,157	-0.58	0.00	4.96	0.00	0.00	34,932	-0.51	3,605	-0.87	3,620	-1.01	-0.36***	-0.51***	-0.15

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	N	Mean	Median	SD	25th Pctile	75th Pctile	EST		OUT		NEW		Differences in means		
							N	Mean	N	Mean	N	Mean	OUT-EST	NEW-EST	NEW-OUT
Firm characteristics															
MB(t-1)	42,157	6.07	6.00	2.69	4.00	8.00	34,932	6.13	3,605	5.84	3,620	5.71	-0.29***	-0.43***	-0.14**
SIZE(t-1)	42,157	5.90	6.00	2.72	4.00	8.00	34,932	5.90	3,605	5.87	3,620	5.91	-0.03	0.01	0.04
EVOL(t-1)	42,157	0.03	0.01	0.07	0.00	0.02	34,932	0.02	3,605	0.03	3,620	0.04	0.004***	0.014***	0.010***
DA_ROA(t)	42,157	0.00	0.00	0.07	-0.02	0.01	34,932	-0.004	3,605	-0.002	3,620	-0.003	0.002**	0.001	-0.001
market-to-book (t)	42,157	4.21	2.23	86.16	1.43	3.60	34,932	4.36	3,605	3.37	3,620	3.58	-0.98*	-0.78	0.20
Ln size(t)	42,157	7.09	6.96	1.61	5.96	8.04	34,932	7.09	3,605	7.08	3,620	7.10	-0.01	0.02	0.02

Table 3 Correlation matrix

This table contains pairwise Pearson correlation coefficients among important variables. Appendix I includes definitions of variables. Asterisks ***, ** and * next to a coefficient estimate indicate significance levels of 1%, 5% and 10%, respectively.

	CAR(-1,1)	BAD	GOOD×UE	BAD×UE	MB	SIZE	EVOL
BAD	-0.31***						
GOOD×UE	0.22***	-0.34***					
BAD×UE	0.16***	-0.37***	0.13***				
MB	0.01*	-0.08***	-0.13***	0.14***			
SIZE	0.02***	-0.15***	-0.20***	0.21***	0.28***		
EVOL	0.00	0.06***	0.18***	-0.27***	-0.24***	-0.16***	
DA_ROA	-0.04***	0.01**	0.02***	-0.01***	-0.04***	-0.05***	0.00

Table 4 Stock price response to new-CEO earnings news

This table presents estimation results for the new-CEO quality effect and the honeymoon effect for all CEO turnover events. Columns (1) to (3) present regression results based on the following equation:

$$\begin{aligned} CAR(-1,1) = {} & \beta_0 + \beta_1 \times GOOD \times OUT + \beta_2 \times GOOD \times NEW \\ & + \beta_3 \times BAD + \beta_4 \times BAD \times OUT + \beta_5 \times BAD \times NEW \\ & + \beta_6 \times GOOD \times UE + \beta_7 \times BAD \times UE \\ & + \boldsymbol{\theta} \times \boldsymbol{NONLINEAR} + \boldsymbol{\mu} \times \boldsymbol{CONTROL} + \boldsymbol{\tau} \times \boldsymbol{Yearquarter} + \varepsilon \end{aligned} \quad (1)$$

The regression in Column (1) ignores all control variables, in Column (2) ignores the level of earnings management and its interaction with bad earnings news (DA_ROA and $BAD \times DA\_ROA$). Column (2) includes all control variables. Estimation results for year-quarter dummies are omitted. Regressions include firm fixed effects. Robust standard errors are clustered by year-quarter. p-values are in brackets. Asterisks ***, ** and * next to a coefficient estimate indicate significance levels of 1%, 5% and 10%, respectively. Appendix I includes a detailed description of variables.

	(1)	(2)	(3)
GOOD×OUT (β1)	-0.33*	-0.33**	-0.33**
	(0.052)	*(0.044)*	*(0.046)*
GOOD×NEW (**H1A**: β2>0)	0.51***	0.48**	0.46**
	(0.007)	*(0.013)*	*(0.011)*
BAD (β3)	-3.42***	-3.55***	-3.52***
	(0.000)	*(0.000)*	*(0.000)*
BAD×OUT(β4)	-0.53*	-0.54*	-0.54*
	(0.097)	*(0.090)*	*(0.094)*
BAD×NEW (**H2A**: β5>0)	0.62**	0.52*	0.52*
	(0.041)	*(0.057)*	*(0.066)*
GOOD×UE(β6)	8.54***	8.18***	8.16***
	(0.000)	*(0.000)*	*(0.000)*
BAD×UE (β7)	0.74***	1.01***	1.17***
	(0.000)	*(0.000)*	*(0.000)*
GOOD×UE(t)×|UE(t)|	-1.80***	-1.73***	-1.74***
	(0.000)	*(0.000)*	*(0.000)*
BAD×UE(t)×|UE(t)|	-0.08***	-0.11***	-0.11***
	(0.001)	*(0.000)*	*(0.000)*
MB		0.04	0.04
		(0.452)	*(0.442)*
SIZE		-0.69***	-0.71***
		(0.000)	*(0.000)*
EVOL		-1.70	-2.08
		(0.222)	*(0.173)*
DA_ROA			-9.01***
			(0.001)
BAD×MB		0.05	0.05
		(0.214)	*(0.191)*
BAD×SIZE		0.13***	0.13***
		(0.001)	*(0.001)*
BAD×EVOL		5.87***	6.22***
		(0.002)	*(0.001)*

	(1)	(2)	(3)
BAD×DA_ROA			6.59**
			(0.013)
Const. (β0)	0.44***	4.11***	4.03***
	(0.000)	*(0.000)*	*(0.000)*
Adj R-sqr(%)	14.7	15.3	15.4
N	42,157	42,157	42,157
F-test for equality in coefficients			
GOOD×NEW -GOOD×OUT	0.84***	0.81***	0.79***
	(0.00)	*(0.00)*	*(0.00)*
BAD×NEW -BAD×OUT	1.15**	1.06**	1.06**
	(0.02)	*(0.03)*	*(0.03)*

Table 5 CEO turnover in challenging and normal situations and stock price response to new-CEO earnings news

This table presents estimation results for the new-CEO quality effect and the honeymoon effect for challenging and normal CEO turnovers. We define a challenging CEO turnover situation as one of the six alternative measures during the 12 months prior to CEO turnover (refer to Appendix I for more details). *Panel A* reports pairwise correlation coefficients among the indicator variables for challenging CEO turnover using these six alternative definitions. *Panel B* presents regression results for which we estimate equation (1) on subsamples containing firm-quarters with established CEOs and outgoing and new CEO firm-quarters surrounding one of the six types of challenging CEO turnover. Estimation results for control variables, nonlinear terms and year-quarter dummies are omitted. Regressions include firm fixed effects. Standard errors are clustered by year-quarter. p-values are in brackets. Asterisks ***, ** and * next to a coefficient estimate indicate significance levels of 1%, 5% and 10%, respectively. Appendix I includes a detailed description of variables.

$$\begin{aligned} CAR(-1,1) = {} & \beta_0 + \beta_1 \times GOOD \times OUT + \beta_2 \times GOOD \times NEW \\ & + \beta_3 \times BAD + \beta_4 \times BAD \times OUT + \beta_5 \times BAD \times NEW \\ & + \beta_6 \times GOOD \times UE + \beta_7 \times BAD \times UE \\ & + \boldsymbol{\theta} \times \boldsymbol{NONLINEAR} + \boldsymbol{\mu} \times \boldsymbol{CONTROL} + \boldsymbol{\tau} \times \boldsymbol{Yearquarter} + \varepsilon \end{aligned} \quad (1)$$

A. Correlation coefficients among six indicator variables for challenging CEO turnover.

	Nonroutine	External	Low ROA	Low ret.	High vol.
External	0.08***				
Low ROA	0.15***	0.17***			
Low ret.	0.20***	0.22***	0.38***		
High vol.	0.16***	0.20***	0.47***	0.32***	
Low sales growth	0.17***	0.18***	0.44***	0.44***	0.35***

B. Regression results on subsamples containing established-CEO firm-quarters and firm-quarters surrounding challenging CEO turnover

	(1) Nonroutine	(2) External	(3) Low ROA	(4) Low ret.	(5) High vol.	(6) Low sales growth
GOOD×OUT (β1)	-0.98***	-0.59	-1.20***	-0.50**	-0.66	-0.62**
	(0.00)	*(0.10)*	*(0.00)*	*(0.02)*	*(0.11)*	*(0.01)*
GOOD×NEW (**H1B**: β2>0)	0.39	0.48*	0.28	0.63***	0.51	0.53**
	(0.15)	*(0.09)*	*(0.20)*	*(0.01)*	*(0.13)*	*(0.05)*
BAD (β3)	-3.51***	-3.52***	-3.55***	-3.56***	-3.55***	-3.53***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
BAD×OUT(β4)	-0.91*	-0.89	-0.45	-0.32	-0.87*	-0.23
	(0.09)	*(0.16)*	*(0.37)*	*(0.31)*	*(0.06)*	*(0.50)*
BAD×NEW (**H2B**: β5>0)	0.46	0.78**	0.60	0.67**	0.19	0.64*
	(0.17)	*(0.05)*	*(0.10)*	*(0.03)*	*(0.31)*	*(0.06)*
GOOD×UE(β6)	8.12***	8.21***	8.03***	8.10***	8.04***	8.15***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
BAD×UE (β9)	1.32***	1.16***	1.24***	1.11***	1.16***	1.16***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Const. (β0)	3.86***	4.13***	3.97***	3.92***	4.17***	3.85***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Adj R-sqr(%)	15.3	15.3	15.3	15.5	15.3	15.3
N	37,338	37,095	37,840	40,332	37,693	39,044

C. Regression results on subsamples containing established-CEO firm-quarters and firm-quarters surrounding normal CEO turnover.

	(1) Routine	(2) Internal	(3) High&mid ROA	(4) High&mid stock ret.	(5) Low&mid vol.	(6) High&mid sales growth
GOOD×OUT (β1)	0.01	-0.21	0.10	0.02	-0.17	0.00
	(0.95)	*(0.27)*	*(0.65)*	*(0.95)*	*(0.38)*	*(1.00)*
GOOD×NEW (**H1B**:β2=0)	0.22	0.46	0.54**	-0.16	0.42**	0.33
	(0.32)	*(0.12)*	*(0.02)*	*(0.28)*	*(0.03)*	*(0.30)*
BAD (β3)	-3.53***	-3.50***	-3.47***	-3.46***	-3.49***	-3.49***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
BAD×OUT(β4)	-0.49	-0.66*	-0.73**	-1.36	-0.29	-0.96**
	(0.15)	*(0.05)*	*(0.03)*	*(0.12)*	*(0.47)*	*(0.05)*
BAD×NEW **(H2B**: β5=0)	0.55	0.27	0.45	0.10	0.75**	0.46
	(0.17)	*(0.51)*	*(0.20)*	*(0.35)*	*(0.02)*	*(0.35)*
GOOD×UE(β6)	8.36***	8.25***	8.46***	8.37***	8.42***	8.32***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
BAD×UE (β9)	1.12***	1.31***	1.25***	1.38***	1.30***	1.31***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Const. (β0)	4.25***	4.18***	4.33***	4.34***	4.13***	4.44***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Adj R-sqr(%)	15.5	15.5	15.4	15.3	15.5	15.4
N	38,917	39,635	39,249	36,760	39,398	38,046

Table 6 Analyst coverage and stock price response to new-CEO earnings news

This table presents estimation results for the new-CEO quality effect and the honeymoon effect conditioned on the level of analyst coverage. Panel *A* reports results for which we interact good earnings news from new CEOs and bad earnings news from new CEOs with number of analysts. The regression uses the following equation:

$$CAR(-1,1) = \theta_0 + \theta_1 \times ANALYST + \theta_2 \times GOOD \times OUT + \theta_3 \times GOOD \times NEW + \theta_4 \times GOOD \times NEW \times ANALYST + \theta_5 \times BAD + \theta_6 \times BAD \times OUT + \theta_7 \times BAD \times NEW + \theta_8 \times BAD \times NEW \times ANALYST + \theta_9 \times GOOD \times UE + \theta_{10} \times BAD \times UE + \boldsymbol{\omega} \times \boldsymbol{NONLINEAR} + \boldsymbol{\tau} \times \boldsymbol{Yearquarter} + \boldsymbol{\rho} \times \boldsymbol{CONTROL} + \varepsilon$$

Panel B reports regression results from equation (1) on firms with a high, middle or low level of analyst coverage. We classify a firm as having high (middle or low) analyst coverage if it is ranked among the top 1/3 (middle 1/3 or bottom 1/3) of all firms in terms of number of analysts following in a calendar quarter.

Estimates for the slope coefficients on the nonlinear terms (***NONLINEAR***), control variables (***CONTROL***) and year-quarter indicator variables (***Yearquarter***) are omitted. Regressions include firm fixed effects. Standard errors are clustered by year-quarter. *p*-values are in brackets. Asterisks ***, ** and * next to a coefficient estimate indicate significance levels of 1%, 5% and 10%, respectively. Appendix I includes a detailed description of variables.

A. The new-CEO quality effect and the honeymoon effect interacted with the number of analysts

	CAR(-1,1)
ANALYST	0.00
	(1.00)
GOOD×OUT	-0.34**
	(0.04)
GOOD×NEW	1.02**
	(0.02)
GOOD×NEW×ANALYST (**H1C**: θ4 <0)	-0.08**
	(0.01)
BAD	-3.53***
	(0.00)
BAD×OUT	-0.54*
	(0.10)
BAD×NEW	0.09
	(0.87)
BAD×NEW×ANALYST (**H2C**: θ8>0)	0.08*
	(0.09)
GOOD×UE	8.14***
	(0.00)
BAD×UE	1.19***
	(0.00)
Const	4.04***
	(0.00)
Adj R-sqr	15.4
N	42,157

B. The new-CEO quality effect and the honeymoon effect among firms with low, middle and high levels of analyst coverage.

	Number of analysts		
	Low	Medium	High
GOOD×OUT	-0.63*	-0.70	0.09
	(0.09)	*(0.11)*	*(0.71)*
GOOD×NEW (**H1C**: decreasing)	1.32**	0.31	0.05
	(0.02)	*(0.21)*	*(0.41)*
BAD	-4.05***	-3.73***	-2.66***
	(0.00)	*(0.00)*	*(0.00)*
BAD×OUT	-1.10*	-1.80***	0.38
	(0.07)	*(0.00)*	*(0.50)*
BAD×NEW (**H2C**: increasing)	-0.17	0.20	1.41***
	(0.39)	*(0.37)*	*(0.00)*
GOOD×UE	6.87***	8.54***	10.77***
	(0.00)	*(0.00)*	*(0.00)*
BAD×UE	1.02***	1.45***	1.51***
	(0.00)	*(0.00)*	*(0.00)*
Const	2.00***	4.96***	5.30***
	(0.00)	*(0.00)*	*(0.00)*
Adj R-sqr	17.2	17.5	13.7
N	13,023	13,711	15,423

Appendix I Variable definitions

Variable	Definition (Compustat code)
A	Total assets at the end of each quarter (atq).
Accruals	Total accruals, equal to income before extraordinary items minus CFO.
AR	Receivables at the end of each quarter (rectq).
BAD	An indicator variable that takes the value of 1 if UE is negative and 0 otherwise.
Book value of equity	The book value of equity a firm is the book value of stockholders' equity (seqq), plus balance sheet deferred taxes (txditcq) and minus the book value of preferred stock. Depending on availability, we use the redemption (pstkrvq), liquidation (pstkl) or par value (pstkq) (in that order) to estimate the book value of preferred stock. If stockholders' equity is unavailable, we measure stockholders' equity as the book value of common equity (ceqq) plus the par value of preferred stock (pstkq), or the book value of assets (atq) minus total liabilities (ltq) (in that order).
CAR(-1,1)	Cumulative abnormal returns during the three-day period around earnings announcement date, computed as the raw buy-and-hold return less the return to the portfolio matched on size and book-to-market portfolio, as in Fama and French (1992). At the end of June in each year, we classify all CSRP stocks (with share code of 10 and 11, or, US common equities) into 25 portfolios by size at the end of June of the current year and by book-to-market ratio at the end of December of the previous year. Portfolio returns are equal-weighted returns.
CFO	To obtain quarterly cash flow from operations in the second, third and fourth fiscal quarter, we subtract accumulated year-to-date cash flow from operations ended in ended in the previous quarter from that ended in this quarter (oancfy); quarterly cash flow from operations in the first fiscal quarter equals to the year-to-date operating cash flow.
DA_ROA	Discretionary accruals estimated cross-sectionally from the modified Jones Model (Dechow et al., 1995). A larger DA indicates a higher level of discretionary accruals or upward earnings management. Appendix II includes a description of the estimation method.
EVOL	Volatility (standard deviation) in earnings (niq) over quarter $t-3$ to quarter t scaled by the market capitalization (cshoq × prccq) of the firm at the end of quarter t.
GOOD	An indicator variable that takes the value of 1 if UE is nonnegative, and 0 otherwise.
Ln size	Ln size is the natural log of market value is of equity (prcc ×cshoq).
Market-to-book	Market value is the market value of equity (prcc × cshoq). Book is the book value of equity.
MB	The market-to-book decile number of a firm. At the end of each calendar quarter, all firms are sorted into 10 portfolios based on their market-to-books ratios.
BAD	An indicator variable that takes the value of 1 if UE is negative, and 0 otherwise.
NEW	NEW equals to 1 if the earnings announcement date is within 120 calendar days from the beginning of CEO tenure, and 0 otherwise.
$NORM_i/CHAL_i$	$NORM_i$ takes the value of 1 ($CHAL_i$ takes of value of 0) if the CEO turnover occurs in a normal (challenging) situation. All CEO turnover events occur in either a normal situation or a challenging situation. We use six alternative proxies for a challenging turnover situation: the CEO turnover is nonroutine; the new CEO is appointed externally; the company's ROA over the 12 months prior to the CEO turnover falls in the lowest 1/3 among its industry peers; stock return from 24 months to 12 months prior to CEO changes falls in the lowest 1/3 among its industry peers; the volatility (VOL) over the 12 months prior to CEO turnover is among the highest 1/3 in the industry; the 12-month sales

	growth prior to CEO change falls in the lowest 1/3 among its industry peers. An industry includes all firms sharing the same two-digit SIC head.
UE	Unexpected earnings is the difference between actual quarterly earnings per share and expected earnings per share (in cents), scaled by the closing stock price (in dollars) five trading day before the earnings announcement (as in DellaVigna and Pollet, 2009). We use the median of all valid consensus analyst forecasts as a proxy for expected earnings. A valid forecast has to be revised or confirmed to be valid during the 30-day period prior to the earnings announcement. Analyst forecast earnings per share are adjusted for share splits and other corporate events between the forecast date and the earnings announcement date.
OUT	OUT equals to 1 if the earnings announcement date is within 120 calendar days prior to the end of CEO tenure, and 0 otherwise.
PPE	Gross book value of property, plant and equipment (ppegtq). We assume a linear growth rate of PPE and fill in the missing PPE observations if needed.
RET12M	Accumulated stock returns over previous 12 months.
ROA	Net profit (niq) over the four quarters ending in quarter t divided by total assets (atq) as the end of quarter t.
SALESGRWTH12M	Sales growth is the percentage growth in rolling four-quarter sales over the rolling four-quarter sales ending in the same fiscal quarter of last year.
SIZE	The size decile number of a firm. At the end of each calendar quarter, all firms are sorted into deciles based on their size. Size is the market value is of equity (prcc ×cshoq).
VOL	Annualized daily stock return volatility, or standard deviation, in a calendar year.

Appendix II Using performance-adjusted modified Jones model to estimate discretionary accruals

We run the following cross-sectional model for each two-digit SIC-quarter group:

$$\frac{\boldsymbol{Total\ Accruals_t}}{\boldsymbol{A_{t-1}}} = \boldsymbol{\alpha_0} + \boldsymbol{\alpha_1}\frac{\boldsymbol{1}}{\boldsymbol{A_{t-1}}} + \boldsymbol{\alpha_2}\frac{\boldsymbol{\Delta S_t}}{\boldsymbol{A_{t-1}}} + \boldsymbol{\alpha_3}\frac{\boldsymbol{PPE_t}}{\boldsymbol{A_{t-1}}} + \boldsymbol{\alpha_4 ROA_t} + \boldsymbol{\varepsilon_t}\ , \quad (1)$$

where Total 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 equipment.[1] We require at least 15 observations for each cross-sectional estimate. Coefficient estimates from equation (1) are used to estimate the normal levels of accruals as below:

$$Norm\_accruals_t = \hat{\alpha}_0 + \hat{\alpha}_1\frac{1}{A_{t-1}} + \hat{\alpha}_2\frac{\Delta S_t - \Delta AR_t}{A_{t-1}} + \hat{\alpha}_3\frac{PPE_t}{A_{t-1}} + \hat{\alpha}_6\boldsymbol{ROA_t}, \quad (2)$$

where ΔAR_t is the change in accounts receivable. Performance-adjusted discretionary accruals (DA_ROA_t) is the difference between total accruals and the fitted normal accruals.

[1] Missing quarterly gross PPE values are filled in by linear interpolation.

Appendix III Routine CEO turnover and external appointment

This appendix summarizes the procedure to identify routine CEO turnover and externally appointed CEOs.

Audit Analytics records a CEO change event as an 'action' with a 'reason'. It also reports whether the departing CEO has retained any position within the company. A CEO change is routine when the departing CEO retires after 60 years of age or the departing CEO retains a position within the company. If the departing CEO retires before 60 or the reason for retirement is nonroutine (e.g. investigation, health, change in control and disagreement), the CEO change is classed as nonroutine. If the action of CEO departure is recorded as death, dismissal, resignation or ceasing employment of a CEO younger than 60, the CEO change is classed as nonroutine. For CEO turnover events with insufficient information to categorize it as routine or nonroutine, we rely on the gap between CEO departing and new CEO in position to determine whether a CEO turnover is nonroutine. If a firm appoints a new CEO more than 30 days after his/her predecessor leaves, we treat the CEO change as nonroutine. However, 356 CEO appointments (or 13 per cent of total CEO turnover events) cannot be matched with a CEO departure, and we do not have sufficient information to determine whether the CEO turnover is routine. After reading a sample of related SEC filings, we believe that they tend to be genuine CEO turnover events and label these as other.[2] Our sample contains more routine than nonroutine turnover events – each type accounts for 56 and 44 per cent of CEO turnover events, respectively.[3]

We examine the reason for a CEO appointment to decide whether the new CEO is promoted internally or hired externally. If the new CEO is appointed to assume an additional position or as a result of a position change within company, the new CEO is an internal hire; otherwise, the new CEO is an external hire. A total of 220 CEO

[2] For unmatched CEO appointments, we randomly sampled 20 cases and reviewed their filings. These appointments are mostly genuine CEO turnover events. They are neither predominantly routine nor nonroutine turnover events. These appointments cannot be matched with a departure for the following reasons: (1) the departure of the preceding CEO is reported in the news or included in the filings but not recorded in the database; (2) the CEO departure occurred in 2004, before the executive turnover data become available in Audit Analytics; (3) data entry errors and not CEO turnover events.

[3] Hazarika et al. (2012), a recent study on earnings management, board discipline and forced CEO turnover events, record 20% of CEO turnover events as forced turnover and 80% as voluntary turnover. We are aware that this proportion of forced turnover is smaller than our 44% of nonroutine CEO turnover in our sample. Two reasons can be driving the difference: (1) Forced turnover is a subcategory of nonroutine turnover; for example, a sudden CEO resignation is a voluntary change (not a forced change) in their paper but can be nonroutine in our paper; (2) Our paper includes all CEO turnover events in CRSP/Compustat/IBES companies instead of the S&P 1000 companies in their paper. Small companies have less scope than large companies to implement a planned CEO succession; thus, our sample can contain a higher percentage of nonroutine CEO changes than their S&P 1000 sample.

departures (or 8 per cent of total CEO turnover events) cannot be matched with a CEO appointment, and we lack the information to determine whether the firms promote new CEOs internally or hire externally after these CEO departures. We reviewed a random sample of related SEC filings and found that they mostly tended to be genuine CEO turnover events. Thus, we categorize them as the other type of CEO turnover.[4] About 63 per cent of the appointments are internal promotions and about 37 per cent of new CEOs are hired externally.[5]

[4] For unmatched CEO departures, we randomly sampled 20 cases and reviewed their filings. These departures are mostly genuine CEO turnover events. These departures cannot be matched with an appointment for the following reasons: (1) the CEO departure occurred in 2004, before the executive turnover data became available in Audit Analytics; (2) data entry errors.

[5] In Parrino (1997), external new appointments account for 15% of CEO appointments in the Forbes sample from 1969 to 1989. This percentage is lower than the percentage of external appointments, 37%, 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/IBES firms, while Parrino (1997) focuses on large firms. The inclusion of small firms could increase percentage of external succession in our study.