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The Effect of Missing Quarterly Earnings Benchmarks on Chief Financial Officer Turnover and Annual Bonus

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Abstract: We examine the effect of missing quarterly earnings benchmarks on Chief Financial Officer (CFO) turnover and compensation. We consider two well-known earnings benchmarks: 1) consensus analyst earnings forecast, and 2) earnings for the same quarter of the prior year. Our results are consistent with significant bonus and career consequences to CFOs of failure to meet quarterly earnings benchmarks. Our evidence suggests that missing one quarter of consensus analyst earnings forecast in the prior year increases the probability of CFO dismissal by 18.57%, after we control for established determinants of executive turnover. Overall, our findings provide evidence that missing earnings benchmarks has economically significant adverse consequences for a CFO's bonus compensation and future career. Further, we find that the effect of missing the consensus analyst forecast on CFO dismissal is more pronounced for firms with better governance, consistent with better-governed firms considering negative earnings surprise more seriously as a signal of poor performance. These adverse consequences create pressure for CFOs to manage or manipulate earnings in order to meet earnings targets.

Key Words: CFO turnover, annual bonus, earnings benchmarks, governance.

... Just after the IPO in 2000, Krispy Kreme replaced longtime Chief Financial Officer Paul Beitbach with newcomer John Tate ... who was forced out as CFO of Williams-Sonoma after missing two quarterly earnings forecasts. ... Tate was promoted to Chief Operating Officer in 2002, and longtime controller Randy Casstevens was promoted to the top finance spot. Casstevens lasted less than eighteen months and turned in a "purely voluntary" resignation just five months before the company's first quarterly earnings shortfall. To replace Casstevens, the company brought in Michael Phelan, a key member of the investment banking team that executed Krispy Kreme's IPO and following offering, who in turn lasted less than two years in the position.

A later report filed with the SEC stated that Tate and Casstevens didn't provide the "leadership or supervision over the accounting and finance functions that one would expect from the CFO position." One analyst suggested that "... the real numbers the CFOs were coming up with were numbers the rest of management didn't want to hear. They were looking for a CFO who was going to tell them good news." Anderson [1, P. 2-3].

INTRODUCTION

The chief financial officer (CFO, hereafter) assumes ultimate responsibility for overseeing a firm's financial system, including financial planning, budgeting, internal control, capital raising, tax management, and financial strategy [2]. The CFO additionally monitors a firm's financial reporting

process and, therefore, holds key fiduciary responsibility for creating and disseminating accurate information about the firm's financial condition [3, 4]. High profile accounting scandals have highlighted the role of CFO as a key player in the financial reporting process and contributed to enactment of the Sarbanes-Oxley Act of 2002 (SOX, hereafter). Among other provisions, SOX mandates corporate governance reforms and requires both the CEO and the CFO to be held personally accountable for the integrity of a firm's financial statements, and specifically, earnings.¹

We empirically investigate both the bonus and career consequences (in the form of forced turnover) for CFOs of failure to meet quarterly earnings benchmarks. Understanding the implications of missed earnings benchmarks for corporate executives is important because legislators, regulators, and the business press argue that recent large-scale accounting frauds were often linked to incentives provided through executive compensation [5]. Jensen, Murphy, and Wruck [6] also argue that excessive emphasis on meeting analyst expectations creates perverse incentives for managers to manipulate short-term earnings. A substantial stream of research examines the role of CEO equity incentives and career concerns as underlying motives for earnings management or manipulation² [7-11].

¹ Under Section 302 of SOX, both CEOs and CFOs must certify that their companies' quarterly and annual filings are true and that they omit no material facts.

² Earnings management refers to the practice of managers using discretion in financial reporting to mislead stakeholders about the underlying firm performance [16]. Since generally accepted accounting principles (GAAP) inherently provide considerable flexibility concerning accounting methods and estimates, earnings management under GAAP is lawful. Some firms, however, take unlawful actions in violation of GAAP to inflate reported income. Earnings manipulation refers to these illegal behaviors. Accounting frauds in Enron and WorldCom are clearly examples of earnings manipulation.

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Less, however, is known about the pressures to manipulate earnings that CFOs face in their position of final oversight authority for the financial reporting process. Nevertheless, concern about these pressures has inspired comments such as Internal Revenue Service Commissioner Mark Everson's testimony before the Senate Finance Committee that, "CFOs should get generous but fixed compensation for specified contract periods" [12]. A growing body of academic research examines whether CFO incentive compensation such as equity incentives is associated with earnings management or manipulation above and beyond that brought about through CEO influence [13, 14]. Yet, CFOs' incentive compensation is often much smaller than that of the CEOs and, therefore, may only partly explain CFOs' desire to meet earnings targets. As the quote at the beginning of this article illustrates, the nature of CFOs' responsibilities makes them vulnerable to dismissal when, for example, the firm misses earnings targets or benchmarks.

In their survey of more than 400 CFOs, Graham, Harvey, and Rajgopal [15] report that more than 75 percent of the survey respondents agree that their desire to hit an earnings target is driven more by career concerns than by short-term compensation motivations. Graham *et al.* [15] argue that failure to hit the earnings target may be indicative of CFOs' incompetence in the labor market for executives and thus may pose a serious threat to CFOs' labor market mobility. One CFO interviewed by Graham *et al.* [15] stated, "I miss the target, I am out of a job." The survey evidence clearly highlights the need to investigate CFOs' motivation to manage or manipulate accounting numbers because of career concerns.

We therefore examine both the bonus and career consequences (in the form of dismissal, i.e., forced turnover) for CFOs of failure to meet quarterly earnings benchmarks. We consider two well-known earnings benchmarks: 1) consensus analyst earnings forecast, and 2) earnings for the same quarter of the prior year. We use these two earnings benchmarks because the survey respondents in Graham *et al.* [15] identified these two metrics as the most important targets. We predict that the annual bonus penalty and probability of CFO forced turnover increase with the number of quarters that a firm reports earnings below the consensus analyst forecast and earnings for the same quarter of the prior year.

Our sample includes CFOs for the S&P 1500 firms covered by both the Board Analyst database and the ExecuComp database from 2001 to 2006. Consistent with our prediction, we find that CFO turnover is more likely when the firm misses the consensus analyst forecast for more than three quarters in the prior year after we control for established determinants of executive turnover. We also document a similar finding for earnings for the same quarter of the prior year as an earnings benchmark. When we turn our attention to the effect of missing earnings benchmarks on CFOs' annual bonus, we find a significant incremental negative effect on CFO annual cash bonus when the firm's quarterly earnings are below the consensus analyst forecast or the earnings for the same quarter of the prior year, after controlling for accounting and stock price performance.

We next examine whether CFO bonus and career consequences of missing earnings benchmarks are conditional on a

firm's corporate governance quality. On one hand, prior research documents that better-governed firms are more likely to dismiss a CEO for poor performance [17-19]. Given that negative earnings surprise is clearly a signal of poor performance and more directly attributable to the CFO, one might argue that the adverse consequences of missed earnings benchmarks will be stronger for CFOs in better-governed firms. On the other hand, the adverse consequences of missed earnings benchmarks may be weaker for CFOs in better-governed firms if the firms with strong corporate governance deemphasize the negative consequences of missed earnings benchmarks to discourage earnings management or manipulation [4, 6, 20, 21].

We find that the effect of missing the consensus analyst forecast on CFO dismissal is more pronounced for firms with better governance, consistent with better-governed firms considering negative earnings surprise more seriously as a signal of poor performance. We, however, do not find evidence that the adverse effect of missing earnings benchmarks on CFO annual bonus is conditional on the quality of governance.

Our study contributes to the executive compensation and turnover literature in the following ways. First, we add to the growing literature on the consequences to corporate executives of missing earnings benchmarks [11, 22, 23]³. More specifically, our study contributes to the growing literature examining CFO incentives to manage or manipulate accounting numbers, in view of the increasingly important role that the CFO plays in the firm's financial reporting process [2, 4, 15, 23-25]. Although there is a vast academic literature on CEO compensation and turnover, there is relatively little research about the factors influencing CFO forced turnover and compensation penalties. Our study sheds light on career concerns and compensation pressure that may cause CFOs to excessively fixate on accounting numbers such as earnings.

Our results suggest that there is a significant career penalty on CFOs when their firms miss quarterly earnings benchmarks, consistent with the career concern motivation that Graham *et al.* [15] describe. While CFOs may also bear a cost in the form of reduced bonuses after missing earnings benchmarks, CFO dismissal is an even more drastic action that the board can take. Our results on CFO turnover suggest that career concerns (i.e., potential dismissal and its ramifications) may provide a first-order motivation for CFOs to engage in earnings management or manipulation.

Second, we provide evidence that the relation between negative earnings surprise and CFO forced turnover increases with the quality of corporate governance. This finding is important because there are countervailing forces on the role of corporate governance in moderating this relationship. Our findings support that missing the consensus analyst forecast is interpreted as a more informative signal of CFO ability by firms with better governance, suggesting

³ In a concurrent working paper, Dikolli *et al.* [11] document that the likelihood of CEO turnover is associated with missing earnings benchmarks. In another concurrent working paper, Mergenthaler *et al.* [23] examine the effect of missing earnings benchmarks on the dismissal of both CEOs and CFOs, but they do not examine the moderating role of corporate governance in the relation between executive turnover and missing earnings benchmarks.

that better board monitoring actually strengthens the use of earnings targets as inputs for the CFO evaluation process. Our findings stand in contrast to the claim that in the post-SOX environment, corporate boards responded to the criticism on firms' excessive focus on short-term earnings by decreasing emphasis on the importance of meeting earnings targets to discourage earnings management or manipulation by managers [4].

The remainder of the paper is organized as follows. We review prior literature and develop our hypotheses in the next section. In subsequent sections, we discuss our sample and research design, present our results, and provide a conclusion.

PRIOR LITERATURE AND HYPOTHESES

Literature on Earnings Benchmarks

Prior research documents severe negative stock market reactions to small misses from earnings targets. Skinner and Sloan [26], for example, show that stock price falls on average by 5.05% when firms miss consensus analyst earnings forecasts (also see [27-29]). These empirical findings suggest that there are substantial capital market penalties for firms that miss consensus analyst earnings forecasts. Executives may place great emphasis on meeting earnings benchmarks if there are sizable compensation consequences.⁴ Matsunaga and Park [22], for example, document a significant incremental adverse effect on CEO annual cash bonuses when the firm's quarterly earnings fall short of the consensus analyst forecast or the earnings for the same quarter of the prior year.

Graham *et al.* [15] provide survey and field evidence that the two most important earnings benchmarks that CFOs care about are quarterly earnings for the same quarter last year and the consensus analyst forecasts. Further, CFOs try to avoid missing earnings benchmarks because of concerns about internal and external job prospects. Only a few papers have examined the career consequences of failure to meet earnings benchmarks. Dikolli *et al.* [11] find that the likelihood of CEO turnover increases in the number of quarters a firm misses the consensus analyst forecast or the same quarter prior year earnings. They argue that meeting or beating earnings benchmarks (earnings surprises) convey information about a CEO's uncertain ability and the board terminates a CEO's employment if the CEO's track record of missing earnings benchmarks reveals sufficient information about the CEO's inferior quality.

The most closely related work to ours is Mergenthaler *et al.*'s [23] examination of the career consequences to both CEOs and CFOs of missing quarterly benchmarks. They provide evidence that missing quarterly earnings benchmarks, especially consensus analyst forecasts, is related to lower compensation and a higher likelihood of CEO and CFO forced turnover. We examine a different time period that includes more post-SOX years, and also, additionally, examine the effect of governance effectiveness on the career consequences of missing earnings benchmarks.

Literature on CFO Turnover and Compensation

While there is a vast academic literature on CEO compensation and turnover (see [30, 31], respectively, for reviews of the literature), we have limited knowledge of the factors influencing CFO turnover and compensation. Mian [2] is the first paper that provides large-sample evidence on why firms replace their CFOs. He finds that CFOs are replaced following weak stock price performance. CFO turnover is usually preceded by CEO turnover and a new CFO is more likely from outside the firm (i.e., the external succession rate is much higher for CFOs).

A stream of recent studies on CFO turnover relates earnings restatements to CFO dismissal [32-35]. Collins *et al.* [34], for example, find that firms restating earnings exhibit higher rates of forced CFO turnover. They also report that long-term labor market penalties for former restatement-firm CFOs become more severe in the post-SOX period. These studies collectively suggest that CFOs are increasingly held responsible for accounting manipulation.

Other studies examine how CFO incentive compensation has changed in response to SOX. Using a large sample of public companies, Wang [36] finds that the sensitivity of CFO compensation to financial performance indeed increased in the post-SOX period.⁵ In contrast to Wang [36], Indjejikian and Matejka [4] provide survey evidence that public firms reduce the weight placed on financial performance in determining CFO incentive compensation in the post-SOX period. They interpret this finding as consistent with firms attempting to discourage earnings management or manipulation by altering CFOs' economic incentives.

Hypotheses Development

The prior discussion suggests that executives have economic incentives to meet or beat earnings benchmarks. Dikolli *et al.* [11] provide evidence consistent with boards using the CEO's track record of meeting or beating earnings benchmarks in CEO dismissal decisions. Matsunaga and Park [22] also suggest that boards penalize CEOs by reducing bonuses for failure to meet quarterly earnings benchmarks. In line with Graham *et al.*'s [15] survey and field evidence on CFOs' desire to hit earnings targets, we expect the same predictions to hold for CFOs [23]. We argue that the bonus and career consequences of failure to meet earnings benchmarks may be more severe for CFOs than for CEOs. First, a powerful CEO may use the CFO as a scapegoat for failing to meet earnings expectations from Wall Street [23].⁶ Second, the failure to meet earnings benchmarks may signal that the CFO is unable to accurately forecast the firm's future prospects. For firms that issue earnings guidance (i.e., management earnings forecasts), CFOs generally have responsibility to communicate information to analysts regarding forecasted earnings. Because the CFO is in charge of guiding investors, she is the obvious target when failing to meet earnings benchmarks.

⁴ These earnings targets are usually stated in terms of earnings per share (EPS).

⁵ Carter *et al.* [21] document a similar finding for a sample of CEOs in S&P 1500 firms.

⁶ Barr [37] cites the quote by former Nike CFO Robert Falcone, "Firing the head of sales wouldn't make a difference to Wall Street. But shareholders notice when the CFO goes."

One related question is what earnings benchmark is more informative for inferring CFO ability. In a concurrent working paper, Mergenthaler *et al.* [23] also examine the career consequences for both CEOs and CFOs of missing quarterly benchmarks. They show that consensus analyst forecast rather than same quarter prior year earnings is a key benchmark associated with forced CEO and CFO turnover. In another concurrent working paper, Dikolli *et al.* [11], on the other hand, predict and find that same quarter prior year earnings rather than consensus analyst forecast is a key benchmark for CEO turnover. To the extent that the CFO is involved in the process of guiding analysts to form earnings targets, we predict that the consensus analyst forecast will provide more useful information on CFO ability than same quarter prior year earnings. The above discussion leads to the following hypotheses:

H1a

Ceteris paribus, the probability of CFO forced turnover is positively associated with the number of quarters the firm reports earnings below the earnings benchmark.

H1b

Ceteris paribus, the annual bonus of CFOs is negatively associated with the number of quarters the firm reports earnings below the earnings benchmark.

While Mergenthaler *et al.* [23] find empirical support for executive concerns about missing earnings benchmarks as reported by Graham *et al.* [15], they do not examine the effect of governance effectiveness on the career consequences of missing earnings benchmarks. Examining the effect of firms' governance structure on the consequences of missing earnings benchmarks is important because there is a trade-off between encouraging effort on improving accounting performance, and discouraging earnings management or manipulation [20, 38].

Strengthening the link between missing earnings targets and adverse bonus and career consequences may motivate executives to exert more effort on improving accounting performance, but has an unintended consequence of encouraging them to manipulate earnings to hit the targets [4, 6, 20, 21]. Furthermore, CFOs are subject to greater legal responsibilities in the post-SOX period [25]. It is, therefore, an open question whether the quality of monitoring by governance mechanisms is positively or negatively associated with adverse career and bonus consequences of missing earnings targets in a broad cross-section. Using a large sample of CFOs in the post-SOX environment when the cost of earnings manipulation becomes substantially higher, we examine this issue by examining the following hypothesis:

H2

Ceteris paribus, the CFO bonus and career penalties for missing quarterly earnings benchmarks are moderated by the quality of firms' corporate governance mechanisms.

RESEARCH DESIGN

Sample Selection

Our sample consists of CFOs for the S&P 1500 firms covered by the Board Analyst database from 2001 to 2006. We restrict our sample to the 2001-2006 period because the

CFO information in the Board Analyst database is only available for years between 2001 and 2006. From the Board Analyst database, we identify 12,411 firm-year observations, with 1,368 CFO turnovers. These CFO turnover observations include both performance-related and non-performance-related turnover such as retirements and departure due to death, health reasons, and acceptance of another position within or outside the firm. Failure to distinguish between forced and voluntary CFO turnover may induce a measurement error in our dependent variable, CFO turnover [39], and lead to biased inferences. Notably, Prince [40] reports that voluntary CFO turnover has recently soared because "CFOs are no longer motivated by a big paycheck to stay in a pressure-cooker job that carries with it a tremendous amount of personal liability."

We thus classify each turnover as either forced or voluntary following the decision process used in Huson, Parrino, and Starks [41]. Specifically, if *The Wall Street Journal* reports that the CFO was fired, forced from the position, or departed due to unspecified policy differences, the turnover is classified as forced. For the remaining cases, the turnover is classified as forced if the replaced CFO is under the age of 60 and *The Wall Street Journal* either (1) does not report that the departure is due to death, health issues, or the acceptance of another position, or (2) the departure is not announced at least six months in advance.

For the 12,411 firm-year observations, we collected CFO compensation data from the ExecuComp database and firms' characteristics and financial performance data from the Compustat database. We also collected and calculated stock return and stock return volatility from CRSP. Our analyst forecast data are from the First Call database. We calculate analyst forecast error by comparing firms' latest quarterly consensus mean analyst forecast with actual earnings. To determine firms' corporate governance quality, we adopt the governance score used in Brown and Caylor [29] because their measure covers relatively more firms in our sample period. However, the governance score data only spans 2003 to 2005. We, therefore, use the average score as our corporate governance quality proxy. After matching all these databases, our final sample consists of 4,800 firm-year observations.

Empirical Models and Measures

We use two different models to test our hypotheses. Our first model examines the effect of missing earnings benchmarks on CFO replacement decisions.

$$\begin{aligned} \text{Turnover}_{i,t} = & \alpha_0 + \alpha_1 \text{Miss1}_{i,t-1} + \alpha_2 \text{Miss2}_{i,t-1} + \alpha_3 \text{Miss3}_{i,t-1} \\ & + \alpha_4 \text{Miss4}_{i,t-1} + \alpha_5 \text{Gov}_i + \alpha_6 \text{Miss1}_{i,t-1} * \text{Gov}_i + \alpha_7 \text{Miss2}_{i,t-1} * \text{Gov}_i \\ & + \alpha_8 \text{Miss3}_{i,t-1} * \text{Gov}_i + \alpha_9 \text{Miss4}_{i,t-1} * \text{Gov}_i + \alpha_{10} \Delta \text{AdjROA}_{i,t-1} \\ & + \alpha_{11} \text{AdjRET}_{i,t-1} + \alpha_{12} \text{RetVol}_{i,t-1} + \alpha_{13} \text{Mtb}_{i,t} + \alpha_{14} \text{Size}_{i,t} \\ & + \alpha_{15} \text{Herfindahl Index}_{i,t} + \alpha_{16} \text{CFO Age}_{i,t} + \text{Year Dummies} \\ & + \text{Industry Dummies} \end{aligned} \quad (1)$$

$\text{Turnover}_{i,t}$ = Binary dependent variable which equals one when there is CFO turnover for firm i in year t , zero otherwise;

$\text{Miss}(n)_{i,t-1}$ = Equals one if firm i missed the earnings benchmark (consensus of analysts' latest EPS forecast or prior year's earnings in the

- same quarter) in year $t-1$ for exactly n quarters in the prior year, zero otherwise;
- Gov_i = Equals one if firm i 's governance score is greater than the median governance score of the sample;
- $\Delta AdjROA_{i,t-1}$ = Industry-adjusted ROA of firm i in year t minus that in year $t-1$;
- $AdjRET_{i,t-1}$ = 12-month compounded industry-adjusted return of firm i in year $t-1$;
- $RetVol_{i,t-1}$ = Standard deviation of firm i 's monthly industry-adjusted returns over 12 months in year $t-1$;
- $Mtb_{i,t}$ = Firm i 's market value of equity divided by its book value of equity at the end of year t ;
- $Size_{i,t}$ = Natural log of firm i 's total assets at the beginning of year t ;
- $Herfindahl\ index_{i,t}$ = Measure of industry concentration in year t , which is defined as the sum of squares of market share (in terms of sales) in the same 2-digit SIC industry;
- $CFO\ Age_{i,t}$ = Incumbent CFO's age in year t .

Consistent with Matsunaga and Park [22], we use separate indicator variables representing the number of quarters a firm misses an earnings benchmark (once, twice, etc.) rather than using the number of missing quarters (0, 1, 2, 3, or 4) as a continuous variable, due to a potential nonlinear relationship between the number of missing quarters and the turnover decision. Because we are interested in examining whether there will be an incremental career penalty for missing an earnings benchmark, we control for other factors that prior literature suggests may influence CEO turnover decisions. We first control for firms' lagged accounting and stock performance measures [17, 42]. In particular, we control for the change in industry-adjusted ROA ($\Delta AdjROA_{i,t-1}$) and industry-adjusted annual stock return ($AdjRET_{i,t-1}$), and predict that they are negatively associated with the probability of CFO turnover. We also control for stock return volatility ($RetVol_{i,t-1}$) in our turnover model because prior research documents that it is positively correlated with CFO turnover [11]. We also control for other firm characteristics such as market to book ratio, firm size, and industry competition [43]. Finally, we control for the incumbent CFO's age.

Our second model examines the relation between missing earnings benchmarks and the change in the CFO's annual bonus.

$$\Delta Bonus_{i,t} = \alpha_0 + \alpha_1 Miss1_{i,t} + \alpha_2 Miss2_{i,t} + \alpha_3 Miss3_{i,t} + \alpha_4 Miss4_{i,t} + \alpha_5 Gov_i + \alpha_6 Miss1_{i,t-1} * Gov_i + \alpha_7 Miss2_{i,t} * Gov_i + \alpha_8 Miss3_{i,t} * Gov_i + \alpha_9 Miss4_{i,t} * Gov_i + \alpha_{10} \Delta AdjROA_{i,t} + \alpha_{11} AdjRET_i + Year\ Dummies + Industry\ Dummies \quad (2)$$

$\Delta Bonus_{i,t}$ = The CFO's current year bonus minus prior year bonus, scaled by prior year salary.

We estimate ordinary least squares (OLS) regressions with Huber-White robust standard errors clustered by firm.

These standard errors are robust to both serial correlation and heteroskedasticity. Note that our turnover model uses the prior year as the performance period, while our bonus model uses current year financial performance. The difference stems from the fact that annual bonus compensation is usually determined by a firm's short-term performance (one year or less), but the board is likely to use longer performance periods to observe and infer the CFO's ability and to make the retain/replace decision. For example, Gilson [44] and Murphy and Zimmerman [42] both include current and the past two years' performance when examining determinants of CEO turnovers. Moreover, due to data availability constraints, we are unable to determine the turnover event month for some of our observations. Thus, using contemporaneous performance variables in the turnover model could potentially cause data mismatching problems. We take a conservative approach by examining in our main analysis the effect of missing prior year, instead of current year, quarterly earnings benchmarks on the CFO replacement decision.⁷

RESULTS

Descriptive Statistics

Table 1 Panel A presents the descriptive statistics of our sample. The average probability of CFO turnover is 12.2%, while forced CFO turnover is only 4.7%. Our forced turnover rate is approximately the same as that in Mergenthaler *et al.* [23], but our generic turnover rate is slightly higher than the 9% rate in their sample. We trimmed $\Delta Bonus_{i,t}$ and $Mtb_{i,t}$ at the top 1% and bottom 99% to minimize the undue impact of extreme outliers.

Panel B presents a time trend of CFO turnover observations in our sample period. The generic CFO turnover rate, which includes both forced and voluntary turnover, increased significantly from about 4% of the sample in 2001 to approximately 10% in 2002 and remained in the double digits since 2002. The forced CFO turnover rate also substantially increased over time, from 0% in 2001 to more than 6% in 2003, hovering around 5% after that. This trend is consistent with business press reports that the turnover rate among CFOs at public companies has soared over recent years, in part because of the increased workload and legal liability for errors that CFOs face following high-profile accounting scandals and the enactment of SOX in 2002 [40].

Panel C reports the number and percentage of firms missing n ($n = 0, 1, 2, 3, 4$) quarterly earnings benchmarks in each year. The upper half of Panel C shows that the percentage of firms meeting consensus analyst forecasts for all four quarters in the prior year exhibits an overall downward trend, with steady decreases since SOX was enacted in 2002. Mirroring these results, the percentage of firms missing consensus analyst forecasts for 1 or 2 quarters exhibits an overall upward trend, with steady increases since 2002. While we do not further explore this trend, one possible explanation is that the higher litigation risk and improved governance mechanisms enforced post-SOX have reduced managements' incentive and/or ability to manage or manipulate earnings to meet or beat analysts' forecasts.

⁷ In untabulated sensitivity analysis, we test model (1) using the number of quarters a firm missed consensus analyst forecasts and the same quarter prior year earnings in both year t and year $t-1$. Our inferences remain unchanged.

Table 1. Descriptive Statistics.
Panel A: Descriptive Statistics for Full Sample

	N	Mean	Median	Std Dev.	Min	Max
<i>Turnover</i>	4689	0.122	0	0.327	0	1
<i>Forced Turnover</i>	4324	0.047	0	0.213	0	1
Δ <i>Bonus</i>	4800	0.041	0.020	0.770	-5.255	8.034
<i>Gov</i>	4800	0.468	0	0.499	0	1
Δ <i>AdjROA</i> _{<i>t</i>}	4800	-0.009	-0.003	0.076	-2.265	0.777
Δ <i>AdjROA</i> _{<i>t-1</i>}	4760	-0.008	-0.001	0.093	-2.265	1.890
<i>AdjRET</i> _{<i>t</i>}	4800	-0.057	-0.082	0.332	-0.949	5.759
<i>AdjRET</i> _{<i>t-1</i>}	4772	-0.011	-0.074	0.469	-0.949	8.903
<i>RetVol</i> _{<i>t</i>}	4689	0.087	0.075	0.052	0.011	0.585
<i>RetVol</i> _{<i>t-1</i>}	4689	0.101	0.085	0.063	0.016	0.695
<i>Mtb</i>	4689	2.902	2.248	2.165	0.311	24.540
<i>Size</i>	4689	7.823	7.666	1.660	3.318	14.449
<i>Herfindahl Index</i>	4689	0.068	0.045	0.062	0.014	0.659
<i>CFO Age</i>	4689	49.049	49	6.427	30	72

Note:

1. Both Δ *Bonus* and *Mtb* are trimmed at the top 1% and bottom 99%.

2. Variable Definitions:

Turnover equals one when there is CFO turnover for firm *i* in year *t*, zero otherwise. Forced Turnover equals one when there is forced (involuntary) CFO turnover for firm *i* in year *t*, zero for non-turnover. Δ *Bonus* equals current year bonus minus prior year bonus, scaled by prior year salary. *Gov* equals 1 if the firm's governance score is greater than the median governance score of the sample. Δ *AdjROA*_{*t*} is measured as the industry-adjusted ROA in year *t* minus industry-adjusted ROA in *t* -1. *AdjRET*_{*t*} is the 12-month compounded industry-adjusted return in year *t*. *RetVol*_{*t*} is the standard deviation of the monthly industry-adjusted return of the 12 months in year *t*. *Mtb* is the market value of equity divided by the book value of equity. *Size* is the natural log of total asset. *Herfindahl index* is the sum of squares of market share in the same 2-digit SIC industry. *CFO Age* is the incumbent CFO's age in the current year.

Panel B. Distribution of Observations: No Turnover, Generic Turnover, and Forced Turnover

	2001	2002	2003	2004	2005	2006
No Turnover	885 (95.99%)	959 (89.96%)	988 (83.94%)	1101 (86.69%)	1052 (84.57%)	1208 (85.80%)
Generic Turnover	37 (4.01%)	107 (10.04%)	189 (16.06%)	169 (13.31%)	192 (15.43%)	200 (14.20%)
Forced Turnover	0 (0%)	40 (3.75%)	73 (6.20%)	57 (4.49%)	72 (5.79%)	64 (4.55%)
Total	922	1066	1177	1270	1244	1408

Panel C. Number of Quarters Missing Earnings Benchmarks

	2000	2001	2002	2003	2004	2005	2006
Analyst Forecast							
Miss 0 quarters	507 (55.71%)	437 (47.40%)	555 (52.06%)	566 (48.09%)	544 (42.83%)	483 (38.83%)	518 (36.79%)
Miss 1 quarter	220 (24.18%)	262 (28.42%)	274 (25.70%)	308 (26.17%)	384 (30.24%)	387 (31.11%)	454 (32.24%)
Miss 2 quarters	98 (10.77%)	143 (15.51%)	133 (12.48%)	175 (14.87%)	216 (17.01%)	225 (18.09%)	286 (20.31%)
Miss 3 quarters	56 (6.15%)	63 (6.83%)	86 (8.07%)	91 (7.73%)	86 (6.77%)	122 (9.81%)	108 (7.67%)
Miss 4 quarters	29 (3.19%)	17 (1.84%)	18 (1.69%)	37 (3.14%)	40 (3.15%)	27 (2.17%)	42 (2.98%)
Total	910	922	1066	1177	1270	1244	1408

Table 1. Contd....

	2000	2001	2002	2003	2004	2005	2006
Prior Year Earnings							
Miss 0 quarters	458 (50.33%)	252 (27.33%)	417 (39.12%)	485 (41.21%)	680 (53.54%)	577 (46.38%)	620 (44.03%)
Miss 1 quarter	174 (19.12%)	137 (14.86%)	225 (21.11%)	234 (19.88%)	263 (20.71%)	241 (19.37%)	316 (22.44%)
Miss 2 quarters	113 (12.42%)	149 (16.16%)	183 (17.17%)	193 (16.40%)	157 (12.36%)	216 (17.36%)	220 (15.63%)
Miss 3 quarters	106 (11.65%)	187 (20.28%)	142 (13.32%)	163 (13.85%)	108 (8.50%)	132 (10.61%)	152 (10.80%)
Miss 4 quarters	59 (6.48%)	197 (21.37%)	99 (9.29%)	102 (8.67%)	62 (4.88%)	78 (6.27%)	100 (7.10%)
Total	910	922	1066	1177	1270	1244	1408

Results

Table 2 presents the logistic regression results of Model (1). Although forced turnover is a more appropriate measure in testing our hypotheses, we also use generic turnover as an alternative dependent variable to serve as a robustness check. Columns (1) and (3) show the results using generic CFO turnover as the dependent variable, while columns (2) and (4) present the results when we include forced turnovers only in our sample (that is, exclude voluntary turnovers). Columns (1) and (2) show that missing 3 or 4 quarters of consensus analyst forecasts is positively associated with the probability of CFO turnover. This result holds in both the generic and forced turnover models. Columns (3) and (4) present the result using the same quarter's earnings in the prior year as a benchmark, and we find positive correlation, although less pronounced, between missing the same quarter prior year earnings and the probability of CFO turnover.⁸ Our H1a is thus supported.

We also assess the economic significance of our results and find that missing one quarter of consensus analyst forecast in the prior year increases the likelihood of forced CFO turnover by 0.88%, while a one-quarter earnings decrease increases the likelihood by 0.72%, compared to meeting benchmarks for all four quarters in the prior year.⁹ Note that the unconditional probability of forced CFO turnover is only 4.7% as reported in Panel A of Table 1. Having one additional quarter of missing the consensus analyst forecast and same quarter last year earnings increases the probability of CFO dismissal by 18.57% and 15.19%, respectively. Our finding provides evidence that missing earnings benchmarks

does have economically significant adverse consequences to the CFO's future career.

H2 predicts that corporate governance quality has a moderating effect on the relation between missing quarterly earnings benchmarks and the CFO's bonus and dismissal. In Table 2, we find that the interaction terms of missing earnings benchmark and corporate governance are significantly correlated with the probability of forced CFO turnover. Moreover, the moderating effect is more pronounced when consensus analyst forecast is used as a benchmark, suggesting that better-governed firms place greater emphasis on CFOs' role in reducing negative earnings surprise, and in especially in meeting or beating consensus analyst forecast.

Our evidence suggests that firms with stronger monitoring mechanisms are more likely to incorporate the failure to meet quarterly earnings benchmarks into CFO replacement decisions. This finding is consistent with those of Mergenthaler *et al.* [23], who report that CEO and CFO career penalties for missing earnings benchmarks have increased in the post-SOX period. We interpret our finding as suggesting that firms put more weight on accounting earnings in executive employment contracts when better monitoring by the board constrains the discretion allowed to executives, and in turn, constrains earnings management or manipulation [20, 38].

Table 3 presents the effect of missing earnings benchmarks on CFOs' annual bonus. Consistent with the negative effect of missing earnings benchmarks on CEO bonus documented by Matsunaga and Park [22], we find a strong negative association between missing earnings benchmarks and CFOs' bonus. The result is consistent with our H1b, which predicts that CFOs are penalized in terms of a bonus cut for not meeting or beating the consensus analyst forecast or having earnings decreases compared to the same quarter of the prior year.¹⁰ In terms of economic significance, our untabulated results indicate that CFOs faced a bonus decrease equal to 3.9% of the prior year's salary for missing

⁸ Dikolli *et al.* [11] hypothesize and find that CEO turnover is more sensitive to missing the same quarter prior year earnings than to missing consensus analyst forecasts. In contrast, Mergenthaler *et al.* [23] report that consensus analyst forecast appears to be the more important metric in boards' decisions about CFOs. To shed light on this issue, we replicate the analysis with our CFO turnover data. Untabulated results show that when included in the same model, both falling short of the same quarter prior year earnings and consensus analyst forecast are still significantly associated with the probability of CFO turnover. However, in contrast to the finding of Dikolli *et al.* [11], but more consistent with Mergenthaler *et al.* [23], we find that consensus analyst forecasts have more predictive power for CFO turnover than do earnings decreases. This finding is consistent with our conjecture that to the extent that the CFO is involved in the process of guiding analysts to form earnings targets, analyst forecasts will provide more useful information on CFO ability than same quarter prior year earnings.

⁹ We follow Mergenthaler *et al.*'s [23] procedure to estimate the marginal effect of missing earnings benchmarks. First, we estimate the predicted probability of forced turnover by setting the number of quarters missing earnings benchmark (*Miss#*) at 0 and all other control variables at sample means. Second, we change *Miss#* to 1, while holding all other variables unchanged, and estimate the predicted forced turnover probability again. The difference between the two predicted probabilities serves as our proxy for the marginal effect of missing earnings benchmarks for one quarter in the prior year.

¹⁰ Similar to the analysis in footnote 8, we test the relative sensitivity of the two earnings benchmarks on CFOs' bonus. However, in the bonus change model, the number of quarters missing the consensus analyst forecast becomes insignificant when the number of quarters with an earnings decrease is added. This result suggests that most firms rely more on prior year's earnings than on analysts' forecast in setting earnings targets. One reason for this finding, which is contrary to the CFO turnover model, is that the board often uses prior year earnings as internal targets for bonus decisions [30]. Another potential reason that missing the consensus analyst forecast does not load is that our analysis uses the most recent consensus analyst forecast, which has incorporated more new information and should be very different from that available while firms set their earnings target.

Table 2. Effect of Failure to Meet Earnings Benchmarks on CFO Turnover

$$\begin{aligned}
\text{Turnover}_{i,t} = & \alpha_0 + \alpha_1 \text{Miss1}_{i,t-1} + \alpha_2 \text{Miss2}_{i,t-1} + \alpha_3 \text{Miss3}_{i,t-1} + \alpha_4 \text{Miss4}_{i,t-1} + \alpha_5 \text{Gov}_i \\
& + \alpha_6 \text{Miss1}_{i,t-1} * \text{Gov}_i + \alpha_7 \text{Miss2}_{i,t-1} * \text{Gov}_i + \alpha_8 \text{Miss3}_{i,t-1} * \text{Gov}_i + \alpha_9 \text{Miss4}_{i,t-1} * \text{Gov}_i \\
& + \alpha_{10} \Delta \text{AdjROA}_{i,t-1} + \alpha_{11} \text{AdjRET}_{i,t-1} + \alpha_{12} \text{RetVol}_{i,t-1} + \alpha_{13} \text{Mtb}_{i,t} + \alpha_{14} \text{Size}_{i,t} \\
& + \alpha_{15} \text{Herfindahl Index}_{i,t} + \alpha_{16} \text{CFO Age}_{i,t} + \text{Year Dummies} + \text{Industry Dummies}
\end{aligned}$$

Dependent Variable	Predicted Signs	Analysts' Forecast		Prior Year Earnings	
		Generic Turnover (1)	Forced Turnover (2)	Generic Turnover (3)	Forced Turnover (4)
<i>Intercept</i>		0.388 (0.65)	-1.016 (1.83)	0.375 (0.60)	-1.147 (2.35)
<i>Miss1_{t-1}</i>	+	0.067 (0.18)	-0.040 (0.02)	0.157 (0.77)	-0.053 (0.03)
<i>Miss2_{t-1}</i>	+	0.199 (1.12)	0.120 (0.17)	0.182(0.88)	0.651 (5.64) ***
<i>Miss3_{t-1}</i>	+	0.400 (3.12) **	0.693 (4.88) **	0.419 (4.27) **	0.378 (1.30)
<i>Miss4_{t-1}</i>	+	0.653 (3.01) **	-0.661 (0.41)	0.154 (0.39)	0.490 (1.85) *
<i>Gov</i>		0.106 (0.54)	-0.458 (3.13) *	-0.0543 (0.13)	-0.328 (1.50)
<i>Miss1_{t-1}*Gov</i>		0.009 (0.00)	0.759 (4.21) **	0.346 (1.91)	0.724 (2.79) *
<i>Miss2_{t-1}*Gov</i>		0.181 (0.46)	1.019 (5.83) **	0.090 (0.11)	0.028 (0.00)
<i>Miss3_{t-1}*Gov</i>		-0.365 (1.07)	0.096 (0.04)	0.036 (0.02)	0.582 (1.61)
<i>Miss4_{t-1}*Gov</i>		-0.320 (0.35)	1.909 (2.71) *	0.528 (2.47)	0.744 (2.24)
<i>ΔAdjROA_{t-1}</i>	-	-0.559 (1.17)	-0.072 (0.01)	-0.375 (0.51)	0.359 (0.21)
<i>AdjRET_{t-1}</i>	-	-0.436 (7.32) ***	-0.832 (9.34) ***	-0.413 (6.50) ***	-0.789 (8.44) ***
<i>RetVol_{t-1}</i>	+	1.740 (3.12) **	3.292 (5.57) ***	1.598 (2.57) *	2.972 (4.58) **
<i>Mtb</i>	-	-0.016 (0.49)	-0.000 (0.00)	-0.008 (0.11)	0.010 (0.09)
<i>Size</i>	+	0.108 (9.25) ***	0.126 (5.07) **	0.107 (9.03) ***	0.124 (4.93) **
<i>Herfindahl Index</i>	-	0.701 (0.73)	-0.147 (0.01)	0.906 (1.21)	0.128 (0.00)
<i>CFO Age</i>		-0.067 (75.74) ***	-0.066 (28.50) ***	-0.067 (75.26) ***	-0.065 (27.63) ***
<i>Year Dummies</i>		Yes	Yes	Yes	Yes
<i>Ind. Dummies</i>		Yes	Yes	Yes	Yes
N		4689	4324	4689	4324
Likelihood Ratio χ^2		285.17	165.13	291.76	162.87
Sommer's D		0.394	0.494	0.404	0.493
Pseudo R-Square		0.059	0.038	0.060	0.037

Note:

1. ***, **, * statistically distinct from 0 at the 1%, 5% and 10% level, respectively, one-tailed where signs are predicted, and two-tailed otherwise.

2. Wald χ^2 statistics are reported in parentheses.

3. *Mtb* is trimmed at the top 1% and bottom 99%.

4. *Turnover_{i,t}* equals 1 when there is CFO turnover for firm *i* in year *t*, 0 otherwise. *Miss(n)_{t-1}* equals 1 if the firm missed the earnings benchmark (analysts' latest EPS forecast or prior year earnings for the same quarter) for *n* quarters in the prior year, 0 otherwise. Refer to Table 1 for other variable definitions.

the consensus analyst forecast in one quarter, and 6% for having earnings decreases in one quarter. Our finding is roughly comparable to the findings (4% and 7%, respectively) in Mergenthaler *et al.* [23].

However, we are unable to find any significant interactive effect between corporate governance quality and missing earnings benchmarks. The results show that firms with better corporate governance quality penalize CFOs more heavily for missing earnings benchmarks in the sense of a higher probability of dismissal, but the relation between bonus cuts and missing earnings benchmarks does not differ significantly across firms with different levels of governance strength. Our H2 thus is partially supported.

CONCLUSION

Recent massive accounting scandals have led legislators, regulators, and the general public to voice concerns about how executive compensation and poor corporate governance contributed to the scandals, and to suggest changes in executive compensation and corporate governance. The outcry facilitated passage of the Sarbanes-Oxley Act of 2002, which requires improvements in corporate governance in publicly traded firms, including oversight of executive compensation. A substantial amount of research has focused on various facets of CEO short-term and longer-term compensation, including motivation to meet earnings targets or benchmarks both for compensation and career concerns.

Table 3. Effect of Failure to Meet Earnings Benchmarks on CFO Annual Bonus

$$\Delta Bonus_{i,t} = \alpha_0 + \alpha_1 Miss1_{i,t} + \alpha_2 Miss2_{i,t} + \alpha_3 Miss3_{i,t} + \alpha_4 Miss4_{i,t} + \alpha_5 Gov_i + \alpha_6 Miss1_{i,t-1} * Gov_i + \alpha_7 Miss2_{i,t} * Gov_i + \alpha_8 Miss3_{i,t} * Gov_i + \alpha_9 Miss4_{i,t} * Gov_i + \alpha_{10} \Delta AdjROA_{i,t} + \alpha_{11} AdjRET_i + Year\ Dummies + Industry\ Dummies$$

	Predicted Sign	Analysts' Forecast (1)	Prior Year Earnings (2)
<i>Intercept</i>		-0.516 (-14.02) ***	-0.524 (-14.26) ***
<i>Miss1_t</i>	-	-0.080 (-2.27) **	-0.035 (-0.95)
<i>Miss2_t</i>	-	-0.086 (-2.22) **	-0.048 (-1.06)
<i>Miss3_t</i>	-	-0.086 (-1.51) *	-0.213 (-4.23) ***
<i>Miss4_t</i>	-	-0.227 (-3.24) ***	-0.168 (-3.30) ***
<i>Gov</i>		-0.027 (-0.87)	-0.003 (-0.10)
<i>Miss1_t * Gov</i>		-0.015 (-0.30)	-0.010 (-0.19)
<i>Miss2_t * Gov</i>		0.007 (0.11)	-0.087 (-1.43)
<i>Miss3_t * Gov</i>		-0.051 (-0.64)	-0.066 (-1.01)
<i>Miss4_t * Gov</i>		0.165 (1.59)	-0.042 (-0.56)
<i>ΔAdjROA_t</i>	+	0.963 (4.06) ***	0.759 (3.59) ***
<i>AdjRET_t</i>	+	0.256 (6.85) ***	0.230 (6.42) ***
<i>Year Dummies</i>		Yes	Yes
<i>Ind. Dummies</i>		Yes	Yes
N		4800	4800
Adj. R-Square		0.180	0.187

Notes:

1. ***, **, * statistically distinct from 0 at the 1%, 5% and 10% level, respectively, one-tailed where signs are predicted, and two-tailed otherwise.

2. t statistics are reported in parentheses.

3. *ΔBonus* is trimmed at the top 1% and bottom 99%.

We contribute to the growing body of literature on CFO incentives. The CFO works closely with the CEO and yet has distinct responsibility for the financial reporting system. Anecdotal and survey evidence indicates that CFOs are highly vulnerable to dismissal when their firms miss earnings targets or benchmarks. Moreover, inability to hit the targets may be perceived as a signal that the CFO has inferior skills. These career concerns create pressure for the CFO to manage or manipulate earnings in order to hit the targets.

We empirically investigate whether CFOs suffer adverse effects from missing quarterly earnings benchmarks. Our findings suggest that missing earnings benchmarks has economically significant adverse consequences for a CFO's bonus compensation and future career. The results thus bolster concerns about CFO incentives to manage or manipulate earnings. Strengthening the link between missing earnings targets and adverse bonus and career consequences may motivate CFOs to exert more effort to make business decisions designed to improve accounting performance, but can have the unintended consequence of encouraging manipulation of earnings (that is, choosing excessively aggressive or improper accounting methods in violation of generally accepted accounting principles) in order to hit the targets.

We also examine the relationship between governance effectiveness and the bonus and career consequences of missing earnings benchmarks. Examining this relationship is important because of the inherent trade-off between encouraging effort through adverse consequences upon missing targets and discouraging earnings management or manipula-

tion through improved corporate governance. Our findings suggest that missing the consensus analyst forecast is interpreted as a more informative signal of CFO ability by firms with better governance, indicating that better board monitoring actually strengthens the use of earnings targets as inputs for the CFO evaluation process rather than decreases emphasis on earnings targets to discourage earnings manipulation.

Overall, our study suggests that the CFO's desire to hit the targets partially stems from her career concerns and compensation-based motivation. The CFO oversees a firm's financial reporting process and assumes the ultimate responsibility for delivering financial statements to stakeholders. To the extent that the CFO's economic and career incentives are closely tied to her track record of meeting earnings targets, she will be more pressured to deliver an earnings number that exceeds Wall Street expectations and to potentially engage in earnings management or manipulation through making creative and aggressive accounting choices. These incentives and resulting pressures create ethical concerns regarding the role of the CFO in safeguarding firms' financial reporting process.

We also believe that as a key member of a firm's management team, but still subordinate to the CEO, the CFO may be subject to pressure from the CEO, as illustrated by our opening quote. Due to data limitations, we were unable to distinguish between CFO dismissals initiated by the CEO and those by the board. It is not uncommon for the CEO of an underperforming firm to replace the CFO as a first reme-

dial action or as a scapegoat. The CEO could thus, through a threat of dismissal, exert undue pressure on the CFO to engage in unethical behavior such as earnings manipulation. A careful examination of the extent to which the CFO faces such pressure from the CEO is an important avenue for future research that would increase our insight into how to better structure the role and incentives of CFOs in order to maintain integrity in the financial reporting process.

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