

Who Makes the Call on Goodwill Impairment Charges: CEOs or CFOs?

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Goodwill impairment involves subjective estimations and a high degree of managerial discretion. However, it remains unclear whether CEOs or CFOs have more influence on goodwill valuation. We address the question by investigating the relation between executives' equity incentives and goodwill impairments. We find that firms with higher CEO or CFO equity incentives report lower annual goodwill impairments. Interestingly, the negative relation is stronger for CFO equity incentives. Further, we conjecture and find that the relative influence of CEOs and CFOs on goodwill impairments differs in a setting involving executive turnovers. Specifically, we find that a new CFO has no significant effect on impairment decisions. In contrast, a new CEO is associated with a higher probability of recording a large goodwill impairment, presumably to engage in "big bath" accounting. Taken together, our results suggest that, while incumbent CFOs are in charge of routine review of goodwill valuation, new CEOs have the final authority on large-impairment decisions.

Keywords: goodwill impairment, CEO/CFO incentives, earnings management

INTRODUCTION

Over the past two decades the Financial Accounting Standards Board (FASB) has issued seven accounting standard updates with the intention of improving goodwill reporting while simplifying the valuation process. Goodwill accounts for 18% of total assets of an average public firm (in our sample), making it one of the most valuable assets on the balance sheet. Since 2001, the FASB requires firms to assess the value of reported goodwill at least annually and record an impairment charge to earnings if the asset is deemed to have lost its value. Prior research shows that managers have strong incentives to delay goodwill write-off, such as to avoid sending a negative signal about future cash flow or violating debt covenants (Beatty and Weber 2006). When an impairment is recognized, the average amount of loss is 150% of net income. The assessment of potential impairment, however, involves estimating the subjective fair value of reporting units and a great degree of managerial discretion. Thus, it begs the questions: who makes the ultimate call on goodwill impairments – CEOs or CFOs?

CFOs, on the one hand, may ultimately decide the timing and amount of goodwill impairment. They are the primary responsible party that oversees all aspects of financial reporting, whereas CEOs are mainly responsible for the strategic operations of a firm (Geiger and North 2006; Feng, Ge, Luo, and Shevlin 2011). Given their unique position with respect to the management of a firm's financial system, CFOs have an informational advantage over the subjective valuation of goodwill. Equity compensation, external reputation and job security may incentivize CFOs to exercise discretion in reporting goodwill impairment losses (Graham, Harvey and Rajpogal 2005). Further, in the pre-SOX period, CFOs' equity incentives have a stronger association with accruals earnings management than CEOs' equity incentives (Jiang, Petroni, and Wang 2010).

However, CFOs are agents of CEOs (Graham and Harvey 2001), and CEOs have the power to replace CFOs when conflict of interest arises (Mian 2001; Fee and Hadlock 2004). The equity compensation of CEOs constitutes a significantly larger share of the total compensation than that of CFOs. Since goodwill impairment has an immediate and significant impact on current earnings, CEOs may delay the write-off to avoid negative consequences such as firm devaluation and lower compensation. In addition, recording goodwill write-off is essentially an admission of CEOs' overpayment of the acquired firm or their failure to extract value from the past acquisitions (Roychowdhury and Martin 2013). Consistent with the argument, Beatty and Weber (2006) document that CEOs who are more likely to have affected the original acquisition are less likely to impair goodwill.

Given the implications of impairment charges and the respective power of CEOs and CFOs, it is unclear which executive is more responsible for making decisions on the timing and amount of goodwill impairment. We investigate the research question using two settings. First, we test the relative influence of CEOs and CFOs during annual routine goodwill valuation (i.e., firm-years without executive turnovers). Since executives' decision-making is unobservable, we test the relation between goodwill impairment and CEOs' and CFOs' equity incentives to draw the inference on the relative influence of the two executives. Following prior studies (e.g., Bergstresser and Philippon 2006; Jiang et al. 2010; Feng et al. 2011), we use an equity incentive measure that captures the share of an executive's total compensation that would come from a one percentage increase in the share price of the firm. Second, we compare the effect of new CEOs on the likelihood of recording a large goodwill impairment to that of CFOs.

We begin our analysis by estimating a Tobit regression to test the relation between firms' annual goodwill impairment and executives' equity incentive ratios. Using a sample from 2007 to 2017, we find goodwill impairment to be negatively associated with equity incentives of both CEOs and CFOs, suggesting that managers whose compensations are more sensitive to share price declines record less goodwill impairment loss. However, the relation is stronger for CFOs' equity incentives than those of CEOs. Specifically, a one percentage point increase in CFOs' equity incentive ratio lowers the impairment amount (scaled by total assets) by eight basis points, whereas the same increase in CEOs' equity incentive ratio lowers the impairment by only three basis points. Our effect magnitude of CEOs' equity incentives is similar to the magnitude documented in Bergstresser and Philippon 2006, which examines the effect of CEOs' equity incentives on accruals in general. These results suggest that, for the annual routine goodwill write-offs, CFOs have a stronger influence than CEOs.

Next, we use executive turnovers as a setting to investigate the impact of a new CEO and CFO on goodwill valuation, and thus the relative influence of the respective executive. Using a Probit regression, we find that a new CFO has no significant effect on impairment decisions. In contrast, a new CEO is associated with a higher probability of recording a large goodwill impairment. This finding is consistent with anecdotal evidence often reported by financial press that CEO changes coincide with large goodwill impairment charges. For example, in 2010 the new CEO of Bank of America recorded a \$12.4 billion goodwill impairment, and in 2012 the new CEO of Hewlett Packard recorded a \$13.7 billion of impairment. The conjecture is that new CEOs engage in "big bath" accounting with the intention of starting their tenure with a clean slate. Our collective results suggest that, while incumbent CFOs are in charge of routine review of goodwill valuation, new CEOs have the final authority on large-impairment decisions.

Last, we conduct a cross-sectional analysis to test whether executive tenure exerts a role in determining the relation between executive equity incentives and goodwill valuation. We use executive tenure as a proxy

for job security. We conjecture that an executive with a longer tenure should be less concerned about being fired for missing a profit target, and thus more willing to report a goodwill impairment loss. Consistent with the prediction, we find that the negative relation between CEOs' and CFOs' equity incentives and goodwill write-offs is mitigated by the length of executive tenure.

We contribute to the literature that examines the factors affecting goodwill valuation and impairment. Hayn and Hughes (2006) show that characteristics of the original acquisitions are powerful predictors of eventual goodwill write-offs. Beatty and Weber (2006) find that managers delay the recognition of impairment losses to avoid violating debt covenants. Ramanna and Watts (2012) document that CEO's cash bonus influences impairment timing. These studies, however, do not test the effect of CFOs on goodwill impairment. We extend the literature by demonstrating that both CEOs and CFOs have an effect on goodwill impairment decisions. Further, as stated in Geiger and North (2006), "there has been very little direct investigation of the CFO in the financial reporting process" (p. 782). Therefore, we complement prior studies by providing direct evidence of CFOs' influence on goodwill valuation.

Our research also augments the extant research that examines the effect of executive equity incentives on financial reporting and the relative roles played by CEOs and CFOs. For example, using a pre-SOX sample, Bergstresser and Philippon (2006) finds that CEOs' equity incentives are associated with higher total and discretionary accruals. Other studies investigate the relative importance of CEOs and CFOs in financial reporting quality. Jiang, et al. (2010) find that, in the pre-SOX period, CFOs' incentives are more strongly associated with discretionary accruals than those of CEOs. However, in the post-SOX period, they find no evidence of either CEOs' or CFOs' equity incentives to be associated with higher earnings management. Feng et al. (2011) argues that CFOs implicate in earnings manipulation because of pressure from CEOs, but they find no evidence of CFOs' equity incentives having an effect. In summary, prior studies suggest that the effect of executives' equity incentives on financial reporting varies over time, and the relative importance of CEOs and CFOs are subject to the specific setting. We contribute to the literature by documenting the relative roles of CEOs and CFOs in goodwill valuation. We find that, while CFOs are more influential than CEOs on routine goodwill valuation, new CEOs have the ultimate authority in making large impairment decisions.

It is worth noting that our study differs from prior studies that examine the effect of executive incentives on accruals earnings management in several important ways. First, goodwill impairments are often significantly larger than other accrual items and comprise a greater degree of manager discretion and estimation. Second, once goodwill has been written down, the asset value cannot be restored in the future. Thus, managers need to be more cautious about the write-off decision. Third, goodwill impairment estimation is arguably more subjective than other estimations such as allowance for bad debts, since it involves projection of future cash flows as opposed to using historical trends; hence, it may be less likely to trigger adverse auditor opinion. Fourth, goodwill captures the premium managers paid for the acquisition. Unlike other accrual items, recording goodwill write-off is an admission of managers' overpayment of the acquiree or their failure to produce value. Since CEOs are the ultimate party to initiate the acquisition, their incentives to write off goodwill are likely to greatly differ from all other accrual accounts over which CFOs have more control and responsibility. Therefore, our results cannot be implied by prior studies, and our focus on goodwill accounting sheds new light on the influence of CEOs and CFOs on financial reporting.

The remaining paper is organized as follows. Section II reviews the background information of goodwill accounting, discusses related literature and develops hypotheses. Section III describes the research design. Section IV presents the results, and Section V concludes.

BACKGROUND, RELATED LITERATURE & HYPOTHESIS DEVELOPMENT

Background: Accounting for Goodwill

The FASB issued SFAS 142 in 2001 to significantly revise accounting rules for goodwill valuation. Prior to the adoption of SFAS 142, managers were allowed to amortize goodwill over a predetermined useful life with a ceiling of 40 years. Under SFAS 142, goodwill is assumed to have an indefinite life and therefore is no longer amortized. Instead, managers must assess the value of goodwill at least annually and

record an impairment loss when it is deemed that its value has declined. Between 2001 and 2017, firms rely on the two-step impairment assessment rule prescribed by SFAS 142. In the Step 1 test, managers estimate the fair value of the reporting unit to which goodwill is assigned and compare it with the book value of the unit, including goodwill. In the case that the estimated fair value is less than the book value, an impairment is assumed to have occurred, and managers will be required to perform the Step 2 test to calculate the actual amount of impairment. The Step 2 test requires managers to compare the implied value of goodwill with the book value of goodwill. If the implied value is less than the book value, the difference must be reported as impairment loss. In 2017, the FASB simplified the test by eliminating the Step 2 test, such that the amount of impairment loss is calculated in Step 1, i.e., the difference between the fair value and the book value of a reporting unit.

The two-step test is considered a *quantitative* test. SFAS 142 also allows managers to use an optional *qualitative* test, i.e., the “Step 0” test, as a precursor to the two-step quantitative process. In general, the Step 0 test allows managers to assess qualitative factors to determine whether it is more likely than not (greater than 50 percent chance) that the fair value of a reporting unit is less than its carrying value. To make this evaluation, managers consider factors such as macroeconomic conditions, industry and market considerations, changes in cost factors, financial performance, entity-specific events, and evidence of sustained decline in share price. If the assessment passes the qualitative test, goodwill is considered unimpaired, and the two-step test need not be performed. A survey of Financial Executives International members finds that more than 50% of companies use the optional Step 0 qualitative test (Nunes, Roland, Marianna, and Warner 2017).

One common concern related to the SFAS 142 is that discretions throughout the assessment process afford managers substantial flexibility and create opportunities for managers to manipulate financial outcomes (Holthausen and Watts 2001; Watts 2003; Ramanna 2008; Ramanna and Watts 2012). For example, managers can overvalue goodwill, through delaying the impairment, thereby inflate earnings (e.g., Hayn and Hughes 2006).

Related Literature: Influence of CEOs and CFOs on Financial Reporting

Extant literature provides evidence that CEOs’ equity incentives have a strong effect on financial reporting. Using a pre-Sarbanes-Oxley Act of 2002 (SOX) sample, prior studies (e.g., Healy 1985; Burns and Kedia 2006; Cheng and Warfield 2005; Cheng, Warfield, and Ye 2011; Bergstresser and Philippon 2006; Burns and Kedia 2007) find that CEOs with higher stock-based incentives are more likely to engage in earnings management, presumably to boost share price and therefore their compensation. While much of the emphasis has been on CEOs, a stream of literature also focuses on the influence of CFOs in financial reporting. CFOs have been viewed to play an important role in the stewardship of firms’ financial reporting, particularly after SOX when CFOs (and CEOs) are required to personally certify the material accuracy and completeness of released financial information. The SEC’s requirement essentially elevates the accountability of CFOs to be on the same level as CEOs, who were viewed as the primary responsible party for financial reporting (Geiger and North 2006). Evidence from this stream of studies shows that CFOs’ professional qualifications (Li, Sun and Ettredge 2010), personal “styles” (Ge, Matsumoto and Zhang 2011) or board membership (Bedard, Hoitash and Hoitash 2014) have an impact on financial reporting. In particular, Jiang et al. (2010) investigates the influence of CFOs on financial reporting quality by testing the relation between CFOs’ equity incentives and earnings management measures. They find that, during the pre-SOX period, CFOs’ (and CEOs’) equity incentives are positively associated with discretionary accruals and the likelihood of beating analyst forecasts, suggesting that CFOs impose strong influence on financial reporting via their equity incentives. However, in the post-SOX period, they find no evidence of a relation between accruals earnings management and CFOs’ (or CEOs’) equity incentives. The finding is consistent with the observation that accruals earnings management has declined in the post-SOX period, so has the relation between executive compensation and discretionary accruals (Cohen, Dey and Lys 2008).

However, it is important to note that goodwill impairment, although a part of accruals, differs from other accrual accounts over which managers can exercise discretion. For example, the mean (median) goodwill impairment loss is 150% (32%) of annual net income in our sample. The amount is significantly

larger than many discretionary accruals accounts such as warranty expenses, bad debt expenses or depreciation expenses. Also, unlike other asset accounts such as accounts receivable, goodwill value cannot be restored once it has been written down. Therefore, managers would need to be more cautious in using goodwill as an earnings management tool. On the other hand, goodwill valuation is also much more subjective because it relies on managers' prediction of future cash flows, relative to other assets such as accounts receivable which often uses historical trends in valuation. Thus, timing impairment charges opportunistically may less likely be challenged by the audit committee, external auditors and analysts. Accordingly, the finding of no relation between CEOs' and CFOs' equity incentive and accruals earnings management in prior studies (e.g., Jiang et al. 2010) may not extrapolate to the goodwill setting.

Hypothesis 1: Influence of CEOs and CFOs on Goodwill Accounting

We extend the theories and findings from prior research, discussed in the preceding section, to the setting of goodwill accounting. A number of studies have shown that executives have motives and ability to time goodwill impairments. Bens, Heltzer and Segal (2011) find that the mean return around the two-day window of impairment announcement is -3.3%. Li, Shroff, Venkataraman and Zhang (2011) document that both analysts and investors lower their future profitability expectations after an impairment announcement. These studies suggest that executives have sufficient motives to delay goodwill impairment. As supporting evidence, Hayn and Hughes (2006) find that, on average, goodwill write-offs lag behind the economic impairment of goodwill by three to four years. For one-third of the companies in their sample, the delay can reach up to ten years. The authors contend that such "substantial delay may reflect the exercise of managerial discretion in timing goodwill write-offs to meet certain reporting objectives" (p. 226). Similarly, Li and Sloan (2019) find, under the SFAS 142 rule, goodwill has become more inflated on the balance sheet and impairment less timely.

Using the SFAS 142 adoption setting, Beatty and Weber (2006) investigate the behavior of firms at the initial adoption of SFAS 142. They find that impairment avoidance is more likely when there are concerns about a debt covenant violation, suggesting that managers opportunistically time the impairment loss recognition. This opportunistic behavior is stronger for firms that grant earnings-based bonus to managers. Ramanna and Watts (2012), on the other hand, study the incentives that influence impairment decisions during periods subsequent to the adoption of SFAS 142. Similar to Beatty and Weber (2006), they find some evidence that CEO reputation, existence of an earnings-based bonus plan, and debt covenant violations influence impairment decisions.

Notwithstanding the relation between executives' equity incentives and accruals earnings management has declined post-SOX, extant research suggests that executives have the motives to time goodwill impairments. On average, benefits from delaying goodwill impairment exceeds costs associated with delayed impairment (Filip, Jeanjean and Paugam 2015). Therefore, we present our first hypothesis, in the alternative form:

H1a: CEOs' equity incentives are negatively associated with annual goodwill impairment.

While studies such as Beatty and Weber (2006) and Ramanna and Watts (2012) demonstrate executives' motives to time impairments, they do not examine the role of CFOs. Prior evidence suggests that CFOs play an influential role in financial reporting (e.g., Aier, Comrix, Gunlock and Lee 2005; Ge, Matsumoto and Zhang 2011; Bedard, Hoitash and Hoitash 2014). Stenheim and Madsen (2016), using a sample of 288 UK firms, find that CFO cash-bonus is negatively associated with goodwill impairment. Thus, we state our next hypothesis also in the alternative form:

H1b: CFOs' equity incentives are negatively associated with annual goodwill impairment.

Hypothesis 2: Relative Influence of CEOs and CFOs on Impairment

Even though both CEOs and CFOs have incentives to delay goodwill impairment, it remains unclear which executive has more influence on goodwill impairment decisions on annual routine assessments. From

the perspective of stewardship role in financial reporting, CFOs are the ultimate responsible party for the quality of firms' financial disclosures (e.g., Aier, Comprix, Gunlock, and Lee 2005; Ge, Matsumoto, and Zhang 2011; Geiger and North 2006), while CEOs are more responsible for the strategic operations of a firm. Because of their oversight role, CFOs are in a unique position to make financial reporting decisions, including accounting manipulations (Feng et al. 2011). Since impairment assessment involves highly subjective projection of future cash flows, CFOs are more adept than CEOs in the valuation of goodwill and the timing of recording impairment losses. Consistent with the conjecture, Jiang et al. (2010) find that CFOs' equity incentives are more strongly associated with beating financial analysts' earnings forecasts than those of CEOs, suggesting that CFOs have a stronger influence on financial reporting outcome than CEOs. Similarly, Graham, Harvey and Rajogopal (2005) document that CFOs are motivated to achieve internal and external performance targets. As one of the CFOs stated in the survey: "I miss the target, I'm out of a job" (p. 28). Thus, CFOs may have a stronger influence than CEOs on goodwill impairment decisions given their unique position and equity incentives.

On the other hand, CFOs are often viewed as agents of CEOs (Graham and Harvey 2001), and therefore the preferences and incentives of CEOs may dominate those of CFOs. Feng et al. (2011) provide indirect evidence that CFOs instigate financial misreporting because they succumb to the pressure from CEOs (Baker, Lopez, Reitenga, and Ruch 2019). They also find that when both the CEO and CFO are charged by SEC, the CEO is more likely to be accused of devising the earnings manipulation scheme. Bishop, Dezoort, and Hermanson (2017), using a sample of 69 CFOs, find that CFOs are more willing to revise their initial inventory adjustments in the presence of pressure from CEOs to meet an earnings target. Further, goodwill impairment is an admission of failure to generate value from past acquisitions or a signal of overpayment for the acquiree (Roychowdhury and Martin 2013). Since CEOs are the primary executive to initiate the acquisition, impairments are more reflective of CEOs' poor strategic decisions than those of CFOs.

Given the respective roles of CEOs and CFOs and their incentives, it is worthwhile to explore who has a stronger impact on goodwill impairment decisions. Accordingly, we hypothesize that:

H2: CEOs' and CFOs' equity incentives have a differential degree of effect on goodwill impairment.

Hypothesis 3: Executive Turnovers and Recognition of Large Impairment Charges

Prior studies document that firms with new CEOs are more likely to report lower income, i.e., engage in "big bath" accounting, than firms without a new CEO appointment (e.g., Strong and Meyer 1987; Murphy and Zimmerman 1993; Denis and Denis 1995; Geiger and North 2006). Using a sample of firms from 21 countries, Glaum, Landsman and Wyrwa (2018) find that the probability of a firm recording goodwill impairment is significantly higher if the firm has a new CEO during the year. However, as the authors noted, "...the accounting for goodwill differs in some regards between U.S. GAAP and IFRS and, furthermore, financial reporting is strongly influenced by incentives and by capital market supervision and enforcement" (p. 154). Thus, it is unclear whether findings based on non-U.S. firms applying IFRS can generalize to U.S. firms. Nonetheless, the evidence is consistent with anecdotal evidence reported in financial press that new CEOs tend to "clean the slate" as they begin their tenure (Call, 2019). For example, when the new CEO at Hewlett Packard begins her executive role in 2012, the company recorded \$13.7 billion of goodwill impairment – an amount equal to 35% of the beginning of the year total stockholder's equity. Similarly, in 2010, the new CEO of Bank of America recorded a \$12.4 billion impairment in 2010 and another \$3.2 billion in 2011.

While prior research investigates the association between CEO changes and financial reporting (e.g., Jordan and Clark 2015), little attention has been given to the effect of CFO changes, particularly in the goodwill valuation setting. It is plausible that CFO changes also bring about large goodwill impairments, since new CFOs may share the same preferences as new CEOs in regard to starting their tenure anew. However, as discussed in the previous sections, goodwill impairment has a much more meaningful impact on CEOs' reputation than that of CFOs because CEOs are often the party who orchestrated the mergers and acquisitions. Therefore, to safeguard their personal interests, incumbent CEOs may not allow new CFOs to record large impairments. Consistent with the argument, Geiger and North (2006) finds that CFO turnover

has no effect on discretionary accruals, unless the new CFO is externally recruited. Thus, it is an empirical matter whether new CEOs and CFOs are associated with large goodwill impairments. We state our hypotheses in the alternative forms:

H3a: CEO changes are positively associated with the likelihood of recording a large goodwill impairment.

H3b: CFO changes are positively associated with the likelihood of recording a large goodwill impairment.

Hypothesis 4: Cross-sectional analysis of Executive Job Security

We predict that job security of executives, as proxied by executive tenure, has a moderating effect on the relation between goodwill valuation and CEOs' and CFOs' equity incentives. The more secure executives feel about their jobs the more they are willing to recognize an impairment loss that will have a negative impact on earnings. Consistent with the argument, Darrough, Guler and Wang (2014) find that goodwill impairment losses are associated with lower CEO option-based compensation, and the effect is less pronounced for CEOs with longer tenure. The results suggest that the compensation committee "punishes" CEOs for making non-value maximizing acquisitions and the punishment is mitigated if the CEO is more entrenched. The same reasoning can be extended to CFOs. Thus, we predict that:

H4a: The negative relation between CEOs' equity incentives and goodwill impairment is weaker for firms with longer tenured CEOs.

H4b: The negative relation between CFOs' equity incentives and goodwill impairment is weaker for firms with longer tenured CFOs.

RESEARCH DESIGN

Executive Equity Incentives and Goodwill Impairment – H1a, H1b and H2

To test H1a, H1b and H2, we estimate the following Tobit regression models (Beatty and Weber 2006; Li et al. 2011):

$$\begin{aligned} \text{Impairment}_{i,t+1} = & \beta_0 + \beta_1 \text{CEO_Incentive}_{i,t} + \beta_2 \text{Goodwill}_{i,t} + \beta_3 \text{CEO_Change}_{i,t} + \\ & \beta_4 \text{CFO_Change}_{i,t} + \beta_5 \text{LogSales}_{i,t} + \beta_6 \text{Leverage}_{i,t} + \beta_7 \text{BTM}_{i,t} + \\ & \beta_8 \text{ROA}_{i,t} + \sum \text{Industry} + \sum \text{Year} + \xi_{i,t} \end{aligned} \quad (1a)$$

$$\begin{aligned} \text{Impairment}_{i,t+1} = & \beta_0 + \beta_1 \text{CFO_Incentive}_{i,t} + \beta_2 \text{Goodwill}_{i,t} + \beta_3 \text{CEO_Change}_{i,t} + \\ & \beta_4 \text{CFO_Change}_{i,t} + \beta_5 \text{LogSales}_{i,t} + \beta_6 \text{Leverage}_{i,t} + \beta_7 \text{BTM}_{i,t} + \\ & \beta_8 \text{ROA}_{i,t} + \sum \text{Industry} + \sum \text{Year} + \xi_{i,t} \end{aligned} \quad (1b)$$

Model 1a (1b) estimates the relation between firm i 's CEO (CFO) equity incentives, measured at year t , and the amount of goodwill impairment loss at year $t+1$, scaled by beginning of the year total assets. We adopt the lead-lag design because changes in executive equity incentives may not immediately affect executives' goodwill valuation decisions. For ease of interpretation, the amount of goodwill impairment loss, which is reported in negative numbers, is multiplied by -1 such that a higher positive value represents higher impairment amount. Since the dependent variable, *Impairment*, is greater than or equal to zero, we use the Tobit model to account for the fact that it is left-censored. To measure CEO and CFO equity incentives, we follow prior studies (e.g., Bergstresser and Philippon 2006; Jiang et al. 2010; Feng et al. 2011) and use an equity incentive measure that captures executives' pay-for-performance sensitivity. Specifically, we form the measure by using the following equation:

$$\text{CEO_Incentive (or CFO_Incentive)} = \text{OnePCT}_{i,t} / (\text{OnePCT}_{i,t} + \text{Salary}_{i,t} + \text{Bonus}_{i,t}) \quad (2)$$

where $OnePCT_{i,t} = 0.01 \times Price_{i,t} + (Shares_{i,t} + Options_{i,t})$. *Price* is the firm's share price; *Shares* is the number of shares held by the executive; *Options* is the number of options held by the executive. Thus, *OnePCT* measures the dollar change in value of an executive's stock and stock option portfolio in response to a one percent change in the firm stock price. The resulting measure, *CEO_Incentive (or CFO_Incentive)*, then captures the share of the executive's total compensation that would come from a one percentage increase in the share price of the firm. A higher value would indicate a higher sensitivity of the executive's total pay to changes in the company stock price. H1a (H1b) predicts a negative β_1 coefficient in the regression model 1a (1b), suggesting that CEOs' (CFOs') equity incentives delay executives' decision to write off goodwill. To test H2, we compare the β_1 coefficient of regression model 1a to that of model 1b. We predict that the coefficients are significantly different, a finding that would support the relative importance of CEOs and CFOs in goodwill valuation.

We include a list of controls in the regression models to mitigate the effect of confounding factors. We include the total amount of reported goodwill (*Goodwill*) since the amount of goodwill write-off may be positively correlated with the book value of goodwill (Francis, et al. 1996). We include CFO and CEO turnovers (*CFO_Change* and *CEO_Change*) because prior studies document that a CFO or CEO change may have an impact on financial reporting (Geiger and North 2006; Denis and Denis 1995; Strong and Meyer 1987). We control for size (*Sales*) since large firms may be more likely to make acquisitions and therefore carry a higher book value of goodwill. We also control for financial leverage (*Leverage*) as firms with higher debt face higher cost of debt covenant violation (Ramanna and Watts 2012). Highly leveraged firms may also indicate higher financial distress and therefore report higher goodwill impairment. We include book-to-market ratio to account for firms' likelihood of recording an impairment (Ramanna and Watts 2012). We also include firms' average profitability over the past five years (*ROA*) since prolonged low profitability increases the need for goodwill write-off (Hayn and Hughes 2006). Lastly, we add industry fixed effects, using Fama-French 12 industry classification, to account for industry heterogeneity and year fixed effects to minimize effects of time-specific economic trends. All continuous variables are winsorized at the 1st and 99th percentiles to ensure that our results are not driven by outliers. More detailed definitions of the variables are presented in Appendix.

Executive Changes and Large Goodwill Impairments – H3a & H3b

We estimate the following Probit regression models to estimate the effect of a new CEO or CFO on the probability of recording a large goodwill impairment:

$$Prob(Large_Impairment_{i,t+1} = 1) = \beta_0 + \beta_1 CEO_Change_{i,t} + Controls + \sum Industry + \sum Year + \varepsilon_{i,t} \quad (3a)$$

$$Prob(Large_Impairment_{i,t+1} = 1) = \beta_0 + \beta_1 CFO_Change_{i,t} + Controls + \sum Industry + \sum Year + \varepsilon_{i,t} \quad (3b)$$

Large_Impairment is equal to one if a firm reports a goodwill impairment amount that is greater than the sample median for a given year, and zero otherwise. *CEO_Change (CFO_Change)* is equal to one if a firm has a CEO (CFO) turnover during the year, and zero otherwise. H3a (H3b) predicts a positive β_1 coefficient on *CEO_Change (CFO_Change)* – a finding which would suggest that new CEOs or CFOs engage in “big bath” accounting by recognizing large goodwill impairments as they begin their new tenure.

Cross-sectional Analysis: Effect of Executive Tenure – H4a & H4b

To test the incremental effect of executive tenure, a proxy for executive job security, we estimate the following Tobit regression models:

$$Impairment_{i,t+1} = \beta_0 + \beta_1 CEO_Incentive_{i,t} + \beta_2 CEO_Tenure_{i,t} + \beta_3 (CEO_Incentive \times CEO_Tenure)_{i,t} + Controls + \sum Industry + \sum Year + \varepsilon_{i,t} \quad (4a)$$

$$Impairment_{i,t+1} = \beta_0 + \beta_1 CFO_Incentive_{i,t} + \beta_2 CFO_Tenure_{i,t} + \beta_3 (CFO_Incentive \times CFO_Tenure)_{i,t} + Controls + \sum Industry + \sum Year + \varepsilon_{i,t} \quad (4b)$$

CEO_Tenure (*CFO_Tenure*) is the number of years an executive has been the CEO (CFO) of the firm. *CEO_Incentive x CEO_Tenure* (*CFO_Incentive x CFO_Tenure*) estimates the incremental effect of CEO (CFO) tenure on the relation between equity incentives and goodwill impairment. H4a (H4b) predicts a positive β_3 coefficient on the interaction term – a finding which would suggest that executive job security reduces the delay in goodwill write-offs that are induced by executives' equity incentives.

DESCRIPTIVE STATISTICS & HYPOTHESIS TESTING RESULTS

Descriptive statistics of Sample

We begin our main sample with all firm-year observations in the Compustat database to obtain goodwill impairment data and other firm fundamental values. The sample is merged with the ExecuComp dataset to obtain CEO and CFO turnovers, as well as executives' annual compensations. Our main sample period is from 2007 to 2017. Since our research questions focus on goodwill impairments, our sample requires firm-year observations to have a positive goodwill balance. We start the sample period in 2007 because the availability of CFO data in ExecuComp begins in 2006, and therefore 2007 is the first year we can construct the CFO turnover variable.

Panel A of Table 1 provides the descriptive statistics of the main variables in our regression models. The mean value of *Goodwill* is 0.18, indicating that an average firm-year has a goodwill balance equal to 18% of total assets. The mean value of annual goodwill impairment charge (*Impairment*) is only 0.006, or 0.6% of total assets. A total of 15% of firm-years reported a large goodwill impairment. In regard to executive compensation and characteristics, the mean value of CEO equity-based incentive ratio (*CEO_Incentive*) is 0.35, indicating that an average CEO's annual equity-based pay is 35% of total compensation. In contrast, the mean value of CFO equity incentive ratio (*CFO_Incentive*) is 10% of total compensation. Ten percent of firm-year observations have a CEO turnover, while 14% of the sample have a CFO turnover. The average tenure is six years for CEOs and four years for CFOs. With respect to firm characteristics, an average firm-year has \$7.5 billion in sales (*Sales*), a financial leverage (*Leverage*) of 37%, a book-to-market ratio (*BTM*) of 52%, and an average return-on-assets (*ROA*) of 4% over the past five years.

TABLE 1
DESCRIPTIVE STATISTICS & CORRELATIONS

Panel A: Descriptive Statistic	<u>Mean</u>	<u>STDEV</u>	<u>10%</u>	<u>25%</u>	<u>50%</u>	<u>75%</u>	<u>90%</u>
<i>Goodwill</i>	0.181	0.178	0.009	0.037	0.128	0.276	0.430
<i>Impairment</i>	0.006	0.029	0	0	0	0	0.004
<i>Large_impairment</i>	0.147	0.354	0	0	0	0	1
<i>CEO_Incentive</i>	0.348	0.243	0.064	0.147	0.301	0.512	0.707
<i>CFO_Incentive</i>	0.098	0.101	0.008	0.026	0.065	0.134	0.233
<i>CEO_Change</i>	0.103	0.304	0	0	0	0	1
<i>CFO_Change</i>	0.142	0.349	0	0	0	0	1
<i>CEO_Tenure</i>	6.269	4.429	2	3	5	9	12
<i>CFO_Tenure</i>	4.093	2.531	1	2	4	6	8
<i>Sales</i>	7,540	21,553	287	641	1,803	5,539	15,369
<i>Leverage</i>	0.370	0.294	0	0.152	0.347	0.531	0.730
<i>BTM</i>	0.523	0.422	0.135	0.267	0.451	0.713	1.014
<i>ROA</i>	0.044	0.066	-0.017	0.012	0.044	0.079	0.120

Panel B: Pearson Correlations

	1	2	3	4	5	6	7	8	9	10	11	12
1 <i>Goodwill</i>												
2 <i>Impairment</i>	0.122											
3 <i>Large_impairment</i>	0.056	0.519										
4 <i>CEO_Incentive</i>	0.101	-0.076	-0.075									
5 <i>CFO_Incentive</i>	0.138	-0.055	-0.079	0.434								
6 <i>CEO_Change</i>	-0.013	0.020	0.026	-0.242	-0.057							
7 <i>CFO_Change</i>	0.004	0.030	0.021	-0.007	-0.201	0.105						
8 <i>CEO_Tenure</i>	-0.025	-0.049	-0.024	0.420	0.122	-0.382	-0.063					
9 <i>CFO_Tenure</i>	-0.010	-0.094	-0.068	0.035	0.302	-0.069	-0.483	0.226				
10 <i>Sales</i>	0.043	-0.039	0.044	0.252	0.269	0.022	0.021	0.053	-0.001			
11 <i>Leverage</i>	0.011	-0.017	0.050	-0.069	0.001	0.021	0.035	-0.036	-0.045	0.245		
12 <i>BTM</i>	-0.133	0.152	0.157	-0.232	-0.218	0.009	0.007	-0.017	-0.069	-0.056	-0.195	
13 <i>ROA</i>	0.104	-0.070	-0.064	0.264	0.206	-0.031	-0.035	0.073	0.064	0.206	-0.147	-0.190

Panel A of Table 1 provides descriptive statistics of the main variables. *Goodwill* is book value of goodwill. *Impairment* is annual goodwill impairment loss, scaled by total assets and multiplied by -1. *Large_Impairment* is an indicator variable equal to 1 if impairment is greater than the sample median value in a given year. *CEO_Incentive* is CEO equity incentive ratio. *CFO_Incentive* is CFO equity incentive ratio. *CEO_Change* is an indicator variable equal to 1 if a firm-year has a CEO turnover. *CFO_Change* is an indicator variable equal to 1 if a firm-year has a CFO turnover. *CEO_Tenure* is number of years an executive has been the CEO of the firm. *CFO_Tenure* is number of years an executive has been the CFO of the firm. *Sales* is the natural logarithm of firms’ annual sales. For ease of interpretation, *Sales* is presented in unlogged form in Panel A. *Leverage* is financial leverage ratio. *BTM* is book-to-market ratio. *ROA* is the average return-on-assets ratio over the past five years. Panel B shows the Pearson correlations between the variables. Correlation coefficients in bold represent statistical significance at the 10% level. Detailed definitions of the variables are presented in Appendix.

Panel B of Table 1 reports the Pearson correlations between the main variables. The correlation between *Impairment* and *CEO_Incentive* is -0.08, and the correlation between *Impairment* and *CFO_Incentive* is -0.06, suggesting that higher executive incentives are associated with less goodwill impairment write-off. In contrast, *Impairment* is positively associated with both CEO (*CEO_Change*) and CFO turnovers (*CFO_Change*), suggesting that new executives are more likely to write-off goodwill. The correlations also indicate that larger firms (*Sales*), and firms with higher profitability (*ROA*) or higher leverage (*Leverage*) are associated with lower impairment charges. Lastly, higher book-to-market (*BTM*) is positively associated with goodwill impairment. The positive correlation is consistent with our prediction since a higher book-to-market ratio is an indication that the market believes goodwill is likely impaired (Li and Sloan 2017).

Hypothesis Testing Results

Table 2 reports the Tobit regression results from tests that estimate the relation between executive equity incentives and goodwill impairment. H1a (H1b) predicts that equity-based incentives of CEOs (CFOs) are negatively associated with goodwill impairment. As reported in Column (1) of Table 2, the β_1 coefficient on *CEO_Incentive* is negative and statistically significant (-0.032, $t = -4.07$). Similarly, the β_1 coefficient on *CFO_Incentive* reported in Column (2) is also negative and statistically significant (-0.084, $t = -4.38$). These results suggest that higher equity incentives of both CEOs and CFOs are associated with lower goodwill impairment, supporting H1a and H1b. The magnitude of the coefficients infers a one percentage point increase in CFOs’ equity incentive ratio lowers the impairment amount (scaled by total assets) by eight basis points, whereas the same increase in CEOs’ equity incentive ratio lowers the impairment by only three basis points. We assess the statistical significance of the difference between *CEO_Incentive* and *CFO_Incentive* coefficients. The comparison result ($p = 0.003$) indicates that CFOs’

equity incentives are more strongly associated with goodwill impairment than CEOs' equity incentives, a finding that supports H2. In Column (3), we report the regression results from a model that includes the equity incentive ratios of both CEOs and CFOs. The coefficient on *CFO_Incentive* (-0.065, $t = -3.31$) is higher than that on *CEO_Incentive* (-0.023, $t = -2.92$), further implying that CFOs have a stronger influence on firms' goodwill valuation than do CEOs.

TABLE 2
RELATION BETWEEN EXECUTIVE EQUITY INCENTIVES AND
GOODWILL IMPAIRMENTS

Dependent Variable = <i>Impairment</i>	(1)	(2)	(3)
<i>Intercept</i>	-0.062 *** (-5.38)	-0.056 *** (-5.18)	-0.058 *** (-5.38)
<i>CEO_Incentive</i>	-0.032 *** (-4.07)		-0.023 *** (-2.92)
<i>CFO_Incentive</i>		-0.084 *** (-4.38)	-0.065 *** (-3.31)
<i>Goodwill</i>	0.079 *** (8.56)	0.082 *** (8.93)	0.082 *** (8.90)
<i>CEO_Change</i>	0.001 (0.21)	0.006 (1.57)	0.002 (0.47)
<i>CFO_Change</i>	0.003 (0.88)	-0.002 (-0.45)	-0.001 (-0.18)
<i>Sales</i>	0.002 * (1.75)	0.002 * (1.71)	0.003 ** (2.37)
<i>Leverage</i>	0.024 *** (3.83)	0.026 *** (4.21)	0.023 *** (3.75)
<i>BTM</i>	0.057 *** (12.76)	0.058 *** (12.97)	0.056 *** (12.48)
<i>ROA</i>	-0.123 *** (-4.51)	-0.129 *** (-4.69)	-0.118 *** (-4.28)
Industry & Year	YES	YES	YES
Pseudo R-squared	0.4383	0.441	0.444
N	12,989	13,047	12,989

Assessment of Difference in Coefficients:

Test $CEO_Incentive = CFO_Incentive$

Chi-squared: 8.57

P-value: 0.003

Table 2 reports the results of Tobit regressions that estimate the relation between executive equity incentives and goodwill impairments. Impairment is annual goodwill impairment loss, scaled by total assets and multiplied by -1. *CEO_Incentive* is CEO equity incentive ratio. *CFO_Incentive* is CFO equity incentive ratio. All other variables are defined in Appendix. The chi-squared statistic reflects the statistical significance of the difference between the two coefficients. t-statistics reported in parentheses are based on firm-clustered standard errors. ***, ** and * indicate statistical significance at the 1%, 5% and 10% two-tailed level, respectively.

In Table 3, we present the results from estimating a Probit regression model that estimates the relation between new CEOs or CFOs and the likelihood of recording a large goodwill impairment, which is defined as an impairment amount that is greater than the sample median for a given year. As reported in Column (1), the β_1 coefficient on *CEO_Change* is positive (0.076, $z = 1.70$), supporting H3 and anecdotal evidence that new CEOs engage in “big bath” accounting by recognizing large goodwill impairments to “clean the slate” as they begin their tenure. However, the results in Column (2) show that new CFOs (*CFO_Change*) do not increase the likelihood of recording a large impairment (0.019, $z = 0.51$). We include both CEO and CFO turnover variables in the model reported in Column (3), and we continue to find that only new CEOs are associated with a higher probability of recognizing a large impairment.

TABLE 3
EXECUTIVE EQUITY INCENTIVES AND PROBABILITY OF
RECORDING LARGE IMPAIRMENTS

Dependent Variable: <i>Large_Impairment</i>	(1)	(2)	(3)
<i>Intercept</i>	-0.969 *** (-7.55)	-0.970 *** (-7.57)	-0.971 *** (-7.55)
<i>CEO_Change</i>	0.076 * (1.70)		0.074 * (1.66)
<i>CFO_Change</i>		0.019 (0.51)	0.017 (0.45)
<i>Goodwill</i>	0.539 *** (5.28)	0.538 *** (5.28)	0.539 *** (5.28)
<i>Sales</i>	0.029 ** (2.28)	0.029 ** (2.31)	0.029 ** (2.28)
<i>Leverage</i>	0.398 *** (5.37)	0.401 *** (5.42)	0.397 *** (5.36)
<i>BTM</i>	0.667 *** (13.24)	0.663 *** (13.25)	0.667 *** (13.23)
<i>ROA</i>	-1.323 *** (-4.38)	-1.324 *** (-4.38)	-1.320 *** (-4.36)
Industry & Year	YES	YES	YES
Pseudo R-squared	0.093	0.093	0.0934
N	13,047	13,098	13,047

Table 3 reports the results of Probit regressions that estimate the relation between executive changes and the likelihood of recording large goodwill impairments. *Large_Impairment* is an indicator variable equal to 1 if impairment is greater than the sample median value in a given year. *CEO_Change* is an indicator variable equal to 1 if a firm-year has a CEO turnover. *CFO_Change* is an indicator variable equal to 1 if a firm-year has a CFO turnover. All other variables are defined in Appendix. z-statistics reported in parentheses are based on firm-clustered standard errors. ***, ** and * indicate statistical significance at the 1%, 5% and 10% two-tailed level, respectively.

In Table 4, we present the results of a cross-sectional analysis, which estimates the incremental effect of executive tenure, a proxy for job security, on the relation between executive equity incentive and the impairment amount. In Panel A, we find a positive and statistically significant coefficient on *CEO_Incentive x CEO_Tenure* (0.002, $t = 1.87$). Similarly, we find a positive coefficient on *CFO_Incentive*

x CFO_Tenure (0.009, t = 1.87) in Panel B. These results suggest the negative relation between executive equity incentives and goodwill write-off is weaker for firms that have a longer-tenured CEO or CFO, a finding that supports H4a and H4b.

TABLE 4
CROSS-SECTIONAL ANALYSIS: EFFECT OF EXECUTIVE TENURE ON THE RELATION
BETWEEN EXECUTIVE EQUITY INCENTIVES AND IMPAIRMENTS

Panel A: Incremental Effect of CEO Tenure	Dependent Variable = <i>Impairment</i>	
<i>Intercept</i>	-0.051	***
	(-4.56)	
<i>CEO_Incentive</i>	-0.053	***
	(-4.17)	
<i>CEO_Tenure</i>	-0.001	
	(-0.90)	
<i>CEO_Incentive x CEO_Tenure</i>	0.002	*
	(1.87)	
<i>Goodwill</i>	0.080	***
	(8.61)	
<i>CEO_Change</i>	0.000	
	(-0.10)	
<i>CFO_Change</i>	0.003	
	(0.88)	
<i>Sales</i>	0.002	*
	(1.75)	
<i>Leverage</i>	0.024	***
	(3.83)	
<i>BTM</i>	0.057	***
	(12.50)	
<i>ROA</i>	-0.122	***
	(-4.46)	
Industry & Year	YES	
Pseudo R-squared	0.440	
N	12,989	

Panel B: Incremental Effect of CFO Tenure

	Dependent Variable = <i>Impairment</i>	
<i>Intercept</i>	-0.059	***
	(-5.41)	
<i>CFO_Incentive</i>	-0.132	***
	(-3.93)	
<i>CFO_Tenure</i>	-0.000	
	(-0.47)	
<i>CFO_Incentive x CFO_Tenure</i>	0.009	*
	(1.87)	
<i>Goodwill</i>	0.082	***
	(8.94)	
<i>CEO_Change</i>	0.006	
	(1.55)	
<i>CFO_Change</i>	-0.002	
	(-0.42)	
<i>Sales</i>	0.002	*
	(1.82)	
<i>Leverage</i>	0.025	***
	(4.15)	
<i>BTM</i>	0.057	***
	(12.86)	
<i>ROA</i>	-0.130	***
	(-4.69)	
Industry & Year	YES	
Pseudo R-squared	0.443	
N	13,047	

Panel A (Panel B) of Table 4 reports the results of Tobit regressions that estimate the incremental effect of CEO tenure (CFO tenure) on the relation between executive equity incentives and goodwill impairments. *CEO_Incentive* is CEO equity incentive ratio. *CFO_Incentive* is CFO equity incentive ratio. *CEO_Tenure* is number of years an executive has been the CEO of the firm. *CFO_Tenure* is number of years an executive has been the CFO of the firm. *CEO_Incentive x CEO_Tenure* is the interaction between the two variables, as is *CFO_Incentive x CFO_Tenure*. All other variables are defined in Appendix. ***, ** and * indicate statistical significance at the 1%, 5% and 10% two-tailed level, respectively.

CONCLUSION

Accounting for goodwill has been a challenging topic for the FASB, and it has consistently been on the board's technical agenda over the past two decades. One of the key issues revolves around how to systematically assess the value of goodwill, since valuation of the intangible asset can be subject to a high degree of managerial discretion. While prior literature suggests that managerial incentives play a critical role in financial reporting in general, scant evidence exists to demonstrate the influence, and more important the relative influence, of CEOs and CFOs on goodwill valuation, particularly in the post-SOX period.

Goodwill valuation is an internal process and unobservable; therefore, we follow prior literature and use the relation between executives' equity-based incentives and goodwill impairments to infer the relative influence of CEOs and CFOs on the valuation process. We find that firms with higher CEO or CFO equity

incentives report lower annual goodwill impairments. Interestingly, we find the negative relation to be stronger for CFO equity incentives. This finding is in contrast to Jiang et al. (2010) who find no relation between executive equity incentives and discretionary accruals in the post-SOX period.

Further, we conjecture that the relative influence of CEOs and CFOs on goodwill impairments would be different under the scenario of executive turnovers. Thus, we investigate the effects of executive turnovers and find that a new CFO has no significant effect on impairment decisions. In contrast, a new CEO is associated with a higher probability of recording a large goodwill impairment, presumably to engage in “big bath” accounting. Taken together, our results suggest that, while incumbent CFOs are in charge of routine review of goodwill valuation, new CEOs have the final authority on large-impairment decisions. Last, we conduct a cross-sectional analysis to test the incremental effect of executive tenure, a proxy for job security. We find that the negative relation between CEOs’ and CFOs’ equity incentives and goodwill write-offs is mitigated by the length of executive tenure.

Our study, however, is subject to at least two limitations. First, our results may be influenced by omitted confounding factors that may be correlated with both executives’ equity incentives and goodwill impairment. Second, using an archival study, we are unable to directly investigate the underlying process through which CEOs and CFOs make goodwill valuation decisions. We use the degree of association between each executive’s equity incentive and goodwill impairment to imply the relative influence of each manager on goodwill valuation. We urge future experimental or survey-based studies to further investigate the inner workings of managers’ impairment decision-making process.

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APPENDIX: VARIABLE DEFINITIONS

<i>Impairment</i>	= Annual goodwill impairment loss, scaled by beginning total assets and multiplied by -1
<i>Large_Impairment</i>	= 1 if a firm reports a goodwill impairment amount that is greater than the sample median for a given year, and zero otherwise
<i>CEO_Incentive</i>	= $\text{OnePCT} / (\text{OnePCT} + \text{Salary} + \text{Bonus})$, where: $\text{OnePCT} = 0.01 \times \text{Share Price} \times (\text{Equity Shares Owned by CEO} + \text{Options Owned by CEO})$
<i>CFO_Incentive</i>	= $\text{OnePCT} / (\text{OnePCT} + \text{Salary} + \text{Bonus})$, where: $\text{OnePCT} = 0.01 \times \text{Share Price} \times (\text{Equity Shares Owned by CFO} + \text{Options Owned by CFO})$
<i>CEO_Change</i>	= 1 if a firm-year has a CEO turnover, and zero otherwise
<i>CFO_Change</i>	= 1 if a firm-year has a CFO turnover, and zero otherwise
<i>CEO_Tenure</i>	= Number of years the executive has been the CEO of the firm
<i>CFO_Tenure</i>	= Number of years the executive has been the CFO of the firm
<i>Goodwill</i>	= Book value of goodwill balance, scaled by beginning total assets
<i>Sales</i>	= Natural logarithm of sales
<i>Leverage</i>	= Firm financial leverage, calculated as total debt divided by the sum of total debt and book value of equity
<i>BTM</i>	= Book-to-market ratio
<i>ROA</i>	= Average ROA (income before extraordinary items divided by total assets) from year t-4 to t
