C E O

Center for
Effective
Organizations

PERFORMANCE MEASURE CHOICE AND
TARGET SETTING IN LOSS-MAKING FIRMS

CEO PUBLICATION
G 05-3 (475)

KENNETH A. MERCHANT
WIM A. VAN DER STEDE

University of Southern California
Leventhal School of Accounting

MICHAL MATEJKA

University of Michigan
Ross School of Business

February 2005

Performance Measure Choice and Target Setting in Loss-Making Firms

Michal Matějka,[a,☆] Kenneth A. Merchant,[b] and Wim A. Van der Stede[b]

[a]*University of Michigan, Ross School of Business, Ann Arbor, MI 48109-1234*
[b]*University of Southern California, Leventhal School of Accounting, Los Angeles, CA 90089-0441*

[☆]<u>Corresponding author</u>: University of Michigan, Ross School of Business, 701 Tappan Street, Ann Arbor, MI 48109-1234, (734) 764-3175, Fax (734) 936-0282, matejka@umich.edu.
<u>Date</u>: January 4, 2005

Performance Measure Choice and Target Setting
in Loss-Making Firms

ABSTRACT

We examine the choice of performance measures and performance target difficulty in CEO annual bonus plans in loss-making firms. We predict that loss-making firms do not lower aggregate financial (earnings-based) targets to reflect expected losses. Instead they tend to use nonfinancial or individual performance measures that increase the likelihood of a bonus payout, and hence, help address retention concerns. Using a sample of 469 loss-making and 295 profitable firms, we find support for our predictions. First, using nonfinancial or individual performance measures in annual bonus plans significantly increases the probability of a bonus payout in loss-making firms. Second, the likelihood of using nonfinancial or individual performance measures is significantly higher in loss-making firms than in profitable firms even after controlling for the informativeness of aggregate financial performance measures.

1. *Introduction*

Prior research documents a strong positive association between earnings and executive compensation (Larcker and Lambert 1987; Sloan 1993). However, the link between earnings and cash compensation is weak when earnings are negative (Gaver and Gaver 1998). These findings suggest that profitable firms provide their executives with explicit earnings-based incentives to increase profits, but loss-making firms provide weak incentives to reduce losses. This asymmetry is striking given that increasing profits is economically similar to reducing losses. In this study, we propose a rationale for the asymmetry in the use of short-term incentives between profitable and loss-making firms and provide empirical evidence on how two different but related compensation choices in loss-making firms—performance measure choice and target setting—can help explain this phenomenon.

A weak link between earnings and cash compensation can be the consequence of at least two different compensation choices. The first one is the choice of performance measures in annual bonus plans (Ittner et al. 1997; Bushman et al. 1996). Firms can design annual bonus plans that include not only aggregate financial performance measures (most commonly earnings or earning-based measures), but also nonfinancial or individual performance measures. A good performance on the latter set of measures may yield high annual bonuses even though earnings are poor (and vice versa). The second compensation choice relates to performance standards (Murphy 2001). Firms decide annually on targets (standards) for the performance measures they use in bonus plans to determine bonus payouts at the end of the year. Increasing the difficulty of aggregate financial performance targets reduces the link between earnings and cash compensation as more difficult-to-achieve earnings targets reduce the likelihood of bonus payouts.

Prior research suggests that earnings targets in financially-distressed firms are very difficult to achieve (Gilson and Vetsuypens 1993). We expect this finding to generalize to all loss-making firms because firms that lower aggregate financial performance targets to reflect expected losses potentially weaken incentives to prevent losses in the future (Acharya et al., 2000). Firms' reluctance to lower aggregate financial performance targets to reflect expected losses should reduce the likelihood of bonus payouts in loss-making firms, unless they also rely on other measures in annual bonus contracts. Therefore, we predict that loss-making firms using solely aggregate financial performance measures are less likely to pay a bonus than loss-making firms also using nonfinancial or individual performance measures. We further expect that retention concerns affect the likelihood of paying a bonus in loss-making firms. We use two proxies for retention concerns: the number of consecutive loss-years and the percentage of shares owned by the CEO. We predict that the likelihood of paying a bonus in loss-making firms increases with the number of consecutive loss-years and decreases with the percentage of shares owned by the CEO.

If loss-making firms are concerned about retention but do not lower aggregate financial performance targets to reflect expected losses, we expect that loss-making firms substitute aggregate financial performance measures in their bonus plans with other achievable performance measures. Thus, we predict that loss-making firms are more likely than profitable firms to use nonfinancial or individual performance measures.

We empirically test these predictions using a sample of 469 loss-making firms with one to five consecutive years of losses during 1997-2001 matched to 295 profitable firms. We find strong support for all of our predictions. First, using nonfinancial or individual performance measures in annual bonus plans significantly increases the likelihood of a bonus payout in loss-

making firms. For example, the predicted likelihood of paying a bonus in firms with two consecutive loss-years using solely aggregate financial performance measures is only 29 percent, whereas it is 46 percent in similar loss-making firms that also use nonfinancial or individual performance measures. Moreover, the likelihood of a bonus payout also increases with the number of consecutive loss-years and decreases with the percentage of shares owned by the CEO.

Second, the likelihood of using nonfinancial or individual performance targets is significantly higher in loss-making firms than in profitable firms. The proportion of profitable firms using nonfinancial or individual performance measures is 29 percent, while for loss-making firms it increases from 40 to about 60 percent as the number of loss-years increases from one to five.

The results contribute to the literature as follows. First, they at least partly explain why pay-performance sensitivity in loss-making firms is lower than in profitable firms (Gaver and Gaver 1998). Both the higher difficulty of aggregate financial performance targets in loss-making firms and the increased reliance on nonfinancial or individual performance measures dampen the link between earnings and cash compensation. Second, our results highlight that retention concerns affect the design of annual bonus plans in loss-making firms. This extends the compensation literature which has largely viewed annual bonuses as a means to provide performance-based incentives.

We next review the relevant literature to formulate our hypotheses. Section 3 describes our empirical research design. Section 4 presents the results. The final section discusses the findings and concludes.

2.   *Hypotheses*

Skinner (2004) documents an increasing trend in the frequency of firms reporting losses. By 2000, more than 50 percent of firms covered by Compustat reported a loss. Moreover, losses appear persistent in many firms. Joos and Plesko (2004) show in a sample of 621 firms with five consecutive loss years that only less than a third of the sample firms return to profitability the following year and about a quarter of the sample firms does not reverse losses within the five following years. Despite the frequency and persistence of losses, we know relatively little about how firms design executive compensation plans in a loss situation.

Prior literature shows that the association between earnings and cash compensation is weak when earnings are negative (Dechow et al. 1994; Gaver and Gaver 1998; Adut et al. 2003; Leone et al. 2004).[1] This suggests that CEO cash compensation is to some extent insulated from the effects of losses. It is not clear, however, what this finding implies about the design of annual bonus plans that are the principal source of variation in cash compensation. Below, we discuss two different bonus plan choices that may account for this prior finding in the literature.

First, target-setting choices could explain the weak relation between earnings and cash compensation. For example, if a firm expecting a loss sets a positive earnings target, then it is likely that the earnings-based component of the annual bonus plan will not pay out. Gilson and Vetsuypens (1993) present evidence suggesting that financial-distress firms set impossible-to-achieve earnings targets. Specifically, although managers could be rewarded for minimizing the size of their firm's losses, none of the 77 firms in their study adopted this practice; instead, their bonus plans were typically "deep out of the money". We expect that this finding generalizes to other loss-making firms even if they are not in financial distress, for two possible reasons. Firms

that lower aggregate financial performance targets to reflect expected losses (e.g., set negative earnings targets) potentially weaken incentives to prevent losses in the future (Acharya et al., 2000). And, they may also incur political costs of shareholder opposition to paying bonuses for losses (Bebchuk et al. 2002; Matejka et al. 2004).

We can make inferences about the difficulty of aggregate financial performance targets based on whether loss-making firms pay their CEO a bonus or not. Firms' reluctance to lower aggregate financial performance targets to reflect expected losses implies a low likelihood of a bonus payout, unless annual bonus plans also include other performance measures. Therefore, we compare the likelihood of a bonus payout in loss-making firms that solely use aggregate financial performance targets versus loss-making firms that also use nonfinancial or individual performance measures. Thus, we predict that:

H1: Loss-making firms using solely aggregate financial performance measures are less likely to pay a bonus than loss-making firms using nonfinancial or individual performance measures.

Second, the choice of performance measures in annual bonus plans could explain the weak relation between earnings and cash compensation. Loss-making firms may be more likely than profitable firms to use nonfinancial or individual performance measures that are not contemporaneously related to earnings. Research on new-economy firms, many of which run losses, has documented that firms in early stages of product development base incentives on forward-looking nonfinancial drivers of forthcoming profit, rather than on historically-focused accounting measures of performance (Engel et al. 2003; Ittner et al. 2003; Murphy 2003). The maintained

---

[1] A different stream of literature shows that the association between earnings and stock returns is also weak when earnings are negative (e.g., Hayn, 1995).

argument for this observation is that in these start-up situations, earnings are not particularly in-formative and fail to adequately reflect all of the anticipated future consequences of these firms' current business-building decisions.

But even after controlling for the impact of the informativeness of aggregate financial performance measures (Ittner et al. 1997), we expect that loss-making firms are more likely to rely on nonfinancial or individual performance measures because they are likely to be more con-cerned than profitable firms about retention and attraction of executives (Jensen and Murphy 1990; Brickley et al. 2002). If retention motives influence the design of annual bonus plans, we should observe a higher likelihood of a bonus payout in firms where retention concerns are greater.[2] We assume that retention concerns (a) increase when losses persist for several years, and (b) decrease in the percentage of shares owned by the CEO. Thus, we predict that:

H2: The likelihood that loss-making firms pay a bonus (a) increases in the number of con-secutive years that a firm has been making losses, and (b) decreases with the percentage of shares owned by the CEO.

If both H1 and H2 hold, i.e., loss-making firms do not lower the difficulty of aggregate financial performance targets to reflect expected losses even though they are concerned about retention, then it is likely that loss-making firms substitute aggregate financial performance measures in their bonus plans with other achievable performance measures. Thus, we expect that loss-making firms are more likely to use nonfinancial or individual performance measures than profitable firms even after controlling for the informativeness of aggregate financial performance measures. As an exception to this general prediction, however, we expect that financial-distress

---

[2] We acknowledge that loss-making firms rely not only on annual bonus plans but also on long-term (equity-based) compensation in assuring attraction and retention. Section 4 provides further evidence related to this issue.

firms are less likely to use nonfinancial measures and more likely to rely on aggregate financial performance measures because of their urgency to generate profit, and cash, in the short-term (Gilson and Vetsuypens 1993; Ittner et al. 1997; Matejka et al. 2004). Thus, we expect that:

H3: Except for financial-distress firms, loss-making firms are more likely to use nonfinancial or individual performance measures in their annual bonus plans than are profitable firms.

3.   *Method*

3.1   SAMPLE

Testing of H2 necessitates a comparison of loss-making firms with a different number of consecutive loss-years. To obtain different groups of firms with a clear pattern of consecutive losses, we proceed as follows. We sample from the population of firms with negative earnings per share (EPS), sales over $10 million,[3] 1997-2001 data available from Compustat industrial annual files, and a loss pattern falling into one of the following: (i) a loss in 2001 and profits in each year 1997-2000 (LOSS1); (ii) losses in 2000-2001 and profits in 1997-1999 (LOSS2); (iii) losses in 1999-2001 and profits in 1997-1998 (LOSS3); (iv) losses in 1998-2001 and a profit in 1997 (LOSS4); and (v) losses in 1997-2001 (LOSS5). Table 1 shows the population size of each group. We select all firms in the LOSS3 and LOSS4 groups (151 and 142 firms, respectively), and randomly select a comparable number of firms in the other groups. The final sample of loss-making firms (*n* = 500), then, consists of selected firms for which we could obtain proxy statement information on executive compensation in 2001 from Lexis-Nexis.[4] We find that 469 (94

---

[3] Although this limit on sales is arbitrary to some extent, it excludes small firms for which data are less likely to be available on Lexis-Nexis, which simplifies data collection.

[4] We match proxy statement data with Compustat data for 2001. We obtain proxy statements for 2001 for firms with fiscal years from June through December, and 2002 for firms with fiscal years from January through May.

percent) of the 500 loss-making firms have annual bonus plans. The remaining 6 percent of firms offer only salary and long-term (typically equity-based) compensation to their CEOs.

[TABLE 1 HERE]

We also obtain a sample of clearly profitable firms. We consider firms with sales over $10 million, 1997-2001 data available from Compustat industrial annual files, positive EPS in each year, and an average ratio of earnings (as in EPS) to shareholder equity during 1997-2001 exceeding 10 percent. We select a random sample of 368 profitable firms stratified by industry (3-digit SIC code) to match the industry composition in the loss-making sample of 500 firms.[5] We could obtain relevant information from the proxy statements of 307 of the 368 profitable firms. Of these 307 profitable firms, 295 (96 percent) offer their CEOs annual bonuses.

Thus, the combined sample consists of 764 firms (469 loss-making and 295 profitable firms) designing annual bonus plans.[6] Table 2 shows the industry composition of our sample firms as compared to all Compustat firms in 2001. Two industries are slightly overrepresented (35: Industrial and Commercial Machinery and Computer Equipment, and 73: Business Services) and one slightly underrepresented (49: Electric, Gas, and Sanitary Services). There are some differences among the loss-making groups, but most industries are represented with comparable percentages, indicating that our sample reasonably matches the population of Compustat firms.

[TABLE 2 HERE]

---

[5] Most of our sample firms are not included in the Execucomp database, and hence, the data had to be hand-collected from firms' proxy statements. To optimize the data collection effort, our aim was to select a control group of profitable firms of about two thirds the size of the loss-making sample (i.e., about 330 firms), which is sufficiently large for statistical power in the subsequent tests. The actual sample size of 368 profitable firms is somewhat larger, however, due to the matching procedure by 3-digit SIC code.

[6] Defining profit (loss) as positive (negative) income before extraordinary items (Joos and Plesko 2004) yields practically identical results (more than 99 percent of our sample firms meets this alternative definition).

3.2   MEASURES

We code a dummy variable BPAID indicating whether the CEO was awarded (not necessarily actually paid) a bonus for performance in 2001. We base our coding primarily on what the firm discloses in the text of the executive compensation proxy statement rather than just gleaning the compensation table.[7]

We code a dummy variable NONFIN that equals one if the fiscal year 2001 proxy statement explicitly mentions: (i) 'nonfinancial' or 'qualitative' measures in determining the annual bonus of the CEO; (ii) financial and other performance measures (e.g., financial and operational performance); (iii) nonfinancial and 'non-quantifiable' performance dimensions (such as leadership, recruiting of employees, vision, or work ethic) as important determinants of CEO compensation; (iv) disaggregate financial measures (such as reducing debt, overhead reduction, or growth in a specific area); or (v) individual performance measures.

We also collect data on CEO turnover from the proxy statements (as well as the Execu-comp database for the sample firms included). We define two dummy variables: (i) TURN equals one if a new CEO was in charge for most of fiscal year 2001; (ii) LSTYEAR equals one if a new CEO was in charge for most of fiscal year 2002, and thus 2001 was the outgoing CEO's last year. In line with prior work (Sloan 1993), we exclude firms with CEO turnover in 2001 (TURN = 1) from our analyses. To the extent that TURN is a proxy for the ex ante threat of dismissal, excluding firms with CEO turnover alleviates potential biases due to unobserved incentive effects of a dismissal threat.

We use dummy variables LOSS1 to LOSS5 for firms with one to five consecutive loss years, and LOSS0 for profitable firms. FSTRESS denotes financial-distress firms defined as loss-

making firms for which the bankruptcy proxy of Ohlson (1980) exceeds its critical value in at least one of the years 1997-2001 (Ittner et al. 1997).

We also follow Ittner et al. (1997) when constructing proxies for the informativeness of financial performance measures. We use market-to-book ratio (MTB) as a proxy inversely related to the information content of financial performance measures and construct two proxies for noise in financial performance measures.[8] The first proxy, STDM, is the volatility in industry profitability during 1997-2001. We calculate the standard deviation across the five years in median annual industry return on assets (ROA), return on equity (ROE), and return on sales (ROS), respectively, and extract a common factor underlying these three indicators. The second proxy, CORR, uses quarterly firm data from 1997-2001 to calculate the correlation between current stock market returns and changes in EPS scaled by beginning-of-period stock price in the previous quarter.[9]

3.3   DESCRIPTIVE STATISTICS

Table 3 presents descriptive statistics for profitable and all groups of loss-making firms. Our profitable firms are larger than the loss-making firms. The median market value (MSIZE) of a profitable firm in our sample is $950 million, while the median market value of our groups of loss-making firm ranges from $29 to $133 million. In terms of sales (untabulated), the difference is less pronounced but still significant. Sales of the median profitable firm are about $600 million, while they range from $41 to $324 million across our groups of loss-making firms. The me-

---

[7] Examples of differences between disclosures in the text and in compensation tables include: cash bonus awarded but payment deferred (and vice versa, i.e., bonus paid but for performance in a prior period) or bonus paid, yet none of it related to performance (e.g., sign-up bonus, special retention payment).

[8] We adjust MTB to reflect that some of our sample firms have a very low or negative book value. We impose a maximum value of 20 and set negative values of MTB to the maximum value.

[9] When the correlation between stock market returns and changes in EPS is negative we set the value of CORR to zero.

dian percentage of shares owned by the CEO (PSHO) is 1.2 percent in profitable firms, while in our groups of loss-making firms it ranges from 2.3 to 4.4 percent.

[TABLE 3 HERE]

There is also a pronounced difference in market-to-book ratios (MTB). The median of 3.1 in profitable firms compares to a median ranging from 1.4 to 1.8 in the LOSS1-4 groups. The median MTB is highest (4.9) in LOSS5 firms suggesting that these are firms with high future growth opportunities. Untabulated results further show that LOSS5 firms have by far the largest median ratio of R&D-to-sales (0.39 as compared to 0.03 in profitable firms or 0.08 in LOSS4 firms). These characteristics of LOSS5 firms suggest that they are at the stage of developing a new business that will become profitable in the future. Therefore, we often refer to this group as pre-profit firms and set the financial-distress dummy to zero.[10]

The median volatility in industry profitability (STDM), our proxy for exogenous noise in financial performance measures, is the lowest in profitable and LOSS1 firms and the highest in LOSS4 firms.[11] Further, the median correlation between stock returns and prior quarter's change in earnings (CORR) in profitable firms is comparable to the correlation in LOSS2 and LOSS5 firms (0.05). The highest correlation is in LOSS1 firms (0.08) and the lowest in LOSS3 and LOSS4 firms (0.01).

Obviously, accounting and stock performance also differ substantially among our groups of firms. For example, median return on equity (ROE) in 2001 is 0.14 in profitable firms, while it decreases from -0.08 in LOSS1 firms to -0.43 in LOSS5 firms. Median raw stock returns (RET)

---

[10] Sixty-four percent of LOSS5 firms have never made any profits and 84 percent made only negligible profits (at least ten times less than the absolute value of accumulated losses). The Ohlson model predicts a high probability of bankruptcy for a large majority of these pre-profit firms even though they are clearly different from financial-distress firms in groups LOSS1-4.

in profitable firms is 0.16, while the median is negative in all groups of loss-making firms, ranging from -0.05 (LOSS2) to -0.24 (LOSS5). The percentage of loss-making firms classified as financially distressed (FSTRESS) firms increases from 45 percent (LOSS1) to 79 percent (LOSS4). (FSTRESS equals zero for profitable firms and pre-profit (LOSS5) firms by construction.)

Table 3 also shows that 37 percent of the profitable firms use nonfinancial or individual performance measures (NONFIN). For loss-making firms, this percentage increases from 33 percent (LOSS1) to 62 percent (LOSS5). These results are comparable to Ittner et al. (1997) reporting that 37 percent of the firms in their sample use customer satisfaction as a performance measure. The percentages for other nonfinancial measures are lower, but on average their sample firms use 2.3 nonfinancial measures.

Median CEO salary ranges from $300,000 to $386,000 in loss-making firms as compared to $477,000 in profitable firms. Also, 80 percent of CEOs in profitable firms received at least some bonus for 2001 (the median bonus is $239,000).[12] In loss-making firms, the percentage increases from 40 percent (LOSS1) to 58 percent (LOSS5). Further, there are substantial differences in equity compensation (restricted stock plus stock options). The median in groups LOSS1-4 is between $48,000 and $90,000, while the median in profitable and pre-profit (LOSS5) firms is $596,000 and $414,000, respectively. Finally, executive turnover in 2001 (TURN) of about 10 percent in profitable firms is about half the turnover in loss-making firms (18-20 percent). Inferences are similar for executive turnover in 2002 (LSTYEAR).

---

[11] The median of STDM in Table 3 is negative for all groups of firms because it is based on factor scores rather than on a direct measure of volatility.

[12] Although the likelihood of receiving a bonus seems high, it is consistent with Merchant and Manzoni (1989) describing highly-achievable targets at the divisional level (80 percent achievable on average).

4. Results

We first replicate in our sample prior results concerning the sensitivity of cash compensation to earnings. Second, we test H1, H2a, and H2b by estimating a model of the likelihood of a bonus payout. Third, we test H3 by estimating a model of the likelihood of using nonfinancial or individual performance measures in annual bonus plans. Finally, we test the robustness of our results and consider alternative explanations. In particular, we examine the use of equity-based compensation in loss-making firms and discuss how it might affect our results.

4.1 SENSITIVITY OF CASH COMPENSATION TO EARNINGS

Similar to prior work (e.g., Baber et al. 1998; Core et al. 2003; Leone et al. 2004), we specify the following model to examine the sensitivity of cash compensation to earnings (where LOSS0 is a dummy variable equal to one to indicate profitable firms; i.e., firms with positive EPS in the five consecutive years 1997-2001):

$$\Delta\ln(\text{COMP}) = \beta_0 + \beta_1\text{LOSS0} + \beta_2\Delta\text{ACC} + \beta_3\Delta\text{ACC} \cdot \text{LOSS0} + \beta_4\text{RET} + \\ + \beta_5\text{RET} \cdot \text{LOSS0} + \varepsilon. \tag{1}$$

All changes in eq. [1] are from 2000 to 2001, which is our benchmark year. We measure COMP as CEO salary plus bonus (Leone et al. 2004). ΔACC measures the change in accounting performance as measured by EPS, ROA, and ROE, respectively. ΔEPS is the change in earnings per share scaled by beginning-of-period stock price (Core et al. 2003). ΔROA is the change in return on assets defined as net income divided by total assets. ΔROE is the change in return on equity defined as income before extraordinary items divided by average value of common equity. RET represents raw fiscal-year returns (Lambert and Larcker 1987; Baber et al. 1998). When

- 14 -

estimating eq. [1], we omit several high-influence observations using diagnostics recommended in Belsley et al. (1980).[13]

The results in Table 4 corroborate that the sensitivity of cash compensation to accounting performance in profitable firms is far greater than the sensitivity in loss-making firms. In particular, Column I shows that the estimate of β_2 is close to zero suggesting that there is no association between changes in cash compensation and changes in EPS in loss-making firms. A similar result holds for ROA (Column II). Although the estimate of β_2 is significantly greater than zero in the case of ROE (Column III), it is less than 10 percent the sensitivity in profitable firms ($\beta_2 + \beta_3$). Further, changes in cash compensation are significantly associated with stock returns in both profitable and loss-making firms. However, the estimated sensitivity in profitable firms ($\beta_4 + \beta_5$) is about twice as large as the sensitivity in loss-making firms (β_4).

[TABLE 4 HERE]

4.2   CHOICE OF TARGET DIFFICULTY

The weak relation between cash compensation and earnings in loss-making firms could be the consequence of overly difficult aggregate financial performance targets in loss-making firms. H1 predicts that aggregate financial performance targets are relatively more difficult to achieve than non-financial or individual performance measures in loss-making firms.

Although we do not directly observe performance target difficulty in our sample, we can make inferences about the difficulty from the likelihood of paying a bonus. To test H1 we spec-

---

[13] We proceed in two steps. First, we estimate eq. [1] and identify observations with standardized residuals exceeding the critical value (3.3, $p = 0.001$) of the *t*-distribution or with the diagonal element of the least-squares projection matrix exceeding the critical value (3.4, $p= 0.001$) of the *F*-distribution. Second, we reestimate eq. [1] without observations identified in the first step and examine the same diagnostics once more. We further omit observations if one of the diagnostics exceeds a critical value of 5.0. We also run the analyses with all the variables windsorized at the lowest/highest percentile. The results are qualitatively similar. Unless indicated otherwise, we apply the same procedures when estimating other models.

ify a model of the likelihood that the CEO was awarded a bonus for 2001 performance (BPAID), and include a dummy variable for firms using nonfinancial or individual performance measures (NONFIN) as a predictor. We specify the model to estimate separate effects of NONFIN for profitable and loss-making firms.[14]

Furthermore, H2 posits that the likelihood that loss-making firms pay a bonus (BPAID) is affected by retention concerns. Specifically, H2 predicts that BPAID (a) increases in the number of consecutive years that a firm has been making losses, and (b) decreases with the percentage of shares owned by the CEO. To test H2b, we include the log of the percentage of shares owned by the CEO (LPSHO).[15] Because BPAID is obviously also expected to be determined by perform-ance, we include several accounting-based (EPS, ROA, or ROE) and market-based (RET) per-formance variables. Finally, we also include several other control variables: FSTRESS, a dummy variable for financial-distress firms; LSTYEAR, a dummy variable equal to one if 2001 was the last year of the CEO's tenure at the firm; and LMSIZE, the log of the market value. Thus, we estimate the following equation:[16]

$$
\begin{aligned}
\text{BPAID} = \lambda_0 &+ \sum_{i=1}^{5} \lambda_{1i} \text{LOSSi} + \lambda_2 \text{FSTRESS} + \lambda_3 \text{NONFIN} + \lambda_4 \text{NONFIN} \cdot \text{LOSS0} \\
&+ \lambda_5 \Delta\text{EPS} + \lambda_6 \Delta\text{EPS} \cdot \text{LOSS0} + \lambda_7 \text{RET} + \lambda_8 \text{RET} \cdot \text{LOSS0} + \lambda_9 \text{LPSHO} \\
&+ \lambda_{10} \text{LPSHO} \cdot \text{LOSS0} + \lambda_{11} \text{LMSIZE} + \lambda_{12} \text{LSTYEAR} + \varepsilon.
\end{aligned}
\tag{2}
$$

H1 predicts that $\lambda_3 > 0$ and H2b that $\lambda_9 < 0$. We test H2a using a modified version of eq. [2] in which LOSSi ($i = 1…5$) are replaced by LOSS0 and NLOSS, the number of consecutive loss-years. H2a predicts that the likelihood of paying a bonus increases in NLOSS.

_____

[14] The value of NONFIN is chosen at the beginning of a period while the value of BPAID is realized at the end of the period, which alleviates concerns about potential biases due to endogeneity.

[15] If CEO ownership is smaller than 0.1 percent, we replace its value with 0.1 percent.

[16] To identify influential observations, we use diagnostics comparable to those described for OLS regressions (see footnote 13). However, the distribution of the diagnostics in a logistic regression is not known (Hosmer and

In line with H1, Table 5 shows that when loss-making firms include nonfinancial or individual performance measures in their bonus plans (NONFIN), the likelihood of receiving a bonus significantly increases. The increase is not significant in profitable firms ($\lambda_3 + \lambda_4$; $p = 0.419$). We interpret these findings as evidence that nonfinancial or individual performance targets are easier to achieve than aggregate financial performance targets but only in loss-making firms.

Consistent with our findings regarding sensitivity of cash compensation to performance (Table 4), an increase in EPS significantly increases the likelihood of receiving a bonus in profitable firms but not in loss-making firms.[17] An increase in stock returns (RET) increases the likelihood of receiving a bonus in both groups of firms, although the increase in profitable firms is much stronger than in loss-making firms.

Further, the evidence supports H2a. The likelihood of receiving a bonus is lower in loss-making firms than in profitable firms, but increases significantly with the number of consecutive loss-years (NLOSS). Also, as H2b predicts, the likelihood of receiving a bonus is lower in loss-making firms where the CEO owns a greater percentage of shares outstanding (LPSHO). Again, this finding only holds in loss-making firms. In profitable firms, the relation is not significant ($\lambda_9 + \lambda_{10}$; $p = 0.455$). We interpret these findings as evidence that retention concerns lower the difficulty of performance targets.

Lemenshow 1989). Therefore, we do not use any specific cutoff points, but instead omit observations with clearly outlying values of the diagnostics.

[17] We reestimate eq. [2] using ROA and ROE as the accounting performance measure. The results (untabulated) are qualitatively similar to those presented in Table 5 for EPS.

To assess the economic significance of these results, Table 6 presents predicted probabilities of a bonus payout for profitable and loss-making firms.[18] The predicted probability is 77 percent for profitable firms, while for loss-making firms it increases from 25 (LOSS1) to 53 percent (LOSS5). The use of nonfinancial or individual performance measures in annual bonus plans increases these probabilities by 5 percentage points in profitable firms and by 16-18 percentage points in loss-making firms.

[TABLE 6 HERE]

Another way to assess the economic significance of the effect of performance measurement choice on cash compensation is to use the actual size of bonus for 2001 as the dependent variable in eq. [2]. This approach does not directly relate to any of our hypotheses, because the actual bonus size depends on both performance target difficulty and the functional form of the compensation contract about which we make no predictions. However, the results presented in Table 7 have supportive value.

[TABLE 7 HERE]

On average, the largest decline in bonus paid (relative to profitable firms) is in LOSS1 firms experiencing a loss after several years of profits. LOSS2-5 firms also pay lower bonuses on average, but the decrease is not statistically significant. When loss-making firms use nonfinancial or individual performance measures (NONFIN), the bonus paid increases by about $86,000 on average. Again, this effect is specific to loss-making firms and does not arise in profitable firms. Also in line with the results presented earlier, the bonus size increases in performance as meas-

---

[18] In a Logit model, the marginal effect of an explanatory variable on the dependent variable depends on values of the other explanatory variables. We calculate the predicted probabilities for a firm with median sample characteristics.

ured by stock and accounting returns but only in profitable firms. Obviously, firm size and industry median bonus are highly significant determinants of the bonus paid.

4.3   CHOICE OF PERFORMANCE MEASURES

Another reason for the weak relation between cash compensation and earnings in loss-making firms could be loss-making firms' increased reliance on nonfinancial or individual performance measures in annual bonus plans. To examine whether the choice of performance measures in loss-making firms indeed systematically differs from the choice in profitable firms, we estimate a model of the likelihood of using nonfinancial or individual performance measures in determining annual bonuses (NONFIN).

H3 predicts that the likelihood of using nonfinancial or individual performance measures is higher in LOSS1-5 firms. We control for financial distress (FSTRESS), which we expect is negatively associated with NONFIN (Gilson and Vetsuypens 1993). We also control for informativeness of financial performance measures using three proxies (Ittner et al. 1997): market-to-book ratio (MTB), volatility in industry profitability (STDM), and the correlation between stock returns and earnings (CORR). We assume that high MTB and STDM imply low informativeness of financial performance measures and therefore expect a positive relation with NONFIN. CORR is a proxy for high informativeness of financial performance measures and we expect a negative relation with NONFIN. We also use market value as a control variable, and consider industry effects (2-digit SIC codes) in a stepwise estimation procedure. Thus, we estimate the following model:

$$
\begin{aligned}
\text{NONFIN} = \gamma_0 &+ \sum_{i=1}^{5} \gamma_{1i} \text{LOSSi} + \gamma_2 \text{FSTRESS} + \gamma_3 \text{MTB} + \gamma_4 \text{CORR} + \gamma_5 \text{STDM} \\
&+ \gamma_6 \text{LMSIZE} + \gamma_7 \text{SIC} + \varepsilon.
\end{aligned}
\tag{3}
$$

Table 8 presents the results of estimating eq. [3]. In line with H3, the coefficient estimates for LOSS1-5 are positive and significant except for LOSS1. The extent to which losses in LOSS1 and LOSS2 firms are more likely to be unexpected may contribute to the weaker results in these firms ($p = 0.138$ and $p = 0.040$, respectively). Our control variables also have the predicted effect. The likelihood of using nonfinancial or individual performance measures is significantly lower in financial-distress firms and significantly higher when MTB, CORR, and STDM indicate low informativeness of financial performance measures. Further, larger firms (LMSIZE) are more likely to use nonfinancial or individual performance measures and only one of the industry dummies is significant (SIC-38: Measurement Analyzing, Control Instruments and Related Products). We interpret these findings as evidence that firms expecting a loss are more likely to include nonfinancial or individual performance measures in CEO's annual bonus plans than profitable firms.

[TABLE 8 HERE]

To facilitate an evaluation of the economic significance of these results, Table 9 compares the predicted probabilities of using nonfinancial or individual performance measures in profitable firms and in different groups of loss-making firms. On average, 29 percent of profitable firms include nonfinancial or individual performance measures in their annual bonus plans. In loss-making firms that are not financially distressed, the percentage increases from 40 (LOSS1) to about 60 percent (LOSS4 and LOSS5). The estimated decrease in the probability of using nonfinancial or individual performance measures due to financial distress is 15-17 percentage points.

[TABLE 9 HERE]

4.4   ALTERNATIVE EXPLANATIONS AND ROBUSTNESS CHECKS

Our findings suggest that loss-making firms are more likely to use nonfinancial or individual performance measures and that these measures in turn increase the likelihood of paying a bonus. These findings are consistent with the argument that retention concerns affect the design of annual bonus plans. An alternative view is that loss-making firms rely solely on equity compensation to address retention concerns. Therefore, we examine whether there are systematic differences between equity compensation paid in profitable and loss-making firms by estimating a model of total equity compensation similar to the one presented in Table 7 for annual bonus compensation.[19] The coefficient estimates (untabulated) relating to the LOSS1-4 dummy variables are negative but not significant. Although pre-profit firms (LOSS5) pay on average higher equity compensation than profitable firms as indicated by a positive coefficient estimate, the difference is not statistically significant either. Thus, it appears that equity compensation does not eliminate the need to consider retention concerns when designing annual bonuses plans in our sample of loss-making firms.

Further, prior research suggest that managerial power over compensation contracts and related corporate governance issues may to some extent account for the "shielding of executives from losses" (Cheng 2004; Comprix and Muller 2004). In this paper, however, we view firms' choices of performance measures and performance target difficulty as a result of optimal contracting rather than managerial entrenchment. Nonetheless, it is plausible that a part of the variance in performance measurement and target choices can be explained by weak corporate governance. Therefore, we reestimate both eq. [2] and [3] after including a dummy variable for firms where the CEO is also the chairman of the board, which is a common proxy for managerial en-

trenchment. Untabulated results indicate that this dummy variable is not significant in any of the regressions and does not alter the Table 5 and 8 results.

Finally, our measure of nonfinancial or individual performance measurement identifies firms that indicate in their proxy statements that they use other than aggregate financial perform-ance measures in determining annual bonuses. The aim was to construct a broad measure that encompasses various instances of nonfinancial or individual performance measures to reduce measurement error due to a misclassification of firms that actually use nonfinancial or individual measures but do not fully reveal so in their proxy statements. For this reason, we coded NONFIN = 1 also for firms that rely on nonfinancial and "non-quantifiable" measures (such as leadership) when determining CEO compensation (see category (iii) in Section 3.2). However, it is difficult to set an ex-ante target for such measures and a high degree of subjectivity is likely to be in-volved when using them. To examine the extent to which the coding of this category affects our results, we re-estimate our regressions dropping all observations in this category. The results (untabulated) remain essentially the same as those shown in Table 5 and 8.

5.   *Discussion*

The design of annual bonus plans has been studied extensively in prior work. Neverthe-less, the frequency and persistence of losses in recent years raise the issue as to what extent an-nual bonus plan design choices of loss-making firms differ from those of profitable firms. A well-established finding is that cash compensation is not sensitive to earnings in loss-making firms. The primary contribution of this study is examining how two compensation design

---

[19] Total equity compensation is the sum of the value of restricted stock granted and the Black-Scholes value of stock options granted. We use the same explanatory variables as in Table 7 except that we replace industry me-dian bonus (INDMED) with a similar measure of industry median equity compensation.

choices—choice of performance measures and target difficulty in annual bonus plans—may help explain this phenomenon.

First, we find that loss-making firms relying solely on aggregate financial (earnings-based) performance measures are significantly less likely than loss-making firms using also non-financial or individual performance measures to pay their CEO a bonus. This implies that aggregate financial performance targets in loss-making firms are not fully adjusted to the expected loss situation and are relatively difficult to achieve. Our study cannot provide a conclusive answer as to why loss-making firms set hard-to-achieve aggregate financial performance targets. However, the finding is consistent with prior research suggesting that the reluctance to set negative earnings targets provides ex ante incentives to avoid future losses. An implication of hard-to-achieve earnings targets in annual bonus plans of loss-making firms is that a loss reduction will often fall short of the target and be associated with no bonuses. This at least partly explains the weaker link between cash compensation and earnings in loss-making firms.

Second, we find that loss-making firms are more likely to use nonfinancial or individual performance measures in annual bonus plans. To the extent that nonfinancial or individual performance measures are contemporaneously uncorrelated with earnings, this finding implies that increasing reliance on nonfinancial or individual performance measures also reduces the relation between cash compensation and earnings.

In addition to our findings that target-setting and performance measure choices in loss-making firms differ from those in profitable firms, we find evidence consistent with our prediction that retention concerns affect the design of annual bonus plans. In particular, we find that the likelihood of a bonus payout (i) increases in the number of consecutive loss-years and (ii) decreases in the percentage of shares owned by the CEO. This contributes to the compensation lit-

erature that has largely viewed annual bonuses as a means to provide performance-based incentives, even though it is well recognized that the objective of compensation contracts is not only to provide executives with the right incentives, but also to attract and retain talented executives (Jensen and Murphy 1990; Brickley et al. 2002). Our findings are consistent with the importance of multiple objectives when designing annual bonus plans in that retention-related rationales motivating H2 and H3 have additional explanatory power beyond the explanations offered in prior literature.

Our findings are subject to several caveats. First, we measure firms' performance measurement choices based on information published in their proxy statements. Some firms using nonfinancial or individual performance measures may not disclose sufficient information in their proxy statements for us to categorize them correctly. The implication for our results is that any difference between profitable and loss-making firms is underestimated. Second, we rely on cross-sectional evidence to infer firms' compensation choices in a loss situation. Ideally, we would use panel data with time series of compensation choices. However, the data collection effort required to compile such a dataset makes this infeasible. Finally, studying loss-making firms many of which are in a pre-profit stage or in a financial-distress situation inevitably raises the issue of a survivorship bias. In particular, results concerning our LOSS4 and LOSS5 groups may only generalize to the population of loss-making firms that survive. However, our results are strongest in these groups and it is unlikely that a survivorship bias accounts for all of the effects. Despite these caveats, we believe our results address an interesting interdependence between performance measurement choices and performance target difficulty. It seems worthwhile exploring in future work whether a similar interdependence exists in other settings as well.

REFERENCES

Acharya, V. V., J. Kose, and R. K. Sundaram. 2000. On the optimality of resetting executive stock options. *Journal of Financial Economics* 57(1): 65-101.

Adut, D., W. H. Cready, and T. J. Lopez. 2003. Restructuring charges and CEO cash compensation: A reexamination. *The Accounting Review* 78(1): 169-192.

Baber, R. W., S. H. Kang, and K. R. Kumar. 1998. Accounting earnings and executive compensation: The role of earnings persistence. *Journal of Accounting and Economics* 25: 169-193.

Bebchuk, L. A., Fried, J. M., and D. I. Walker. 2002. Managerial power and rent extraction in the design of executive compensation. *The University of Chicago Law Review* 69: 751-846.

Belsley, D. A., E. Kuh, and R. E. Welsch. 1980. *Regression diagnostics: Identifying influential data and sources of collinearity*. John Wiley & Sons, New York.

Brickley, J. A., C. W. Smith, Jr., and J. L. Zimmerman. 2002. Business ethics and organizational architecture. *Journal of Banking and Finance* 26: 1821-1835.

Bushman, R. M., R. J. Indjejikian, and A. Smith. 1996. CEO compensation: The role of individual performance evaluation. *Journal of Accounting and Economics* 21(3): 161-193.

Cheng, S. 2004. Shielding executive annual pay from losses: Empirical evidence of managerial entrenchment. *Working paper*, Ross School of Business, University of Michigan.

Comprix, J. J., and K. A. Muller III. 2004. 'Moving the goal posts' in CEO compensation calculations for reported pension cost amounts. *Working paper*, Carey School of Business, Arizona State University.

Core, J. E., W. R. Guay, and R. E. Verrecchia. 2003. Price versus non-price performance measures in optimal CEO compensation contracts. *The Accounting Review* 78(4):957-981.

Dechow, P. M., M. R. Huson, and R. G. Sloan. 1994. The effect of restructuring charges on executives' cash compensation. *The Accounting Review* 69(1): 138-156.

Engel, E., E. A. Gordon, and R. M. Hayes. 2003. The roles of performance measures and monitoring in annual governance decisions in entrepreneurial firms. *Journal of Accounting Research* 40(2): 485-518.

Gaver, J. J., and K. M. Gaver. 1998. The relation between nonrecurring accounting transactions and CEO cash compensation. *The Accounting Review* 73 (2): 235-253.

Gilson, S. C., and M. R. Vetsuypens. 1993. CEO compensation in financially-distressed firms: An empirical analysis. *Journal of Finance* 48(2): 425-458.

Hayn, C. 1995. The information content of losses. *Journal of Accounting and Economics* 20(2): 125-153.

Hosmer, D. W. and S. Lemeshow. 1989. *Applied logistic regression*. John Wiley & Sons, New York.

Ittner, C. D., D. F. Larcker, and M. V. Rajan. 1997. The choice of performance measures in annual bonus contracts. *The Accounting Review* 72(2): 231-255.

Ittner, C. D., D. F. Larcker, R. Lambert. 2003. The structure and performance consequences of equity grants to employees of new economy firms. *Journal of Accounting and Economics* 34(1-3): 89-127.

Jensen, M. C., and K. J. Murphy. 1990. Performance pay and top-management incentives. *The Journal of Political Economy* 98(2): 225-264.

Joos, P. R., and G. A. Plesko. 2004. Valuing loss firms. *Working Paper*, MIT Sloan School of Management.

Larcker, D. F., and R. A Lambert. 1987. An analysis of the use of accounting and market measures of performance in executive compensation contracts. *Journal of Accounting Research* 25: 85-125.

Leone, A. J., J. S. Wu, and J. L. Zimmerman. 2004. Conservatism in CEO cash compensation. *Working Paper*, University of Rochester.

Matejka, M., K. A. Merchant, and W. A. Van der Stede. 2004. Performance measurement and incentives in loss-making firms: A field study. *Working Paper*, University of Southern California.

Merchant, K. A., and J. F. Manzoni 1989. The achievability of budget targets in profit centers: A field study. *The Accounting Review* 64 (July): 539-558.

Murphy , K. J. 2001. Performance standards in incentive contracts. *Journal of Accounting and Economics* 30(3): 245-278.

Murphy , K. J. 2003. Stock-based pay in new economy firms. *Journal of Accounting and Economics* 34 (1-3): 129-147.

Ohlson, J. A. 1980. Financial ratios and the probabilistic prediction of bankruptcy. *Journal of Accounting Research* 18(1): 109-131.

Skinner, D. J. 2004. What do dividends tell us about earnings quality? *Working Paper*, University of Michigan.

Sloan, R. G. 1993. Accounting earnings and top executive compensation. *Journal of Accounting and Economics* 16: 55-100.

TABLE 1
Sample Selection

	Population	Initial sample	Proxy info missing	No annual bonus plans	Final sample
LOSS1	405	120	21 (18%)	7 (7%)	92
LOSS2	228	133	36 (27%)	4 (4%)	93
LOSS3	151	151	48 (32%)	3 (3%)	100
LOSS4	142	142	49 (35%)	8 (9%)	85
LOSS5	420	152	44 (29%)	9 (8%)	99
Loss All	1,346	698	198 (28%)	31 (6%)	469
Profit All	1,707	368	61 (17%)	12 (4%)	295
N	3,053	1,066	259 (24%)	43 (5%)	764

LOSS1: firms with a loss in 2001 and profits in each year 1997-2000; **LOSS2**: firms with losses in 2000-2001 and profits in 1997-1999; **LOSS3**: firms with losses in 1999-2001 and profits in 1997-1998; **LOSS4**: firms with losses in 1998-2001 and a profit in 1997; **LOSS5**: firms with losses in 1997-2001; **Profit All**: firms profitable in each year 1997-2000 and average return on equity greater than 10%.

TABLE 2

Sample Industry Composition

SIC	Description	Compustat	Loss All	Profit All
2000	Food and Kindred Products	2.1	2.3	3.1
2800	Chemicals & Allied Products	5.0	7.2	6.4
3500	Industrial and Commercial Machinery and Computer Equipment	4.9	9.8	9.2
3600	Electrical Equipment and Components	6.5	8.1	7.8
3800	Measurement Analyzing, Control Instruments and Related Products	4.5	6.8	7.1
4800	Communications	4.6	3.8	1.4
4900	Electric, Gas, and Sanitary Services	4.5	0.6	1.0
5900	Miscellaneous Retail	1.9	2.3	2.4
6300	Insurance Carriers	2.7	3.4	3.4
7300	Business Services	12.1	19.4	17.3
8700	Engineering, Accounting, Research Management, and Related Services	1.8	3.6	3.1
N		7,342	469	295

SIC	LOSS1	LOSS2	LOSS3	LOSS4	LOSS5
2000	1.1	2.1	0.0	3.5	5.1
2800	8.7	3.2	4.0	4.7	15.2
3500	10.9	10.6	10.0	15.3	3.0
3600	7.6	8.5	6.0	14.1	5.1
3800	6.5	4.3	6.0	8.2	9.1
4800	1.1	2.1	1.0	3.5	11.1
4900	3.3	0.0	0.0	0.0	0.0
5900	0.0	4.3	3.0	1.2	3.0
6300	5.4	4.3	4.0	3.5	0.0
7300	12.0	17.0	24.0	17.6	25.3
8700	1.1	6.4	4.0	1.2	5.1
N	92	93	100	85	99

Percentage of sample firms in each SIC group. The table excludes industries represented in our sample with less than 3 percent unless the percentage is greater than 5 percent in one of the LOSS1-5 groups.

LOSS1: firms with a loss in 2001 and profits in each year 1997-2000; **LOSS2**: firms with losses in 2000-2001 and profits in 1997-1999; **LOSS3**: firms with losses in 1999-2001 and profits in 1997-1998; **LOSS4**: firms with losses in 1998-2001 and a profit in 1997; **LOSS5**: firms with losses in 1997-2001; **Profit All**: firms profitable in each year 1997-2000 and average return on equity greater than 10%.

TABLE 3
Descriptive Statistics

			Profit All						Loss1			
	N	Mean	Std. Dev.	Min	Median	Max	N	Mean	Std. Dev.	Min	Median	Max
NONFIN	295	0.373	0.484	0.000	0.000	1.000	92	0.326	0.471	0.000	0.000	1.000
BPAID	295	0.797	0.403	0.000	1.000	1.000	91	0.396	0.492	0.000	0.000	1.000
SALARY	295	539	295	0.000	477	2,000	92	438	286	0.001	355	1,800
BONUS	295	541	1,081	0.000	239	10,053	92	160	402	0.000	0	2,214
EQUITY	293	3,268	7,529	0.000	596	70,199	90	1,588	4,935	0.000	88	38,545
TURN	294	0.099	0.299	0.000	0.000	1.000	91	0.176	0.383	0.000	0.000	1.000
LSTYEAR	291	0.062	0.241	0.000	0.000	1.000	91	0.110	0.314	0.000	0.000	1.000
PSHO	290	6.090	12.124	0.000	1.195	72.890	90	11.227	17.042	0.000	4.350	74.760
EPS	295	1.395	1.105	0.000	1.100	6.540	92	-1.378	1.808	-8.950	-0.750	-0.010
ROA	295	0.073	0.053	0.000	0.063	0.364	92	-0.078	0.136	-0.767	-0.036	0.055
ROE	292	0.148	0.111	0.001	0.137	1.089	91	-0.158	0.254	-1.524	-0.079	0.061
RET	294	0.259	0.528	-0.792	0.160	3.067	90	-0.124	0.455	-0.899	-0.153	1.719
FSTRESS	295	0.000	0.000	0.000	0.000	0.000	80	0.450	0.501	0.000	0.000	1.000
MTB	295	4.301	3.774	0.444	3.148	20.000	90	2.199	1.510	0.484	1.618	7.966
CORR	295	0.127	0.162	0.000	0.051	0.657	90	0.153	0.189	0.000	0.078	0.749
STDM	293	-0.042	0.944	-1.091	-0.454	2.241	92	-0.335	0.666	-1.091	-0.518	1.749
MSIZE	295	6,846	29,785	3.240	950	392,959	90	2,180	8,565	2.417	133	64,259

NONFIN: dummy variable for nonfinancial or individual performance measures included in CEO 2001 annual bonus plans; **BPAID**: dummy variable for 2001 performance-related bonus; **SALARY**: CEO salary in 2001; **BONUS**: CEO bonus in 2001; **EQUITY**: CEO equity compensation in 2001 (restricted stock plus Black-Scholes value of stock options granted); **TURN**: dummy variable for CEO turnover in 2001; **LSTYEAR:** dummy variable for CEO turnover in 2002 (i.e., 2001 was the last year of the outgoing CEO); **PSHO**: the percentage of shares owned by the CEO at the beginning of 2001; **EPS**: earnings per share in 2001; **ROA**: return on assets in 2001; **ROE**: return on equity in 2001; **RET**: raw stock returns in 2001; **FSTRESS**: dummy variable for financial-distress firms; **MTB**: the average market-to-book ratio during 1997-2001; **CORR**: correlation between stock returns and prior quarter changes in EPS during 1997-2001; **STDM**: volatility in median industry profitability (factor score); **MSIZE**: market value of the firm at the end of 2001.

TABLE 3
Descriptive Statistics (Cont.)

	Loss2						**Loss3**					
	N	Mean	Std. Dev.	Min	Median	Max	N	Mean	Std. Dev.	Min	Median	Max
NONFIN	93	0.355	0.481	0.000	0.000	1.000	100	0.440	0.499	0.000	0.000	1.000
BPAID	92	0.457	0.501	0.000	0.000	1.000	99	0.434	0.498	0.000	0.000	1.000
SALARY	92	431	251	0.000	386	1,230	99	377	281	0.000	318	2,000
BONUS	92	202	373	0.000	0	1,906	99	131	240	0.000	0	1,000
EQUITY	92	1,235	5,033	0.000	65	46,716	95	1,191	5,083	0.000	48	46,064
TURN	93	0.204	0.405	0.000	0.000	1.000	99	0.182	0.388	0.000	0.000	1.000
LSTYEAR	93	0.108	0.311	0.000	0.000	1.000	95	0.105	0.309	0.000	0.000	1.000
PSHO	90	7.684	12.533	0.000	2.255	68.300	99	8.237	12.687	0.000	3.000	68.700
EPS	92	-2.551	3.677	-18.680	-1.230	-0.050	100	-1.756	2.514	-16.890	-1.010	-0.010
ROA	93	-0.247	0.554	-4.328	-0.068	0.109	100	-0.238	0.332	-1.550	-0.107	0.552
ROE	81	-0.271	0.387	-2.100	-0.122	0.016	89	-0.420	0.532	-3.093	-0.271	-0.002
RET	92	0.146	0.882	-0.848	-0.054	3.661	99	2.570	23.853	-0.939	-0.194	237.146
FSTRESS	85	0.553	0.500	0.000	1.000	1.000	93	0.688	0.466	0.000	1.000	1.000
MTB	92	3.064	4.093	0.485	1.400	20.000	100	3.102	4.141	0.309	1.505	20.000
CORR	92	0.144	0.174	0.000	0.049	0.669	100	0.119	0.166	0.000	0.014	0.586
STDM	93	0.100	1.370	-1.068	-0.217	10.136	100	0.123	1.011	-1.068	-0.324	2.114
MSIZE	92	834	2,771	0.828	105	23,506	100	580	2,705	0.673	39	20,085

NONFIN: dummy variable for nonfinancial or individual performance measures included in CEO 2001 annual bonus plans; **BPAID**: dummy variable for 2001 performance-related bonus; **SALARY**: CEO salary in 2001; **BONUS**: CEO bonus in 2001; **EQUITY**: CEO equity compensation in 2001 (restricted stock plus Black-Scholes value of stock options granted); **TURN**: dummy variable for CEO turnover in 2001; **LSTYEAR:** dummy variable for CEO turnover in 2002 (i.e., 2001 was the last year of the outgoing CEO); **PSHO**: the percentage of shares owned by the CEO at the beginning of 2001; **EPS**: earnings per share in 2001; **ROA**: return on assets in 2001; **ROE**: return on equity in 2001; **RET**: raw stock returns in 2001; **FSTRESS**: dummy variable for financial-distress firms; **MTB**: the average market-to-book ratio during 1997-2001; **CORR**: correlation between stock returns and prior quarter changes in EPS during 1997-2001; **STDM**: volatility in median industry profitability (factor score); **MSIZE**: market value of the firm at the end of 2001.

TABLE 3
Descriptive Statistics (Cont.)

	Loss4						Loss5					
	N	Mean	Std. Dev.	Min	Median	Max	N	Mean	Std. Dev.	Min	Median	Max
NONFIN	85	0.459	0.501	0.000	0.000	1.000	99	0.616	0.489	0.000	1.000	1.000
BPAID	82	0.463	0.502	0.000	0.000	1.000	98	0.582	0.496	0.000	1.000	1.000
SALARY	82	382	240	11.538	342	1,709	98	324	184	0.000	300	1,500
BONUS	81	140	358	0.000	0	2,510	98	118	220	0.000	53	1,801
EQUITY	80	842	1,879	0.000	90	9,504	95	2,362	6,303	0.000	414	48,732
TURN	84	0.179	0.385	0.000	0.000	1.000	97	0.175	0.382	0.000	0.000	1.000
LSTYEAR	83	0.108	0.313	0.000	0.000	1.000	95	0.158	0.367	0.000	0.000	1.000
PSHO	85	8.010	13.453	0.000	2.900	77.200	98	7.103	12.875	0.000	2.500	68.300
EPS	85	-2.673	5.919	-50.560	-1.160	-0.010	99	-2.719	5.990	-51.400	-1.230	-0.010
ROA	85	-0.297	0.491	-2.941	-0.154	0.985	99	-0.690	1.654	-11.657	-0.240	0.118
ROE	70	-0.648	0.832	-4.407	-0.330	0.401	81	-0.733	0.765	-3.163	-0.431	-0.006
RET	85	3.397	29.080	-0.977	-0.100	267.893	99	0.264	1.636	-0.973	-0.243	9.617
FSTRESS	80	0.788	0.412	0.000	1.000	1.000	99	0.000	0.000	0.000	0.000	0.000
MTB	85	3.650	5.060	0.441	1.776	20.000	98	7.388	6.775	0.366	4.866	20.000
CORR	85	0.123	0.161	0.000	0.014	0.587	99	0.155	0.197	0.000	0.050	0.748
STDM	85	0.162	0.959	-1.029	-0.178	2.241	99	0.107	1.015	-1.043	-0.245	1.821
MSIZE	85	545	2,648	0.187	29	23,975	99	612	1,946	0.762	112	16,478

NONFIN: dummy variable for nonfinancial or individual performance measures included in CEO 2001 annual bonus plans; **BPAID**: dummy variable for 2001 performance-related bonus; **SALARY**: CEO salary in 2001; **BONUS**: CEO bonus in 2001; **EQUITY**: CEO equity compensation in 2001 (restricted stock plus Black-Scholes value of stock options granted); **TURN**: dummy variable for CEO turnover in 2001; **LSTYEAR:** dummy variable for CEO turnover in 2002 (i.e., 2001 was the last year of the outgoing CEO); **PSHO**: the percentage of shares owned by the CEO at the beginning of 2001; **EPS**: earnings per share in 2001; **ROA**: return on assets in 2001; **ROE**: return on equity in 2001; **RET**: raw stock returns in 2001; **FSTRESS**: dummy variable for financial-distress firms; **MTB**: the average market-to-book ratio during 1997-2001; **CORR**: correlation between stock returns and prior quarter changes in EPS during 1997-2001; **STDM**: volatility in median industry profitability (factor score); **MSIZE**: market value of the firm at the end of 2001.

TABLE 4

OLS Estimation of the Sensitivity of Cash Compensation to Earnings and Stock Returns

$$\Delta\ln(\text{COMP}) = \beta_0 + \beta_1\text{LOSS0} + \beta_2\Delta\text{ACC} + \beta_3\Delta\text{ACC} \cdot \text{LOSS0} + \beta_4\text{RET} + \beta_5\text{RET} \cdot \text{LOSS0} + \varepsilon$$

	I $\Delta\ln(\text{COMP})$		II $\Delta\ln(\text{COMP})$		III $\Delta\ln(\text{COMP})$	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Intercept	0.019	.335	-0.004	.844	0.001	.956
LOSS0	-0.071*	.040	-0.051	.144	-0.015	.692
ΔEPS	0.001	.863				
ΔEPS · LOSS0	2.726**	.000				
ΔROA			0.087	.260		
ΔROA · LOSS0			2.103**	.002		
ΔROE					0.172*	.011
ΔROE · LOSS0					1.757**	.000
RET	0.096**	.000	0.082**	.002	0.111**	.004
RET · LOSS0	0.148*	.015	0.124*	.014	0.086	.162
Adjusted R^2	.11		.09		.16	
N	597		595		540	

$^{**},^*$ indicates significance at the 0.01 and 0.05 level (two-tailed) with *p*-values based on heteroskedasticity-robust *t*-statistics.

Changes are from 2000 to 2001. **COMP**: CEO salary and bonus; **LOSS0**: dummy variable for profitable firms; **EPS**: earnings per share (scaled by beginning-of-period share price); **ROA**: return on assets; **ROE**: return on equity; **RET**: raw stock returns.

TABLE 5

Logit Estimation of the Likelihood that CEO Received Bonus for 2001 Performance

$$\text{BPAID} = \lambda_0 + \Sigma_{i=1}^{5} \lambda_{1i} \text{LOSSi} + \lambda_2 \text{FSTRESS} + \lambda_3 \text{NONFIN} + \lambda_4 \text{NONFIN} \cdot \text{LOSS0}$$

$$+ \lambda_5 \Delta\text{EPS} + \lambda_6 \Delta\text{EPS} \cdot \text{LOSS0} + \lambda_7 \text{RET} + \lambda_8 \text{RET} \cdot \text{LOSS0} + \lambda_9 \text{LPSHO}$$

$$+ \lambda_{10} \text{LPSHO} \cdot \text{LOSS0} + \lambda_{11} \text{LMSIZE} + \lambda_{12} \text{LSTYEAR} + \varepsilon$$

	BPAID		BPAID	
	Coefficient	p-value	Coefficient	p-value
Intercept	0.079	.869	-2.301 ***	.000
LOSS1	-2.092 ***	.000		
LOSS2	-1.895 ***	.000		
LOSS3	-1.763 ***	.000		
LOSS4	-1.614 ***	.001		
LOSS5	-0.873 **	.034		
LOSS0			2.365 ***	.000
NLOSS			0.272 ***	.004
FSTRESS	0.574 *	.057	0.402	.136
NONFIN	0.721 ***	.005	0.703 ***	.006
NONFIN · LOSS0	-0.407	.387	-0.389	.408
RET	0.415 ***	.005	0.411 ***	.005
RET · LOSS0	1.986 ***	.000	1.988 ***	.000
ΔEPS	0.049	.504	0.046	.543
ΔEPS · LOSS0	12.176 ***	.007	12.183 ***	.007
LPSHO	-0.151 **	.048	-0.150 **	.049
LPSHO · LOSS0	0.227 *	.081	0.226 *	.082
LMSIZE	0.190 ***	.001	0.192 ***	.001
LSTYEAR	-0.538	.138	-0.497	.163
Pseudo R^2		.25		.25
Correctly classified		74%		74%
N		578		578

*** , ** , * indicates significance at the 0.01, 0.05, and 0.10 level (two-tailed) with *p*-values based on heteroskedasticity-robust *t*-statistics.

BPAID: dummy variable for 2001 performance-related bonus; **LOSS1-5**: dummy variables for loss-making firms with one to five consecutive years of losses; **LOSS0**: dummy variable for profitable firms; **NLOSS**: number of consecutive losses from 2001 and before; **FSTRESS**: dummy variable for financial-distress firms; **NONFIN**: dummy variable for nonfinancial or in-dividual performance measures included in CEO 2001 annual bonus plans; **ΔEPS**: 2000-2001 change in earnings per share (scaled by beginning-of-period share price); **RET**: raw stock re-turns; **LPSHO**: log of the percentage of shares owned by the CEO at the beginning of 2001; **LMSIZE**: log of the market value of the firm at the end of 2001; **LSTYEAR:** dummy variable for CEO turnover in 2002 (i.e., 2001 was the last year of the outgoing CEO).

TABLE 6

Predicted Probability that CEO Receives Bonus for 2001 Performance

	Non-financial or individual performance target			
	No		Yes	
	Bonus paid		Bonus paid	
	Yes	No	Yes	No
Profit All	77%	23%	82%	18%
LOSS1	25%	75%	41%	59%
LOSS2	29%	71%	46%	54%
LOSS3	32%	68%	49%	51%
LOSS4	35%	65%	53%	47%
LOSS5	53%	47%	70%	30%

We calculate the predicted probabilities using the Logit coefficients in Table 5 for a firm with median sample characteristics: FSTRESS = 0; RET = 0.039; ΔEPS = -0.007; LPSHO = 0.775; LMSIZE = 5.440; and LSTYEAR = 0.

TABLE 7

OLS Estimation of the Determinants of 2001 Bonus Size

$$\text{BONUS} = \lambda_0 + \Sigma_{i=1}^{5} \lambda_{1i} \text{LOSS}i + \lambda_2 \text{FSTRESS} + \lambda_3 \text{NONFIN} + \lambda_4 \text{NONFIN} \cdot \text{LOSS0}$$

$$+ \lambda_5 \Delta \text{EPS} + \lambda_6 \Delta \text{EPS} \cdot \text{LOSS0} + \lambda_7 \text{RET} + \lambda_8 \text{RET} \cdot \text{LOSS0} + \lambda_9 \text{LPSHO}$$

$$+ \lambda_{10} \text{LPSHO} \cdot \text{LOSS0} + \lambda_{11} \text{LMSIZE} + \lambda_{12} \text{LSTYEAR} + \lambda_{13} \text{INDMED} + \varepsilon$$

	BONUS for 2001	
	Coefficient	p-value
Intercept	-334.829 ***	.001
LOSS1	-132.499 **	.041
LOSS2	-76.904	.266
LOSS3	-52.577	.464
LOSS4	-100.206	.231
LOSS5	-96.590	.101
FSTRESS	92.866 *	.055
NONFIN	85.920 **	.048
NONFIN · LOSS0	-109.399	.121
RET	-20.110	.267
RET · LOSS0	140.833 **	.016
ΔEPS	-2.706	.820
ΔEPS · LOSS0	1697.296 ***	.004
LPSHO	-11.700	.337
LPSHO · LOSS0	-3.800	.847
LMSIZE	71.934 ***	.000
LSTYEAR	17.891	.761
INDMED	0.611 ***	.000
Adjusted R^2		0.29
N		501

***, **, * indicates significance at the 0.01, 0.05, and 0.10 level (two-tailed) with *p*-values based on heteroskedasticity-robust *t*-statistics.

BONUS: CEO bonus in 2001; **LOSS1-5**: dummy variables for loss-making firms with one to five consecutive years of losses; **LOSS0**: dummy variable for profitable firms; **FSTRESS**: dummy variable for financial-distress firms; **NONFIN**: dummy variable for nonfinancial or individual performance measures included in CEO 2001 annual bonus plans; **RET**: raw stock returns; **ΔEPS**: 2000-2001 change in earnings per share (scaled by beginning-of-period share price); **LPSHO**: log of the percentage of shares owned by the CEO at the beginning of 2001; **LMSIZE**: log of the market value of the firm at the end of 2001; **LSTYEAR:** dummy variable for CEO turnover in 2002 (i.e., 2001 was the last year of the outgoing CEO); **INDMED**: industry median bonus average during 1997-2001.

TABLE 8

Logit Estimation of the Likelihood of Using Nonfinancial or Individual Performance Measures in Annual Bonus Plans

$$\text{NONFIN} = \gamma_0 + \sum_{i=1}^{5} \gamma_{1i} \text{LOSSi} + \gamma_2 \text{FSTRESS} + \gamma_3 \text{MTB} + \gamma_4 \text{CORR} + \gamma_5 \text{STDM}$$

$$+ \gamma_6 \text{LMSIZE} + \gamma_7 \text{SIC-38} + \varepsilon$$

	NONFIN	
	Coefficient	p-value
Intercept	-1.707 ***	.000
LOSS1	0.490	.138
LOSS2	0.680 **	.040
LOSS3	1.229 ***	.001
LOSS4	1.358 ***	.000
LOSS5	1.303 ***	.000
FSTRESS	-0.681 **	.017
MTB	0.052 **	.020
CORR	-1.055 **	.039
STDM	0.212 **	.028
LMSIZE	0.146 ***	.002
SIC-38	0.920 ***	.006
Pseudo R^2	.09	
Correctly classified	66%	
N	605	

*** ** * indicates significance at the 0.01 and 0.05 level (two-tailed) with *p*-values based on heteroskedasticity-robust *t*-statistics. Industry dummies (2-digit SIC codes) used in a stepwise estimation procedure; SIC-38 retained as the only significant effect.

NONFIN: dummy variable for nonfinancial or individual performance measures included in CEO annual bonus plans; **LOSS1-5**: dummy variables for loss-making firms with one to five consecutive years of losses; **FSTRESS**: dummy variable for financial-distress firms; **MTB**: the average market-to-book ratio during 1997-2001; **CORR**: correlation between stock returns and prior quarter changes in EPS; **STDM**: volatility in median industry profitability; **LMSIZE**: log of the market value of the firm at the end of 2001; **SIC-38**: industry dummy variable (Measurement Analyzing, Control Instruments and Related Products).

TABLE 9

Predicted Probabilities of Using Nonfinancial or Individual Performance Measures

	In financial distress			
	No		Yes	
	Non-financial or individual performance target		Non-financial or individual performance target	
	Yes	No	Yes	No
Profit All	29%	71%		
LOSS1	40%	60%	25%	75%
LOSS2	44%	56%	29%	71%
LOSS3	58%	42%	41%	59%
LOSS4	61%	39%	44%	56%
LOSS5	60%	40%		

We calculate the predicted probabilities using the Logit coefficients in Table 8 for a firm with median sample characteristics: MTB = 2.501; CORR = 0.048; STDM = -0.358; and LMSIZE = 5.438.