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The Effect of Missing a Quarterly Earnings Benchmark on the CEO's Annual Bonus

Steven R. Matsunaga
University of Oregon
Chul W. Park
Hong Kong University of Science and Technology

ABSTRACT: We investigate the effects of missing quarterly earnings benchmarks on the CEO's annual bonus. After controlling for the general pay-for-performance relation, we find 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, for at least two quarters during the year. However, we find that the relation between the bonus and the number of loss quarters is not significant. Our results suggest that CEO bonus payments provide CEOs with economic incentives to meet quarterly analyst earnings forecasts and earnings from the same quarter of the prior year.

Keywords: *executive compensation; quarterly earnings benchmark; earnings management.*

I. INTRODUCTION

Recent empirical evidence suggests that managers adjust earnings to meet various benchmarks (e.g., Burgstahler and Dichev 1997; DeFond and Park 1997; Brown forthcoming; Degeorge et al. 1999; Myers and Skinner 1999). Specifically, these studies examine earnings patterns around various benchmarks, and conclude that managers try to avoid reporting losses, decreases in earnings from the prior year, and earnings that

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fall short of the consensus analyst forecast.[1] However, there is little evidence on the precise incentives that lead CEOs to manage earnings to meet or beat these benchmarks. Such incentives could include job security, a possible decline in the value of the CEO's equity holdings, or compensation arrangements.

In this paper we focus on CEO compensation and examine whether the CEO's bonus is lower when the firm misses quarterly earnings benchmarks (the quarterly analyst forecast, the same quarter of the prior year, and zero). Our analysis controls for the general pay-for-performance relation, because prior research has documented that CEO bonus payments are positively associated with both accounting and stock price measures of firm performance (e.g., Janakiraman et al. 1992; Clinch and Magliolo 1993; Dechow et al. 1994; Baber et al. 1998; Gaver and Gaver 1998; Baber et al. 1999). If the failure to achieve a quarterly earnings benchmark is also an important aspect of accounting performance, then missing a benchmark is likely to have an *incremental* adverse effect on the CEO's compensation beyond a normal penalty for poor performance. As an example, the December 7, 2000 issue of the *Wall Street Journal* reports, "Carly Fiorina, its [Hewlett-Packard Co.'s] president, chairman and chief executive officer, told analysts in a conference call that she and other senior executives will receive no executive bonuses for the second half of the fiscal year ended Oct. 31, as a result of missing analysts' expectations for the fourth quarter (Dow Jones Newswires 2000)."

Because details of CEO compensation contracts are not publicly available, we cannot document a direct contractual link between missing an earnings benchmark and a CEO's bonus payment. However, our discussions with a leading compensation consultant suggest that the effect of missing a quarterly earnings benchmark on a CEO's bonus is likely to result from the compensation committees' exercise of their discretion in the allocation of the bonus pool, as opposed to the benchmark's being an explicit component of the plan.

For our empirical analysis we use a total of 3,651 firm-year observations drawn from the intersection of the ExecuComp, First Call, Compustat, and CRSP databases. We examine the empirical relations between the change in the CEO's bonus (scaled by prior year's salary) and dummy variables representing the frequency with which the firm missed quarterly earnings benchmarks.

To control for overall performance, our regression analysis includes the change in ROA and the firm's stock return, and sensitivity analyses also control for analysts' annual earnings forecast error. In addition, prior research documents that the pay-performance sensitivity is attenuated when performance is poor (e.g., Gaver and Gaver [1998] show that CEOs are more likely to reap rewards for good performance than to be penalized for poor performance), and firms missing a benchmark are likely to be poor performers. Thus, we also control for the interaction between the number of quarters that the firm missed the benchmark and the change in ROA, to ensure that our dummy variables for missing the earnings benchmarks do not spuriously reflect the asymmetric pay-performance sensitivity for poor performers. Given these controls, the estimated coefficients on the earnings benchmark dummy variables indicate whether CEO bonuses suffer an incremental "penalty" for falling short of the benchmark, beyond the "normal" penalty for poor performance.

[1] The results for the analyst forecast benchmark are consistent with the concerns expressed by Securities and Exchange Chairman Arthur Levitt (1998) that firms manipulate earnings to achieve consensus earnings estimates.

With the analyst forecast and the earnings from the same-quarter-of-the-prior-year benchmarks, we find a significantly negative incremental effect on CEO bonuses when the firm misses the benchmark more than once during the year. We also find weak evidence that missing the benchmark just once during the year also has a negative incremental effect on CEO bonuses, although this finding is not robust to alternative specifications. In contrast, we do not find consistent evidence of a significantly negative relation between CEO compensation and the number of quarters during the year that the firm reports net losses (the zero earnings benchmark). Our sample firms report a quarterly loss in only 6 percent of the sample quarters, suggesting that our sample has an abnormally high proportion of successful firms; so avoiding a loss seems to be a relatively low benchmark.

Overall, our evidence indicates that CEO bonuses provide managers with an incentive to meet analyst earnings forecasts and the earnings for the same quarter of the prior year. Such evidence contributes to the earnings management literature by documenting an incentive for CEOs to manage earnings in order to meet benchmarks. In addition, our results suggest that the strength of those incentives depends on whether the firm has missed a quarterly benchmark earlier during the year. Our evidence also provides additional insight into the pay-for-performance relation. For example, Dechow et al. (1994) and Gaver and Gaver (1998) provide evidence that CEO compensation is at least partially protected from unfavorable events. However, our evidence suggests that this protection is not complete in that CEOs are penalized for failing to meet certain earnings benchmarks.

Because our sample selection criteria led to a preponderance of larger, more successful firms, our inferences may not generalize to populations of smaller, or less successful firms. On the other hand, our sample is based upon a relatively large sample of 3,651 firm-year observations that comprise the intersection of populations often used by accounting researchers.

The next section summarizes the related literature on earnings management and develops the study's hypotheses. In Section III, we discuss our sample selection procedure and research design. We discuss the results of our tests in Section IV and summarize our findings and conclusions in Section V.

II. HYPOTHESIS DEVELOPMENT

Recent research has documented unusual earnings patterns around various quarterly or annual benchmarks. Burgstahler and Dichev (1997) document an unusually low (high) number of reported annual earnings fall just below (above) zero and the earnings for the prior year. Burgstahler and Eames (1999) find a similar pattern for annual earnings relative to the analyst forecast benchmark. Burgstahler (1997) (for zero earnings or the earnings for the same quarter of the previous year) and Degeorge et al. (1999) (for all three benchmarks) document similar patterns for quarterly earnings. In a related paper, Brown (forthcoming) shows that loss surprises (relative to analysts' forecasts) are usually negative, and often extreme, whereas profit surprises are usually positive, and often small. This evidence suggests that profitable firms adjust earnings to meet the analysts' forecasts.

The authors of these papers suggest that their evidence is consistent with earnings management in order to meet a given earnings benchmark. However, little evidence is available on specific consequences to management that result from failing to meet such benchmarks.

We investigate the extent to which CEO compensation suffers from an incremental penalty when the firm misses an earnings benchmark. The compensation committee may

exact a penalty if it views missing an earnings benchmark as a signal of poor performance.[2] On the other hand, beating the benchmark could constitute a public, and often well-publicized, signal that allows the firm's compensation committee to justify higher compensation levels to outside shareholders and thereby overcome the political constraints on CEO compensation suggested by Jensen and Murphy (1990). Given that several studies, including Barth et al. (1999), DeFond and Park (2000), and Kinney et al. (2000), document negative market reactions to missed earnings benchmarks, directors concerned about a negative stock price reaction may also reward the manager for meeting earnings benchmarks.

Finally, the board may want to encourage managers to provide analysts with more accurate earnings-related information. Penalizing the manager for failing to achieve the forecast could motivate the manager to truthfully communicate the earnings news.[3] In other words, by exacting a penalty on the CEO (in the form of a lower bonus) when the firm misses the consensus forecasts, boards encourage CEOs to truthfully reveal earnings-related information so analysts can develop more credible earnings forecasts. For example, Matsumoto (2000) presents evidence consistent with managers attempting to guide analyst forecasts.

Despite the resources at the CEO's disposal, failure to meet the benchmark is not uncommon. We find that 34 percent of our sample observations report earnings below the consensus analyst forecast even though the CEO can make production and operating decisions, adjust accounting estimates, or even influence the earnings forecast. This suggests that the benchmarks are fairly difficult to achieve and that there are substantial limits to the CEO's ability to manage earnings (or the forecast) to meet that forecast.

In any case, it is an empirical question whether the board reduces CEO pay when the firm misses a quarterly earnings benchmark. While compensation committees determine CEO pay on an annual basis, firms typically report earnings on a quarterly basis. Given the documented positive relation between annual performance and annual CEO compensation, we investigate whether CEOs suffer an incremental bonus penalty when the firm misses a quarterly earnings benchmark, after controlling for annual performance.

Detailed descriptions of CEO compensation contracts are generally not publicly available, so we cannot use the actual parameters of executive compensation contracts. As a result, empirical studies of executive compensation, (e.g., Defeo et al. 1989; Clinch and Magliolo 1993; Dechow et al. 1994; Baber et al. 1998; Gaver and Gaver 1998), relate the amount of the bonus paid to observable measures of performance. In our case, we assess the relation between the amount of the bonus and the number of quarters in which the firm fails to meet a quarterly earnings benchmark. Evidence that missing the benchmark is associated with lower bonuses would be consistent with explicit contractual penalties for missing the benchmark, or with informal arrangements whereby the compensation committee considers performance relative to the benchmark to justify the magnitude and allocation of the bonus pool.

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[2] Discussing the removal of Dial Corporation's CEO in an August 2000 *Wall Street Journal* article, Lipin and Mathews report, "The move came after the board heard the company would have to warn investors for the third time in a row that quarterly earnings would be below analysts' estimates." This anecdote is consistent with the board's viewing a missed earnings benchmark as a signal of poor performance. The removal of a CEO can be considered an extreme form of a compensation penalty. However, a direct investigation of CEO turnover is beyond the scope of our study.

[3] The credibility of corporate disclosures has received increasing attention. For example, in the June 21, 1999 issue of *Fortune*, Sellers lists several CEOs who have "major credibility problems with investors."

Hypothesis: *Ceteris paribus*, the change in the CEO's bonus is lower when a firm misses a quarterly earnings benchmark.

The *ceterus paribus* condition means that the hypothesis predicts a negative incremental effect of missing the benchmark after controlling for the "normal" effect of performance on pay.

III. RESEARCH DESIGN

Sample Selection

Our sample is based on the intersection of the ExecuComp, First Call, Compustat, and CRSP databases from 1993 to 1997. We obtain our data on CEO compensation and equity holdings from ExecuComp. We use First Call to obtain the quarterly earnings forecasts. Compustat and CRSP provide firm-specific financial information for our control variables. In addition, we require that the CEO hold that position for the full fiscal year; we delete partial-year CEOs. We also delete acting CEOs, co-CEOs, CEOs of subsidiaries, CEOs of firms with zero or negative stockholders equity, and CEOs of firms that changed their fiscal year-ends in the current or previous year. We require each firm to have quarterly earnings data for all four quarters of the given year. Finally, to reduce the effects of extreme observations, we drop firms in the top and bottom 1 percent of the distributions of the change in annual ROA and changes in our compensation measures, as defined below.

This procedure yields a total of 3,651 firm-year observations. Panel A of Table 1 presents the number of observations in each year. First Call's coverage expanded over our sample period, so the observations cluster in the more recent years. Our sample includes a total of 1,324 different firms and only 129 executives (10 percent) have the maximum number of five observations in the sample.

Empirical Test of the Hypothesis

We hypothesize an association between missing a quarterly earnings benchmark and a reduction in the CEO's cash bonus. To test this hypothesis, for each benchmark we regress the change in the CEO cash bonus on the number of quarters during the year that the firm failed to meet the benchmark level of earnings. Because the effect on compensation may not be linear in the number of quarters that the firm misses its benchmark, we use separate variables for the number of quarters during the year that the firm misses the earnings benchmark (once, twice, etc).

The regression includes variables to control for both accounting and market performance. These controls are critical to separate the incremental effect of a missed earnings benchmark from overall performance. Consistent with past research (for example, Janakiraman et al. 1992), we include the change in ROA from period $t - 1$ to t as our control for accounting-based performance, and the firm's annual stock return in year t as our control for market performance.

In an effort to better disentangle the effects on compensation of missing the quarterly earnings benchmarks from the effects on compensation of poor performance, our controls allow for asymmetric pay-performance sensitivity (i.e., a change in the slope in the compensation/earnings relation). Because prior research suggests the sensitivity of pay to performance is asymmetric (CEOs are more likely to receive a larger bonus for good performance than to be penalized for poor performance), we include an interaction term that allows the slope coefficient on the change in the annual ROA to differ based on the number of missed benchmarks.

TABLE 1
Sample Descriptive Statistics

Panel A: Number of Observations by Year

Year	*Number of Observations*	*Percentage of Total Sample*
1993	236	6.5
1994	633	17.3
1995	862	23.6
1996	967	26.5
1997	953	26.1
Total	3,651	100.0

Panel B: Number of Quarters for which Firms Miss Their Benchmarks

	Firms with Positive Quarterly Earnings (% of total number of observations)		
	Positive Change[a]	*Negative Change*	*Total*
Meet or Exceed Forecast[b]	8,217 (56.3%)	1,205 (8.3%)	9,422 (64.6%)
Miss Forecast	2,361 (16.2%)	1,973 (13.5%)	4,334 (29.7%)
Total	10,578 (72.5%)	3,178 (21.8%)	13,756 (94.3%)

	Firms with Negative Quarterly Earnings (% of total number of observations)		
	Positive Change	*Negative Change*	*Total*
Meet or Exceed Forecast	152 (1.0%)	124 (0.9%)	276 (1.9%)
Miss Forecast	131 (0.9%)	441 (3.0%)	572 (3.9%)
Total	283 (1.9%)	565 (3.9%)	848 (5.8%)

(*Continued on next page*)

TABLE 1 (Continued)

Panel C: Comparison to Other Samples

	Our Sample	*First Call*	*Compustat*[c]
% Miss forecast	34%	38%	NA
% Negative change	26%	32%	38%
% Quarterly loss	6%	16%	31%
Median ROA	10%	9%	6%
Median Return	17%	17%	10%

Panel D: Distributions of Continuous Variables

Variable	*Mean*	*Standard Deviation*	*First Quartile*	*Median*	*Third Quartile*
ΔCOMP	0.122	0.485	−0.061	0.067	0.312
RET	0.218	0.409	−0.021	0.174	0.404
ΔROA	−0.001	0.050	−0.013	0.001	0.015

Panel E: Frequency Distribution of Missed Benchmark Dummy Variables

	Number of Observations (%) Benchmark		
Number of Quarters Missed	*Analyst Forecast*	*Prior Year Earnings*	*Zero*
0	1,268 (34.7%)	1,887 (51.7%)	3,198 (87.6%)
1	903 (24.7%)	653 (17.9%)	235 (6.4%)
2	720 (19.7%)	488 (13.4%)	101 (2.8%)
3	477 (13.1%)	378 (10.3%)	57 (1.6%)
4	283 (7.8%)	245 (6.7%)	60 (1.6%)

[a] Positive change refers to an increase in earnings over the same quarter of the previous year.
[b] We obtain actual earnings and the latest consensus earnings forecast from First Call.
[c] For Compustat earnings we use quarterly data item #19 (primary earnings per share excluding extraordinary items).
ΔCOMP = change in the CEO's annual bonus scaled by salary at t − 1;
RET = annual stock return; and
ΔROA = change in ROA, defined as the ratio of annual earnings before interest and taxes to average total assets.

We estimate the following regressions to test our hypothesis:

$$\begin{aligned}\Delta COMP_{it} = {} & \alpha_0 + \alpha_1 NEGFE1_{it} + \alpha_2 NEGFE2_{it} + \alpha_3 NEGFE3_{it} + \alpha_4 NEGFE4_{it} \\ & + \alpha_5 \Delta ROA_{it} + \alpha_6 RET_{it} + \alpha_7 NEGFE1_{it} \times \Delta ROA_{it} \\ & + \alpha_8 NEGFE2_{it} \times \Delta ROA_{it} + \alpha_9 NEGFE3_{it} \times \Delta ROA_{it} \\ & + \alpha_{10} NEGFE4_{it} \times \Delta ROA_{it} + e_1; \end{aligned} \quad (1)$$

$$\begin{aligned}\Delta COMP_{it} = {} & \beta_0 + \beta_1 DECREASE1_{it} + \beta_2 DECREASE2_{it} + \beta_3 DECREASE3_{it} \\ & + \beta_4 DECREASE4_{it} + \beta_5 \Delta ROA_{it} + \beta_6 RET_{it} + \beta_7 DECREASE1_{it} \\ & \times \Delta ROA_{it} + \beta_8 DECREASE2_{it} \times \Delta ROA_{it} + \beta_9 DECREASE3_{it} \\ & \times \Delta ROA_{it} + \beta_{10} DECREASE4_{it} \times \Delta ROA_{it} + e_2; \end{aligned} \quad (2)$$

$$\begin{aligned}\Delta COMP_{it} = {} & \gamma_0 + \gamma_1 LOSS1_{it} + \gamma_2 LOSS2_{it} + \gamma_3 LOSS3_{it} + \gamma_4 LOSS4_{it} + \gamma_5 \Delta ROA_{it} \\ & + \gamma_6 RET_{it} + \gamma_7 LOSS1_{it} \times \Delta ROA_{it} + \gamma_8 LOSS2_{it} \times \Delta ROA_{it} \\ & + \gamma_9 LOSS3_{it} \times \Delta ROA_{it} + \gamma_{10} LOSS4_{it} \times \Delta ROA_{it} + e_3; \end{aligned} \quad (3)$$

where for each firm i and year t:

$\Delta COMP$ = change in CEO's bonus deflated by prior year salary;[4]
NEGFE(J) = 1 if earnings were below the consensus analyst forecast (negative forecast error) for exactly J quarters during the year and 0 otherwise;
DECREASE(J) = 1 if earnings were below earnings for the same quarter for the previous year (negative change in quarterly earnings) for exactly J quarters during the year, and 0 otherwise;
LOSS(J) = 1 if earnings were below zero (negative earnings) for exactly J quarters during the year and 0 otherwise;
ΔROA = the annual change in ROA, defined as the ratio of earnings before interest and taxes (Compustat annual item #178) to average total assets; and
RET = annual return measured as the monthly stock returns compounded over the 12-month fiscal year.

Our main tests estimate equations (1)–(3) on a pooled cross-sectional, time-series basis. Our hypothesis predicts that even after controlling for the general pay-performance relation, there will still be an incremental penalty for failing to meet a benchmark, i.e., $\{\alpha_1, \alpha_2, \alpha_3,$ and $\alpha_4 < 0$; $\beta_1, \beta_2, \beta_3,$ and $\beta_4 < 0$; $\gamma_1, \gamma_2, \gamma_3,$ and $\gamma_4 < 0\}$.

Gaver and Gaver (1998) provide evidence of a stronger pay-for-performance relation for earnings than for losses. While their evidence relates explicitly to only the zero earnings benchmark, a general attenuation of the pay-for-performance relation would result in an interaction effect for missing any of the benchmarks. In short, while γ_7 to $\gamma_{10} < 0$ would be consistent with the Gaver and Gaver (1998) findings, α_7 to $\alpha_{10} < 0$ and β_7 to $\beta_{10} < 0$ would also be consistent with a lower pay-performance sensitivity when performance is

[4] We do not include the change in salary because the salary level in year t is generally set at the beginning of the period, and thus is unlikely to be affected by performance in year t. The salary deflator provides an intuitive measure of the relative magnitude of the change in bonus, and is consistent with prior research (Baber et al. 1996; Baber et al. 1998; Baber et al. 1999).

poor (i.e., below the consensus analyst forecast and below earnings of the same quarter of the prior year, respectively).

In supplementary analysis, we also examine the incremental effect of missing each of the three benchmarks. Because of the small number of observations for which a firm misses only one benchmark, we are unable to use the Degeorge et al. (1999) procedure of examining each benchmark, conditional on meeting the other two benchmarks. For example, our sample includes only 152 (1 percent) quarters in which a firm meets the earnings forecast and reports an earnings increase but reports a loss. Therefore, we examine the incremental compensation effect of missing each benchmark by including all three benchmarks in the following regression:

$$\begin{aligned}\Delta COMP_{it} = {} & \delta_0 + \delta_1 NEGFE1_{it} + \delta_2 NEGFE2_{it} + \delta_3 NEGFE3_{it} + \delta_4 NEGFE4_{it} \\ & + \delta_5 DECREASE1_{it} + \delta_6 DECREASE2_{it} + \delta_7 DECREASE3_{it} \\ & + \delta_8 DECREASE4_{it} + \delta_9 LOSS1_{it} + \delta_{10} LOSS2_{it} + \delta_{11} LOSS3_{it} \\ & + \delta_{12} LOSS4_{it} + \delta_{13} \Delta ROA_{it} + \delta_{14} RET_{it} + \delta_{15} NEGFE1_{it} \\ & \times \Delta ROA_{it} + \delta_{16} NEGFE2_{it} \times \Delta ROA_{it} + \delta_{17} NEGFE3_{it} \\ & \times \Delta ROA_{it} + \delta_{18} NEGFE4_{it} \times \Delta ROA_{it} + \delta_{19} DECREASE1_{it} \\ & \times \Delta ROA_{it} + \delta_{20} DECREASE2_{it} \times \Delta ROA_{it} + \delta_{21} DECREASE3_{it} \\ & \times \Delta ROA_{it} + \delta_{22} DECREASE4_{it} \times \Delta ROA_{it} + \delta_{23} LOSS1_{it} \\ & \times \Delta ROA_{it} + \delta_{24} LOSS2_{it} \times \Delta ROA_{it} + \delta_{25} LOSS3_{it} \times \Delta ROA_{it} + \delta_{26} LOSS4_{it} \\ & \times \Delta ROA_{it} + e_4. \end{aligned} \quad (4)$$

If missing a benchmark has an incremental effect on compensation, then the coefficients for the dummy variables for missing benchmarks, δ_1 through δ_{12}, will be negative. However, given the overlap among benchmarks, if one benchmark subsumes the effects of the others, we may observe a negative coefficient for the dominant benchmark and insignificant signs on the other benchmarks.

We use the consensus (mean) analyst forecast closest to the earnings announcement date and actual earnings from First Call to measure forecast errors and earnings changes. First Call updates its earnings forecasts on a real-time basis whenever analysts revise their forecasts. In addition, First Call reports "actual" and forecast earnings from continuing operations, which exclude unusual and extraordinary items. Wall Street analysts typically rely on this measure because it reflects the persistent component of earnings (McDermott 1999; Brown and Sivakumar 2000). Furthermore, Baber et al. (1998) find that the sensitivity of compensation to earnings increases with earnings persistence. Thus, we base our earnings benchmarks on earnings from continuing operations.

Panel B of Table 1 reports the distribution of quarters in which firms met, or missed, each benchmark. Forecasted earnings are the most frequently missed benchmark (4,906 quarters, or 34 percent), followed by prior-year quarterly earnings (3,743 quarters, or 26 percent) and zero, (848 quarters, or 6 percent).[5] The data further suggest that a firm that

[5] Of our firm-quarters, 18.8 percent have zero forecast errors. This is close to the overall frequency of 17.0 percent for all First Call firms over our sample period. Of our sample observations, 47.6 percent beat analysts' forecasts, which is slightly higher than the overall percentage (44.4) for all First Call firms over our sample period. On average, most recent analyst consensus forecasts for our sample firms and overall First Call firms reveal a pessimistic bias. This is consistent with Brown (forthcoming), who observes a pessimistic bias for profit firms covered by I/B/E/S analysts.

reports declining earnings is likely to miss the earnings forecast. In addition, firms that report losses often miss the other two benchmarks. On the other hand, for firms reporting positive earnings, those that miss forecasted earnings are more likely to report earnings increases than earnings decreases.

The ExecuComp and First Call databases lead to a sample of relatively successful firms. Panel C of Table 1 compares the frequency of missed benchmarks in our sample to the frequency observed in the full First Call database over the sample period. The firms in our sample miss benchmarks less frequently than the full First Call and Compustat populations. For example, only 6 percent of our firm-quarters report losses, as opposed to 16 percent for First Call firms and 31 percent for all Compustat firms. In addition, our sample firms' accounting and market returns are similar to those for the First Call population, but they are well above those for the Compustat sample.[6]

Panel D of Table 1 provides descriptive data on the distributions of the variables used in the main tests. The median change in the bonus represents 6.7 percent of salary, which is higher than the 0.0 percent reported by Baber et al. (1999). This difference likely stems from both a difference in sample and a difference in time period, as Baber et al. (1999) only include data for 1992 and 1993. For 1993, the median change in bonus as a percentage of salary for our sample is 4.8. While this is closer to the figure reported by Baber et al. (1999), it is still substantially higher than that figure. In addition, our sample's 17.4 percent median stock return exceeds the median returns reported by Baber et al. (1999) of 12 percent in 1992 and 9 percent in 1993. These differences are consistent with the contention that the ExecuComp and First Call data sources we used to generate our sample tend to track relatively more successful firms, and that our sample period reflects a strong economy.

In Panel E of Table 1 we present the frequency distributions for our earnings benchmark variables. For each of the three benchmarks, firms are most likely to meet the benchmark in all four quarters, or to miss the benchmark in just one quarter. Nonetheless, with the exception of the zero earnings benchmark, a nontrivial proportion of firms miss their quarterly benchmarks more than once during a year. Specifically, 41 percent of the firm-quarter earnings missed the analyst forecast and 30 percent missed the same quarter of the prior-year benchmark more than once during the year.

IV. RESULTS

In this section we report the results of tests investigating the impact on CEO compensation of missing a quarterly earnings benchmark. We first report the main results for three benchmarks (forecasted earnings, earnings for the same quarter of the prior year, and zero earnings) and then we discuss sensitivity tests and alternative specifications.

Primary Results

The study's primary results appear in Table 2.[7] The first column examines the effect on the CEO's bonus of missing the consensus analyst forecast. Consistent with the hypothesis, each dummy variable corresponding to the number of quarters in which the firm reported earnings below the consensus analyst forecast is significantly negative. In addition, the bonus penalty appears to increase when the firm misses the forecast or prior-year

[6] We are not aware of an earnings definition on Compustat that exactly matches the First Call definition. Since Brown and Sivakumar (2000) use quarterly data item #19 (primary earnings per share excluding extraordinary items) as a measure of GAAP quarterly earnings to compare with the earnings per share reported in the I/B/E/S database, we also use data item #19 for Compustat earnings.

[7] We compute condition numbers for all the regressions reported in Table 2. In no case does any condition number exceed 10. Thus, there is no evidence of serious multicollinearity problems (see Belsley et al. 1980).

TABLE 2
The Effects of Missing Quarterly Earnings Benchmarks on the Change in CEO Bonus

Regression Models:

$$\Delta COMP_{it} = \alpha_0 + \alpha_1 NEGFE1_{it} + \alpha_2 NEGFE2_{it} + \alpha_3 NEGFE3_{it} + \alpha_4 NEGFE4_{it} + \alpha_5 \Delta ROA_{it} + \alpha_6 RET_{it} + \alpha_7 NEGFE1_{it} \times \Delta ROA_{it} + \alpha_8 NEGFE2_{it} \times \Delta ROA_{it} + \alpha_9 NEGFE3_{it} \times \Delta ROA_{it} + \alpha_{10} NEGFE4_{it} \times \Delta ROA_{it} + e_1$$

$$\Delta COMP_{it} = \beta_0 + \beta_1 DECREASE1_{it} + \beta_2 DECREASE2_{it} + \beta_3 DECREASE3_{it} + \beta_4 DECREASE4_{it} + \beta_5 \Delta ROA_{it} + \beta_6 RET_{it} + \beta_7 DERCREASE1_{it} \times \Delta ROA_{it} + \beta_8 DECREASE2_{it} \times \Delta ROA_{it} + \beta_9 DECREASE3_{it} \times \Delta ROA_{it} + \beta_{10} DECREASE4_{it} \times \Delta ROA_{it} + e_2$$

$$\Delta COMP_{it} = \gamma_0 + \gamma_1 LOSS1_{it} + \gamma_2 LOSS2_{it} + \gamma_3 LOSS3_{it} + \gamma_4 LOSS4_{it} + \gamma_5 \Delta ROA_{it} + \gamma_6 RET_{it} + \gamma_7 LOSS1_{it} \times \Delta ROA_{it} + \gamma_8 LOSS2_{it} \times \Delta ROA_{it} + \gamma_9 LOSS3_{it} \times \Delta ROA_{it} + \gamma_{10} LOSS4_{it} \times \Delta ROA_{it} + e_3$$

$$\Delta COMP_{it} = \delta_0 + \delta_1 NEGFE1_{it} + \delta_2 NEGFE2_{it} + \delta_3 NEGFE3_{it} + \delta_4 NEGFE4_{it} + \delta_5 LOSS1_{it} + \delta_6 LOSS2_{it} + \delta_7 LOSS3_{it} + \delta_8 LOSS4_{it} + \delta_9 DECREASE1_{it} + \delta_{10} DECREASE2_{it} + \delta_{11} DECREASE3_{it} + \delta_{12} DECREASE4_{it} + \delta_{13} \Delta ROA_{it} + \delta_{14} RET_{it} + \delta_{15} NEGFE1_{it} \times \Delta ROA_{it} + \delta_{16} NEGFE2_{it} \times \Delta ROA_{it} + \delta_{17} NEGFE3_{it} \times \Delta ROA_{it} + \delta_{18} NEGFE4_{it} \times \Delta ROA_{it} + \delta_{19} LOSS1_{it} \times \Delta ROA_{it} + \delta_{20} LOSS2_{it} \times \Delta ROA_{it} + \delta_{21} LOSS3 \times \Delta ROA_{it} + \delta_{22} LOSS4_{it} \times \Delta ROA_{it} + \delta_{23} DECREASE1_{it} \times \Delta ROA_{it} + \delta_{24} DECREASE2_{it} \times \Delta ROA_{it} + \delta_{25} DECREASE3_{it} \times \Delta ROA_{it} + \delta_{26} DECREASE4_{it} \times \Delta ROA_{it} + e_4$$

	Estimated Coefficient (White Adjusted t-statistic)			
	Benchmark			
Variable Name[a]	*Analyst Forecast*	*Prior Year*	*Zero or Positive*	*All Benchmarks*
Intercept	0.148	0.143	0.075	0.171
	(9.53)	(11.17)	(8.07)	(10.75)
NEGFE1	−0.035			−0.019
	(−1.72)			(−0.98)
NEGFE2	−0.126			−0.087
	(−5.55)			(−3.76)
NEGFE3	−0.211			−0.143
	(−8.41)			(−5.37)
NEGFE4	−0.197			−0.108
	(−7.06)			(−3.70)
DECREASE1		−0.056		−0.028
		(−2.62)		(−1.31)
DECREASE2		−0.156		−0.103
		(−6.96)		(−4.34)
DECREASE3		−0.208		−0.129
		(−7.36)		(−4.17)
DECREASE4		−0.295		−0.214
		(−7.99)		(−5.75)
LOSS1			−0.060	−0.003
			(−1.96)	(−0.10)
LOSS2			−0.021	0.051
			(−0.58)	(1.36)
LOSS3			−0.037	0.055
			(−0.53)	(0.77)

(*Continued on next page*)

TABLE 2 (Continued)

Variable Name[a]	*Estimated Coefficient (White Adjusted t-statistic) Benchmark*			
	Analyst Forecast	*Prior Year*	*Zero or Positive*	*All Benchmarks*
LOSS4			−0.045	0.046
			(−1.03)	(1.04)
RET	0.209	0.218	0.235	0.182
	(8.02)	(8.48)	(8.87)	(7.23)
ΔROA	2.597	1.545	3.532	2.712
	(6.05)	(3.01)	(10.49)	(6.16)
NEGFE1 × ΔROA	−0.427			−0.364
	(−0.46)			(−0.57)
NEGFE2 × ΔROA	−0.673			−0.406
	(−1.03)			(−0.61)
NEGFE3 × ΔROA	−1.122			−0.306
	(−2.19)			(−0.53)
NEGFE4 × ΔROA	−1.445			0.130
	(−2.45)			(0.19)
DECREASE1 × ΔROA		1.669		1.473
		(2.02)		(2.35)
DECREASE2 × ΔROA		0.701		0.784
		(0.82)		(0.91)
DECREASE3 × ΔROA		−0.527		0.211
		(−0.86)		(0.35)
DECREASE4 × ΔROA		−0.729		−0.575
		(−1.05)		(−0.98)
LOSS1 × ΔROA			−1.095	−1.025
			(−2.04)	(−1.88)
LOSS2 × ΔROA			−1.920	−1.429
			(−4.14)	(−2.67)
LOSS3 × ΔROA			−3.007	−2.313
			(−7.28)	(−4.63)
LOSS4 × ΔROA			−3.961	−3.438
			(−7.59)	(−6.90)
Adj. R^2	0.156	0.156	0.160	0.182

n = 3,651 firm-year observations.

[a] Variable Definitions:

ΔCOMP = change in CEO bonus deflated by prior year salary;
NEGFE(J) = 1 if earnings are below the consensus analyst forecast for J quarters and 0 otherwise;
DECREASE(J) = 1 if earnings are below earnings for the same quarter for the previous year for J quarters and 0 otherwise;
LOSS(J) = 1 if earnings are below zero for J quarters and 0 otherwise;
ΔROA = annual change in ROA; and
RET = monthly stock returns compounded over the 12-month fiscal year.

benchmark for more than one quarter of the year. For example, the estimated coefficient (White's heteroscedasticity-consistent t-statistic) decreases from −0.035 (−1.72) when the firm misses the analyst forecast in one quarter, to −0.126 (−5.55) when the firm misses the analyst forecast in two quarters.

To evaluate the statistical significance of differences in the estimated coefficients, Panel A of Table 3 reports the results of Wald tests of these differences. The estimated coefficient

TABLE 3
Differences between the Estimated Coefficients Based on the Number of Quarterly Earnings Benchmarks Missed
(Wald tests for differences in the coefficient estimates from Table 2)

Panel A: Differences in Coefficient Estimates from Individual Benchmark Regressions
Difference in Coefficients [p − value]

Analyst Forecast Benchmark

NEGFE2 − NEGFE1	*NEGFE3 − NEGFE2*	*NEGFE4 − NEGFE3*
−0.091	−0.085	0.014
[0.000]	[0.001]	[0.648]

Earnings of Same Quarter of Prior Year Benchmark

DECREASE2 − DECREASE1	*DECREASE3 − DECREASE2*	*DECREASE4 − DECREASE3*
−0.100	−0.052	−0.087
[0.000]	[0.097]	[0.045]

Avoiding Loss Benchmark

LOSS2 − LOSS1	*LOSS3 − LOSS2*	*LOSS4 − LOSS3*
0.039	−0.016	−0.008
[0.401]	[0.843]	[0.915]

Panel B: Differences in Coefficient Estimates from the Combined Regression
Difference in Coefficients [p–value]

Analyst Forecast Benchmark

NEGFE2 − NEGFE1	*NEGFE3 − NEGFE2*	*NEGFE4 − NEGFE3*
−0.068	−0.056	0.035
[0.003]	[0.035]	[0.258]

Earnings of Same Quarter of Prior Year Benchmark

DECREASE2 − DECREASE1	*DECREASE3 − DECREASE2*	*DECREASE4 − DECREASE3*
−0.075	−0.026	−0.085
[0.004]	[0.422]	[0.046]

Avoiding Loss Benchmark

LOSS2 − LOSS1	*LOSS3 − LOSS2*	*LOSS4 − LOSS3*
0.054	0.004	−0.009
[0.242]	[0.960]	[0.912]

for missing the forecast benchmark in two quarters, NEGFE2, is significantly lower than the coefficient for missing the forecast in only one quarter, NEGFE1. Similarly, the estimated coefficient for missing the forecast benchmark in three quarters, NEGFE3, is significantly lower than the coefficient for NEGFE2. The estimated coefficient for NEGFE3, however, is not significantly different from the estimated coefficient for NEGFE4.

The results based on earnings-for-the-same-quarter-of-the-prior-year benchmark also support the hypothesis. Table 2 shows that the estimated coefficient for each of the four dummy variables is significantly negative. Similar to the analyst forecast benchmark, the estimated coefficient (t-statistic) decreases from −0.056 (−2.62) when the firm misses the benchmark (i.e., earnings decline) in one quarter, to −0.156 (−6.96) when the firm misses the benchmark in two quarters. The Wald tests in Panel A of Table 3 indicate that this decline is significant ($p < 0.01$). The estimated coefficients continue to decline as the firm records declining earnings in more quarters. However, the Wald tests are less significant as the number of quarters with declining earnings increases to three quarters and then to four quarters (p-value < 0.10 for DECREASE3 − DECREASE2 and p-value < 0.05 for DECREASE4 − DECREASE3).

On the other hand, the regression results of reporting a quarterly loss are less clear. Although Table 2 shows that the estimated coefficient for LOSS1 is significantly negative (as predicted), none of the other quarterly loss dummy variables are significant. The Wald tests in Panel A of Table 3 indicate that the estimated coefficients for the quarterly loss dummy variables are not significantly different from each other.

The fourth column of Table 2 presents the results when we include dummy variables for all of the benchmarks in a single regression. The results indicate that the change in the CEO's bonus is significantly lower if the firm misses the quarterly consensus analyst forecast more than once during the year. In addition, the CEO's bonus is significantly lower when the firm reports quarterly earnings below those of the same-quarter-of-the-prior-year more than once during the year.

Panel B of Table 3 presents the results from the Wald tests for differences in the coefficients estimated in the fourth column of Table 2. They indicate that the estimated coefficient for missing the forecast for two quarters (NEGFE2) is significantly more negative than the estimated coefficient for missing the forecast for one quarter (NEGFE1). Similarly, the estimated coefficient for missing the forecast for three quarters (NEGFE3) is significantly more negative than the estimated coefficient for NEGFE2 (p-values < 0.05). In addition, the estimated coefficient for reporting earnings below the earnings for the same quarter of the prior year for two quarters (DECREASE2) is significantly more negative than the estimated coefficient for missing the same benchmark for one quarter (DECREASE1). Finally, the estimated coefficient for reporting earnings below the earnings for the same quarter of the prior year for four quarters (DECREASE4) is significantly more negative (p-values < 0.05) than the estimated coefficient for missing the same benchmark for three quarters (DECREASE3).

Overall, the results support the contention that CEO bonuses are lower when the firm reports quarterly earnings below the consensus analyst forecast or below the earnings for the same quarter of the prior year. The effects are more pronounced when the firm misses the benchmark more than once during the year. Somewhat surprisingly however, we do not find that reporting losses adversely affects the CEO's bonus. Given our sample firms' overall high performance, avoiding reporting a loss could be a very low benchmark for these firms.

With regard to the control variables, the results confirm prior evidence that pay is positively associated with performance. The estimated coefficients for annual market (RET)

and accounting (ΔROA) measures of performance are significantly positive in all four regressions.

The results are less clear for the interaction terms capturing the effect of missing quarterly earnings benchmarks on the pay-for-performance relation. Column 1 of Table 2 shows that for the analyst forecast benchmark, the estimated coefficients for the interactions of NEGFE3 and NEGFE4 with the change in annual ROA are significantly negative. However, they are not significant when all benchmarks are included in the regression (column 4 of Table 2).

Similarly, the estimated coefficients for the interaction of the earnings decline dummy variables with the change in annual ROA are generally not significant. The one exception is the unexpectedly positive coefficient for firms that report an earnings decrease in one-quarter, and only one-quarter, during the year. This result suggests that for such firms, the CEO's annual bonus compensation is more sensitive to annual accounting returns.

On the other hand, the estimated coefficients for the interaction of the quarterly loss dummy variables with change in annual ROA are all significantly negative. This is consistent with the literature that documents a weaker pay-for-performance relation for firms that report quarterly losses (Gaver and Gaver 1998), and with studies that show that CEO compensation is not affected by infrequent charges against earnings, such as restructuring charges (Dechow et al. 1994).

Overall, the results suggest that the effect of reporting quarterly losses (missing the zero earnings benchmark) on the CEO bonus differs from the effect of missing the other two quarterly benchmarks. Specifically, although quarterly losses appear to attenuate pay-performance sensitivity, there is no evidence that quarterly losses are associated with an incremental penalty on the CEO's bonus. In contrast, the evidence indicates that reporting earnings below the consensus analyst forecast or same-quarter-of-the-prior-year earnings benchmarks leads to a CEO bonus penalty and less attenuation of the pay-performance relation.

Estimating the Marginal Effect of Missing a Quarterly Earnings Benchmark

We use the coefficients reported in Table 2 to estimate the marginal effect on the CEO's bonus of missing a quarterly earnings benchmark. For each of the benchmark dummy variables, we evaluate the partial derivative of the regression equation at the median full sample ΔROA. We present the results for the individual benchmark regressions and for the combined regression in Panels A and B of Table 4.

For simplicity, we focus on the combined regression results in Panel B of Table 4. The results indicate that the penalty for missing any of the benchmarks for only one quarter during the year is relatively small (less than 3 percent of salary). However, if a firm reports earnings below the consensus analyst forecast for two quarters during the year, the average penalty approaches 9 percent of salary, and if the firm reports earnings below the same quarter of the previous year twice during the year, the average penalty exceeds 10 percent of the CEO's salary. For the analyst forecast benchmark, the maximum impact (14 percent of salary) occurs when the firm misses the benchmark for three quarters. For the prior-year earnings benchmark, the maximum impact (21 percent of salary) occurs when the firm reports earnings below the same quarter of the prior year for all four quarters.

On average, avoiding a quarterly loss appears to have a relatively small impact on the CEO's bonus. The penalty is just 0.4 percent of salary for reporting a loss in one quarter. Somewhat surprisingly, column 2 of Panel B in Table 4 indicates that, on average, CEOs receive higher bonuses if their firms report more than one quarterly loss. While this would

TABLE 4
Estimated Effect of Missing an Earnings Benchmark on Annual CEO Bonus
Predicted Value of the Change in CEO Bonus as a Percentage of Salary[a]

Panel A: Marginal Impact Based on Individual Benchmark Regressions

	Benchmark		
Number of Quarters Missed	*Analyst Forecast*	*Prior Year*	*Avoiding a Loss*
1	−0.035	−0.054	−0.065
2	−0.126	−0.155	−0.023
3	−0.212	−0.208	−0.039
4	−0.199	−0.295	−0.049

Panel B: Marginal Impact Based on the Combined Regression

	Benchmark		
Number of Quarters Missed	*Analyst Forecast*	*Prior Year*	*Avoiding a Loss*
1	−0.020	−0.026	−0.004
2	−0.088	−0.103	0.050
3	−0.143	−0.129	0.053
4	−0.108	−0.214	0.043

[a] The predicted change in the CEO bonus as a percentage of prior-year salary, computed using the estimated coefficients from Table 2, evaluated at the sample median ΔROA.

be consistent with a "big bath" effect, where boards reward CEOs for "cleaning house" prior to turning companies around, this inference is weak because it is based on the insignificant positive intercept effects in Table 2.

Sensitivity Tests

We now examine the sensitivity of our results to alternative design specifications. We separate these tests into two categories: alternative measures of compensation and alternative functional forms. We briefly describe the rationale for each test, and the effects of the tests on our inferences. Complete results for these tests are available from the authors.

Alternative Compensation Measures

- Add stock options and restricted stock grants to the CEO's bonus

  Adding the value of stock option and restricted stock grants to the CEO's bonus provides a broader measure of compensation. However, the qualitative results from the individual benchmark tests are unchanged. On the other hand, when we include all of the benchmarks in a single regression, only DECREASE2 and DECREASE3 have significantly negative coefficients. Including equity grants in CEO compensation also reduces the explanatory power of performance measures, in general, and the significance of the benchmark dummy variables in particular. The adjusted R^2s

for the regressions are approximately 2 percent, as opposed to the 16-18 percent when we use the CEO bonus as the compensation measure. Finding that the inferences generally hold, but are somewhat weaker when we add the stock option and restricted stock grants, is consistent with Core and Guay's (1999) contention that compensation committees grant equity securities to adjust the CEO's incentives, rather than as a reward for past performance. Our results are also consistent with past studies indicating that the pay-for-performance relation is generally stronger for cash compensation than for equity compensation (e.g., Baber et al. 1998; Gaver and Gaver 1998).

- Measure CEO compensation as the change in the log of salary plus bonus

  We address any potential biases resulting from the use of salary as a deflator by taking the change in the log of total cash compensation. Because some CEOs do not receive a bonus every year, we add salary to the bonus before taking the log. The study's inferences are unchanged.

Alternative Functional Specifications

- Estimate in ranks

  We estimate the regressions using ranks rather than cardinal values for the continuous variables to mitigate effects of extreme values. The results are qualitatively unchanged.
- Annual forecast error

  DeFond et al. (2001) document a positive relation between CEO bonuses and annual analyst forecast errors, after controlling for traditional accounting and market performance measures. Therefore, we add annual forecast error, defined as reported earnings per share less the consensus forecast at least 9 months before the end of the fiscal year, scaled by the absolute value of the forecast, as an explanatory variable. Including this variable in our regressions as an additional control for unexpected performance does not affect our inferences.
- Dummy variable for fourth quarter

  To ascertain whether the results are primarily attributable to the fourth quarter, we add a dummy variable equal to 1 if the firm missed its earnings forecast in the fourth quarter. We find that the estimated coefficient for the fourth-quarter dummy variable is not significantly different from zero, whereas the estimated coefficients for the quarterly benchmarks remain negative and significant. We conclude that missing the earnings forecast in the fourth quarter is not significantly different from missing the earnings forecast in the other quarters.
- Positive earnings subsample

  Prior research (e.g., Gaver and Gaver 1998) presents evidence that the pay-for-performance relation is asymmetric, depending on whether the firm reports positive or negative earnings. We therefore estimate our regressions on the subsample of firms that report positive annual earnings. The results are qualitatively unchanged.
- Partitions on size and performance

  Because our sample selection criteria yield a sample of large, successful firms we partition our sample based on the median of total assets (or the median annual stock return) and estimate the regressions separately for each size (return) subsample. Finding that the inferences hold for each subsample, including the smaller and less successful firms, suggests that our inferences are not likely an artifact of our sample selection criteria that led to a sample of relatively large and successful firms.

V. SUMMARY AND CONCLUSIONS

In this paper we examine whether the failure to meet quarterly earnings benchmarks is associated with a lower annual bonus for the CEO. We define three alternative earnings benchmarks: the consensus First Call analyst forecast; the earnings for the same quarter of the previous year; and zero. After controlling for the general pay-for-performance relation, we find a significant negative incremental effect on the CEO's bonus when the firm reports quarterly earnings below the analyst forecast, or below the earnings for the same quarter of the prior year, for at least two quarters during the year. The effect on the CEO's bonus of reporting quarterly losses is considerably weaker and not consistently significant. Overall, our findings are consistent with CEO bonus payments' providing CEOs with economic incentives to meet the consensus analyst forecast and to report earnings at least equal to the same quarter of the prior year.

One limitation of our study is that we do not observe executive compensation contracts that impose explicit penalties on managers for failing to meet quarterly earnings benchmarks. As a result, we cannot document a direct link between the failure to meet a benchmark and a compensation penalty. Murphy (1999) examines actual compensation contracts and notes that prior-year earnings are, at times, explicitly part of compensation contracts. However, compensation committees do not appear to explicitly use analyst forecasts or loss avoidance as benchmarks in CEO bonus plans. Instead, these benchmarks likely affect the compensation committee's use of discretion in determining the magnitude and allocation of the bonus pool.

Our results contribute to the literature by documenting that CEOs have a bonus incentive to manage earnings to meet benchmarks. Our evidence has implications for studies of earnings management around various quarterly benchmarks. While the bonus penalty for missing the benchmark for just one quarter during the year is relatively small, the penalty increases substantially if the firm misses the benchmark in more than one quarter during the year. This expectation of a lower bonus may provide managers with an incentive to make more aggressive accounting choices. Our evidence also provides additional insight into the pay-for-performance relation. Prior studies document weaker pay-for-performance relations for firms reporting losses than for firms reporting profits, suggesting that CEO compensation is at least partially protected against unfavorable outcomes (see Dechow et al. 1994; Gaver and Gaver 1998). Although we find similar results for the interaction between missed benchmarks and changes in ROA, our evidence nonetheless suggests that CEO compensation is not fully protected, as CEOs are *incrementally* penalized for failing to meet analyst forecast and prior year earnings benchmarks.

The finding that managers appear to have a bonus incentive to meet quarterly earnings benchmarks also has implications for the SEC's recent concerns that managers may compromise faithful representation to satisfy Wall Street (Levitt 1998). Our results suggest that incentives to manage earnings stem from internal sources such as the board of directors, as well as external sources such as the capital market. Thus, the attainment of the earnings benchmarks appears to be a desirable performance measure and earnings management is a cost of using that measure. As a result, although the SEC could reduce opportunistic reporting by encouraging boards to actively monitor corporate financial reporting, this benefit must be weighed against the additional monitoring cost.

While our results are consistent with CEO bonuses driving the earnings patterns observed around analyst forecasts and the earnings from the same quarter of the prior year, our evidence does not explain the unusual earnings patterns around the zero earnings benchmark documented in prior earnings management studies (Burgstahler 1997; Burgstahler and Dichev 1997). One reason might be that our sample consists of larger and more successful

firms that report a quarterly loss in only 6 percent of the total firm-quarters. While the benchmarks used to evaluate these firms' management could differ from those of a broader population, our inferences hold in our small firm and low stock return subsamples. Thus, sample composition is unlikely to explain the difference between our finding of little or no bonus incentive to avoid a loss and earnings management studies' conclusion that avoiding a loss appears to be the most important benchmark. Perhaps factors other than bonuses (such as job security concerns) motivate CEOs to avoid losses. We leave the relation between achieving earnings benchmarks and CEO turnover to future research.

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