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Shifting corporate culture: executive stock ownership plan adoptions and incentives to meet or just beat analysts' expectations

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Abstract This paper investigates whether adoptions of executive stock ownership plans coincide with decreased incentives to meet or just beat analysts' near-term EPS forecasts. Firms often assert that ownership plans focus executives on long-term performance. I find that the impact of these adoptions on meeting or just beating analysts' EPS forecasts differs depending on whether the plan binds the CEO to reach ownership targets by a specified date. In particular, I find that firms that adopt plans requiring an increase in CEO ownership exhibit a lower propensity to meet or just beat earnings forecasts following plan adoptions. In contrast, firms that adopt plans that require no increase exhibit no change in the propensity to meet or just beat. The results suggest that firms use binding ownership plans to shift executives' focus from near-term earnings benchmarks to long-term value creation.

Keywords Corporate culture · Analyst forecasts · Managerial ownership · Benchmark beating · Corporate governance

JEL Classification D22 · G32 · G34 · M41

1 Introduction

> If a company's primary goals are to simply meet minimum investor voting guidelines and/or align with "typical" competitive practice, this "check the box" approach potentially misses an opportunity to use the [stock ownership] guidelines in a more effective and powerful way—as a tool to actually influence behavior and drive a culture of ownership and focus on long-term, sustained performance.
>
> —Seamus O'Toole (Equilar 2016)

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Executive compensation contracts typically include equity incentives, such as restricted stock and stock options, to focus executives on long-term value creation (e.g., Core et al. 2003). Without a constraint on selling newly vested restricted stock and options, however, executives can liquidate their shares and options to diversify their wealth and maintain a low level of ownership. Executive stock ownership plans limit such selling by requiring a minimum level of ownership by a specified date and, after that date, maintenance of at least that level of ownership. This constraint addresses a shortcoming of restricted stock and options and potentially enhances executives' focus on their firm's long-term performance (Equilar 2016).[1] Firms often adopt stock ownership plans with a stated goal to increase executives' focus on long-term performance or decrease their focus on short-term performance.

This paper investigates whether the adoptions of executive stock ownership plans coincide with a shift in corporate culture toward long-term performance. In a recent survey, Graham et al. (2017) find that executives list an effective corporate culture as one of the top determinants of firm value. One way corporate culture may increase firm value is by reducing short-termism. Although research documents that focusing on near-term benchmarks harms long-term stock performance (e.g., Bhojraj et al. 2009), we know little about how firms adopt a corporate culture that mitigates short-termism.

To understand whether executive stock ownership plans limit short-termism, my investigation focuses on the tendency to meet or just beat analysts' earnings targets. Firms that meet or just beat earnings targets are considered suspect for earnings management (e.g., Keung et al. 2010). Moreover, a corporate culture focused on short-term earnings is likely to be most acute for firms with executives who have little stake in the long-term value of the firm, that is, those with relatively small equity stakes (e.g., Dechow and Sloan 1991). Insofar as executive ownership plans are binding (i.e., the plans change the level of equity that the executive would otherwise hold), adopting a plan may reflect a cultural shift toward long-term performance.

I examine whether the adoption of an executive stock ownership plan reflects a corporate culture committed to long-term value creation for investors, rather than shorter-term benefits for executives. Because of the incentive provided by the (potentially) increased ownership of firm equity, executives subject to these plans may behave less myopically. This, in turn, should lead to a lower tendency to meet or just beat earnings. Thus I formally test the hypothesis that the adoptions of binding executive stock ownership plans are associated with a reduction in incentives to meet or just beat. In contrast, I do not form a hypothesis for whether firms that adopt nonbinding ownership plans change their propensity to meet or just beat following plan adoptions.

To identify firms where the ownership plan adoption is more likely to coincide with a cultural shift toward long-term performance, I collect precise ownership requirements and ownership levels of CEOs at firms that adopt plans. A commonly stated goal of stock ownership plans is to align executives' interests with those of long-term shareholders. As noted in the opening quotation, however, some boards take a check-the-box

[1] Firms refer to executive ownership requirements by various names, including stock ownership plans, target ownership plans, management stock ownership guidelines, and executive stock ownership guidelines. Appendix 1 discusses ownership plans in detail and includes examples of plans from Omnicom and Compaq Computer.

approach that requires no increase in ownership by the CEO. In contrast, others adopt stock ownership plans that stipulate an increase in CEO ownership. The precise CEO ownership requirements and CEO ownership levels allow me to identify which plans require an increase in CEO ownership.

To test the hypothesis, I examine intertemporal changes in the propensity to meet or just beat the consensus analyst EPS forecast for adoption firms that require an increase in CEO ownership. Next, I examine intertemporal changes in the propensity to meet or just beat for adoption firms that require an increase in CEO ownership, relative to a sample of adoption firms that require no such increase. Finally, I examine changes in the propensity to meet or just beat for adoption firms that require an ownership increase, relative to an entropy-balanced set of control firms. Entropy balancing selects firms that exhibit similar prior meet-or-just-beat behavior and similar characteristics related to binding CEO ownership-plan adoptions but that did not actually adopt such plans. In all tests, I find strong evidence of a reduction in the propensity to meet or just beat analysts' EPS expectations for firms that require a CEO ownership increase, consistent with the hypothesis.[2]

Next, I conduct two robustness tests. First, I address an alternative explanation for the results: firms that adopt binding ownership plans exhibit a declining trend in the propensity to meet or just beat that begins before the plan adoptions. The existence of a downward trend within the firms that required a CEO ownership increase, but not the control firms, would violate the parallel trends assumption (e.g., Roberts and Whited 2013). I find no evidence to support this explanation. Second, I examine a corollary of the hypothesis that the adoptions of binding executive stock ownership plans are associated with a reduced propensity to meet or just beat. Specifically, I examine whether the propensity to meet or just beat and then immediately sell stock decreases following the adoption of a binding ownership plan. Consistent with executives focusing on long-term performance, I document a decrease in the propensity to meet or just beat and then sell shares for CEOs at firms with binding ownership plans. In sum, these tests provide additional evidence that the adoptions of binding stock ownership plans are associated with a reduction in short-termism.

In a final analysis, I examine the mechanisms through which firms reduce their propensity to meet or just beat. The results suggest that the reduction in meeting or just beating is not attributable to changes in managing earnings expectations through forecasting (e.g., Matsumoto 2002), an increase in risky projects, or a reduction in the sensitivity of CEO pay to earnings. In contrast, I find that, after adoption, firms that adopt a binding ownership plan are less likely to meet or just beat with income-increasing abnormal accruals.

This paper extends research on the effects of individual CEOs on their firms. Bertrand and Schoar (2003) document that manager fixed effects explain significant variation in corporate policies, even after controlling for firm fixed effects. Fee et al.

[2] A concern is that the adoption of stock ownership plans causes executives to engage in income-decreasing earnings management so that stock may be purchased at lower prices on the open market. Managers do not often buy shares to meet this requirement but instead tend to hold future share grants they otherwise might have sold. In later tests, I confirm that, when CEOs are required to increase their ownership, they exhibit a reduction in selling. Furthermore, I find no evidence of an increase in income-decreasing earnings management in the year prior to, the year of, or the year after the adoption of stock ownership plans (untabulated), which is inconsistent with managers depressing stock prices to buy shares.

(2013), however, cast doubt on the result that idiosyncratic CEO styles affect firm policies. The authors find no evidence of changes in corporate policy around exogenous CEO changes, and they replicate the F-test results of Bertrand and Schoar (2003), with manager fixed effects being randomly assigned. Fee et al. (2013) conclude that, to understand organizational policies, researchers should examine how governance factors at the firm and board levels affect corporate policies. This paper answers their call by examining changes in firms' focus on short-term earnings targets around board-initiated changes in corporate policy.

This paper also extends research that correlates managers' trading incentives with firms' propensities to meet or just beat earnings targets (Cheng and Warfield 2005; McVay et al. 2006). McVay et al. (2006) note that an alternative explanation for the greater managerial selling after meeting or just beating is that managers sell more shares after strong performance. The authors note the evidence of a causal relation between managerial incentives and the propensity for firms to meet or just beat would be stronger if they could measure ex ante managerial intent. By examining the adoption of stock ownership plans, which change firms' cultural preferences for achieving short-term benchmarks, I extend research that asserts a causal relation between managerial incentives and meeting or just beating.

2 Hypothesis development

Survey and archival research suggests that strong incentives exist for meeting or just beating near-term earnings benchmarks (e.g., Burgstahler and Dichev 1997; Degeorge et al. 1999; Graham et al. 2005; Burgstahler and Chuk 2015). Graham et al. (2005) present survey evidence that managers' focusing on near-term benchmarks is a pervasive form of value destruction. To meet an earnings target, 80% of surveyed managers would decrease discretionary spending, and 55% would delay starting a new project. The survey evidence dovetails with the graphical and statistical archival evidence of Degeorge et al. (1999), who find an abnormally large number of firms meet or just beat analysts' earnings expectations and an abnormally small number just miss. Although the managers in the Graham et al. (2005) survey report several reasons for meeting or just beating, archival evidence suggests the focus on short-term benchmark beating diverts executives' attention from long-term value creation (e.g., Dechow and Sloan 1991; Bushee 1998; Roychowdhury 2006; Bhojraj et al. 2009).

Graham et al. (2017) find that an effective corporate culture mitigates executives' myopia. Specifically, 41% of executives stated that they would select a low NPV project with steady positive cash flows over a high NPV project with negative cash flows in the first two years. Importantly, of those executives, 56% stated that, if their firm's corporate culture improved, they would be more likely to select the high NPV project. Reinforcing the importance of corporate culture, archival research documents that corporate culture affects corporate actions. For example, Hoi et al. (2013) find that firms with socially irresponsible behavior also have a higher propensity to engage in tax sheltering. Similarly, DeBacker et al. (2015) find that U.S. firms with owners from foreign countries with more corruption evade more taxes.

To examine a potential shift in corporate culture, I focus on firms that adopt stock ownership plans that require an increase in CEO ownership. The adoption of an

increase-required ownership plan suggests an overarching cultural shift toward long-term performance for three reasons. First, the adoption of an increase-required plan reduces a CEO's incentives to meet or just beat, because such a plan places a binding constraint on the explicit monetary rewards of selling shares following a meet or just beat (e.g., McVay et al. 2006). Relatedly, if the CEO must maintain significant stock ownership, he or she will bear a greater share of the costs of failing to maximize long-term performance.

Second, firms often adopt stock ownership plans with a stated goal of increasing managers' focus on long-term performance or decreasing their focus on short-term performance. In its 2010 proxy statement, Omnicom states: "These [stock ownership] guidelines ensure that executives … build and maintain a long-term ownership stake in Omnicom's stock that will align their financial interests with the interests of the Company's shareholders." Likewise, in its 1995 proxy statement, Campbell Soup Company states: "[T]hese [stock ownership] requirements encourage executives to buy and hold stock rather than behave as short-term traders."[3]

Third, research suggests how executives evaluate an outcome, such as quarterly earnings per share, depends on reference points (e.g., meeting or beating the consensus analyst earnings forecast). For example, Allen et al. (2017) document that reference points (e.g., a three-hour marathon time) influence marathon runners' behavior, even in the absence of explicit rewards (e.g., qualifying for the Boston Marathon). In my setting, the adoption of an increase-required plan suggests that the firm is not adopting a check-the-box approach to governance (Equilar 2016) but rather promoting long-term performance as executives' reference point and curtailing short-term earnings targets as a reference point.

The foregoing discussion suggests that a reduction in CEOs' incentives to meet or just beat will follow the adoption of stock ownership plans that require an increase in CEO ownership.[4] I formally state the hypothesis as follows.

> *H1:* Adopting a stock ownership plan that requires an increase in CEO ownership is associated with a decrease in incentives to meet or just beat the consensus analyst forecast.

Conversely, I may fail to find a reduction in incentives to meet or just beat after adoption of these plans if boards use plans for window dressing or if other incentives offset their intention to focus executives' attention on long-term performance. For example, insofar as incentives to meet or just beat stem from executives' career concerns, I will not find a significant reduction in these incentives after adoption. Mergenthaler et al. (2012) provide evidence that just missing the consensus analyst

[3] Firms may use stock ownership plans to reach a commonly stated cultural goal of long-term value creation, but, in later tests, I find no evidence that firms that adopt ownership plans with a stated goal of long-term value creation reduce their propensity to meet or just beat the consensus analyst forecast. This inconsistency between firms' stated values and their practices is consistent with the results of Loughran et al. (2009), who find that firms with the greatest stated emphasis on ethics are more likely to be "sin" stocks, more likely to be defendants in class action lawsuits, and more likely to exhibit poor corporate governance scores.

[4] Survey evidence suggests that CEOs exert the greatest influence over corporate culture (Graham et al. 2017). In Section 5, I examine whether the cultural shift I document is consistent with fixed, idiosyncratic CEO styles or with the board and the CEO jointly determining corporate culture (Fee et al. 2013).

earnings forecast is associated with a reduction in equity grants and an increase in forced turnover for executives. Similarly, Dikolli et al. (2014) document a positive association between CEO dismissals and strings of failing to meet analyst forecasts. The results of Mergenthaler et al. (2012) and Dikolli et al. (2014) are consistent with meeting or beating the analyst benchmark being in executives' interests, even absent financial benefits from selling stock. Thus it is an empirical question whether the adoption of stock ownership plans coincides with a decrease in incentives to meet or just beat.

3 Sample selection

To construct a sample of stock ownership plan adoptions, I begin with the S&P 1500 firms as of Jan. 1, 1995. Using a web scraping program, I search the firms' 27,036 proxy statements available in the SEC's EDGAR online repository through June 2013. For each firm, I find the earliest proxy-statement mention of an ownership plan, ownership guidelines, or ownership requirements. For each firm's first match, I perform several checks to ensure I correctly identify the year of plan adoption. I read the proxy statement to ensure the ownership plan relates to named executive officers, rather than to directors or non-executive employees. This procedure eliminates false positives. Next, I read the proxy statement the year before the first match to ensure I have the correct adoption year. For firms classified as non-adopters, I read the most recent proxy statement to eliminate false negatives.

Table 1 shows that, from the initial sample of S&P 1500 firms, I exclude 369 firms from regulated industries. In contrast to unregulated firms, regulated firms may have incentives associated with regulatory oversight to report higher or lower earnings to gain economic benefits or avoid costs (e.g., Burgstahler and Dichev 1997). I thus remove from my sample the firms with SIC codes between 4400 and 5000 and between 6000 and 6500. Of the 1131 firms outside regulated industries, I further remove 28 firms that adopt stock ownership plans before 1994, because Execucomp data are not well populated before 1994. I also remove 70 firms with insufficient proxy statement disclosure information to determine when a stock ownership plan was adopted. To conduct my difference-in-differences analysis, I require firms to have at least one year of Compustat, CRSP, and Execucomp information both before and after the year of the adoption. Because I am interested in identifying firms that require an increase in CEO ownership, I also require them to disclose the parameters of the ownership plan. My final sample consists of 427 adoption firms.

The adoption of a plan that requires an increase in CEO ownership constrains CEO selling and increases the CEO's costs for failing to maximize long-term firm value, which in turn reduces importance of the consensus analyst forecast as a reference point. Thus the adoption of a plan suggests the firm may be undergoing a broader cultural shift toward an emphasis on long-term performance. A subset of firms, however, adopts stock ownership plans that do not require CEOs to increase their ownership. For this subset, the plans prohibit CEOs from falling below mandated ownership levels but do not require them to increase their stakes. With the ability to sell shares after the ownership plan adoption, CEOs with a large amount of ownership above the threshold experience little change in the incentive to focus on long-term performance. The

Table 1 Provides sample selection information

S&P 1500 as of January 1, 1995	1500
Firms in regulated industries	(369)
Firms outside regulated industries	1131
Firms that adopt before 1994	(28)
Firms with insufficient DEF 14A information	(70)
Firms that did not adopt plan	(496)
Firms that adopt plan	537
Firms without pre and post period data	(81)
Firms missing CEO adoption parameters	(29)
Adoption sample	427
Adoption subsamples:	
Firms that require CEO ownership increase	100
Firms that require no CEO ownership increase	327
Adoption sample	427

adoption of plans that require no change in CEO ownership is consistent with a check-the-box approach and inconsistent with the firm seeking an increased culture of stock ownership (Equilar 2016). Therefore I separate firms with adoptions into firms that require ownership increases and those that do not. Table 2 shows that both types of plan adoptions were spread across time, with a slight increase in adoptions from 2003 to 2007. Table 3 presents descriptive statistics for both types of adoption firms. Both types exhibit similar amounts of discretionary expenditures, leverage, and CEO turnover, but those that require an increase tend to be smaller.

To measure incentives for meeting or just beating analysts' forecasts, I use firms' realized propensity to meet or just beat. Brown and Caylor (2005) report that, since the mid-1990s, when my sample begins, managers seek to avoid missing the quarterly analyst consensus EPS forecast more than they seek to avoid either quarterly earnings decreases or quarterly losses. I use I/B/E/S unadjusted earnings to calculate surprises (Payne and Thomas 2003), and my meeting or just beating measure (*MJB*) is equal to one when a firm beats the consensus analyst EPS forecast by less than two cents per share and zero otherwise (e.g., McVay et al. 2006).

The hypothesis predicts a reduction in incentives to meet or just beat the consensus analyst earnings forecast following the adoption of ownership plans that require an increase in CEO ownership. To examine for univariate evidence on the hypothesis, I create histograms of EPS surprises around plan adoptions. For each firm that adopted a stock ownership plan, I remove the adoption year from my analysis to ensure correct classification of observations into the pre- and post-adoption periods. Next, I calculate the EPS surprises for the four quarters of the year before adoption and the four quarters of the year afterward. Panel A of Fig. 1 displays the results for the year before and after the adoption of a plan that requires an increase in CEO ownership beside each other, and I group the EPS surprises into bins by cent. The y-axis reports the percentage of all pre-adoption or post-adoption observations that appear in a particular one-cent bin. In Panel A, the proportion of observations decreases from 11.5% to 7.8% for the zero-cent

Table 2 Adoptions by year

Year	CEO increase required	No CEO increase required	Adoptions
1994	4	10	14
1995	8	12	20
1996	5	29	34
1997	4	21	25
1998	6	9	15
1999	2	13	15
2000	2	4	6
2001	6	8	14
2002	12	9	21
2003	11	24	35
2004	7	31	38
2005	6	27	33
2006	8	35	43
2007	7	30	37
2008	2	14	16
2009	2	13	15
2010	4	14	18
2011	4	14	18
2012	0	10	10
Total	100	327	427

Table 2 provides the number of new adoptions by year. Firms in the "CEO Increase Required" column adopt plans that require the CEO to increase ownership. Firms in the "No CEO Increase Required" column adopt plans that do not require an increase

bin around adoption, and the proportion of observations decreases from 14.3% to 7.3% for the one-cent bin. The economic magnitudes of the decreases for the zero-cent and one-cent bins are 32% ([0.115–0.078]/0.115) and 49% ([0.143–0.073]/0.143), respectively. Panel B displays quarterly EPS surprise histograms for firms that adopted stock ownership plans that require no increase in CEO ownership. For these firms, the proportion of observations appearing in the meet (i.e., zero cent surprise) and just beat bins is roughly the same after adoption. Although Fig. 1 provides support for the hypothesis, I rely on multivariate tests to draw inferences.

4 Empirical methods and results

4.1 Intertemporal changes in the propensity to meet or just beat

To test the hypothesis, I use multiple complementary research designs. My first test examines the change in the propensity to meet or just beat the consensus analyst forecast after plan adoption. A benefit of this test is that each firm serves as its own control, which mitigates concerns that time-invariant firm characteristics drive results. I

Table 3 Descriptive statistics

Variables	Mean	Sd	p25	p50	p75
Panel A: CEO Increase Required Sample					
AUD INDUS EXPRT	0.310	0.463	0.000	0.000	1.000
AUDIT MEMBERS	2.190	2.007	0.000	3.000	4.000
BIGN	0.975	0.156	1.000	1.000	1.000
BOARD IND	0.527	0.361	0.000	0.667	0.846
CAPEX	0.057	0.046	0.026	0.041	0.076
CEO CHAIR	0.420	0.494	0.000	0.000	1.000
CEO EQUITY COMP	2.935	2.852	0.000	3.655	5.529
CEO OWNERSHIP	0.002	0.004	0.000	0.001	0.003
CEO RESTRICT STK	3.722	3.692	0.000	4.952	7.190
CEO TENURE	3.390	3.709	1.000	3.000	5.000
CEO TURNOVER	0.175	0.380	0.000	0.000	0.000
CEO VEGA	1.226	1.172	0.000	1.051	1.961
DEDICATED	0.100	0.068	0.047	0.089	0.144
DIR OWNERSHIP	0.034	0.119	0.000	0.000	0.015
DISC EXP	0.036	0.045	0.001	0.020	0.055
E INDEX	1.175	1.602	0.000	0.000	3.000
LEV	0.566	0.187	0.434	0.578	0.689
MTB	2.613	2.362	1.452	2.228	3.070
PRICE	31.440	20.600	16.840	27.090	40.590
RETURN	0.155	0.496	−0.125	0.076	0.321
ROA	0.012	0.018	0.004	0.013	0.021
SIZE	7.699	1.375	6.782	7.483	8.486
SOX	0.655	0.476	0.000	1.000	1.000
σRETURNS	0.024	0.010	0.017	0.022	0.028
Panel B: No CEO Increase Required Sample					
AUD INDUS EXPRT	0.318	0.466	0.000	0.000	1.000
AUDIT MEMBERS	2.529	1.966	0.000	3.000	4.000
BIGN	0.974	0.159	1.000	1.000	1.000
BOARD IND	0.576	0.318	0.500	0.700	0.800
CAPEX	0.057	0.043	0.027	0.046	0.073
CEO CHAIR	0.528	0.499	0.000	1.000	1.000
CEO EQUITY COMP	3.454	3.118	0.000	4.629	6.229
CEO OWNERSHIP	0.015	0.053	0.001	0.002	0.007
CEO RESTRICT STK	4.864	3.988	0.000	6.817	8.270
CEO TENURE	5.778	6.308	1.000	4.000	8.000
CEO TURNOVER	0.147	0.354	0.000	0.000	0.000
CEO VEGA	1.485	1.294	0.000	1.461	2.465
DEDICATED	0.090	0.070	0.037	0.077	0.132
DIR OWNERSHIP	0.040	0.109	0.000	0.000	0.024
DISC EXP	0.040	0.050	0.000	0.023	0.057
E INDEX	1.708	1.784	0.000	1.000	3.000

Table 3 (continued)

Variables	Mean	Sd	p25	p50	p75
LEV	0.551	0.167	0.444	0.555	0.659
MTB	3.526	3.447	1.720	2.587	3.936
PRICE	36.520	21.760	21.150	33.000	47.170
RETURN	0.179	1.164	−0.067	0.120	0.303
ROA	0.016	0.018	0.008	0.016	0.025
SIZE	8.216	1.331	7.261	8.092	9.217
SOX	0.671	0.470	0.000	1.000	1.000
σRETURNS	0.022	0.010	0.015	0.020	0.027

Panel A contains descriptive statistics for the 100 adoption firms that require an increase in CEO ownership. The sample includes quarterly observations for both the year before and after the plan adoption. Variables are as defined in Appendix 2

Panel B contains descriptive statistics for the 327 adoption firms that require no increase in CEO ownership. The sample includes quarterly observations for both the year before and after the plan adoption. Variables are as defined in Appendix 2

examine the change in propensity to meet or just beat after including a vector of control variables:

$$\begin{aligned} Pr(MJB_{i,t}) = {} & \alpha + \beta_1 POST_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 ROA_{i,t} + \beta_4 RETURN_{i,t} + \beta_5 LEV_{i,t} + \beta_6 PRICE_{i,t} \\ & + \beta_7 DISC\ EXP_{i,t} + \beta_8 CAPEX_{i,t} + \beta_9 MTB_{i,t} + \beta_{10}\sigma RETURNS_{i,t} + \beta_{11} CEO\ CHAIR_{i,t} \\ & + \beta_{12} CEO\ TENURE_{i,t} + \beta_{13} CEO\ TURNOVER_{i,t} + \beta_{14} CEO\ RESTRICT\ STK_{i,t} \\ & + \beta_{15} CEO\ VEGA_{i,t} + \beta_{16} CEO\ EQUITY\ COMP_{i,t} + \beta_{17} E\ INDEX_{i,t} \\ & + \beta_{18} DIR\ OWNERSHIP_{i,t} + \beta_{19} AUDIT\ MEMBERS_{i,t} + \beta_{20} BOARD\ IND_{i,t} \\ & + \beta_{21} DEDICATED_{i,t} + \beta_{22} BIGN_{i,t} + \beta_{23} AUD\ INDUS\ EXPRT_{i,t} + \beta_{24} SOX_{i,t} \\ & + \beta_{25} INVERSE\ MILLS\ RATIO_{i,t} + \Sigma\ GOV\ MISSING + \Sigma\ INDUSTRY\ CONTROLS + \varepsilon. \end{aligned} \quad (1)$$

POST is an indicator variable equal to one for the four quarters in the year after adoption and zero for the four quarters in the year before adoption. The hypothesis predicts a negative coefficient estimate on *POST* for firms that adopt a plan that requires an increase in CEO ownership, and I make no prediction for the adoption firms that require no increase. I use both a linear probability model (LPM) and a logit regression. The benefits of using the former model include the ease of interpretation and the capability of including categorical variables, which Greene (2004) shows can bias inferences when researchers use maximum likelihood estimation. Logit regression addresses heteroscedasticity in the linear probability model.

Equation (1) includes controls for potential determinants of meeting or just beating. Growth options may be associated with firms' incentives to meet or just beat, and I control for growth options with the market-to-book ratio (*MTB*).[5] Large firms may have more resources they can deploy to meet or just beat, and thus I include *SIZE*. To control for differences in performance around adoption, I include return on assets (*ROA)* and stock

[5] I define all variables in Appendix 2.

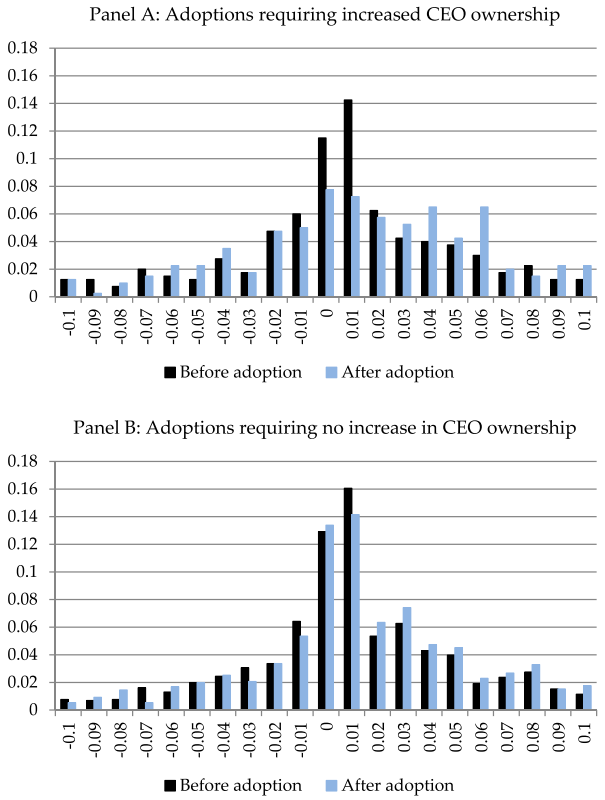

Fig. 1 EPS surprise distributions before and after adoptions. Panel **A**: Adoptions requiring increased CEO ownership. Panel **B**: Adoptions requiring no increase in CEO ownership. Figure 1 displays quarterly EPS surprise histograms for firms that adopted stock ownership plans. I use the I/B/E/S unadjusted earnings to calculate surprises (Payne and Thomas 2003), and I group EPS surprises into bins by cent on the x-axis. The y-axis is the proportion of observations either before or after adoption in each EPS surprise bin. Panel A (Panel B) contains adoption firms that require a CEO ownership increase (require no CEO ownership increase). Both panels display the results for the year before and year after adoption

returns *(RETURN)*. The existence of leverage (*LEV*) may also influence firms' capital market pressures. Firms with significant discretionary expenditures (*DISC EXP*) may have more mechanisms to meet or just beat. I also control for firms' investment intensity (*CAPEX*), which could change around the adoption of ownership plans and affect firms' propensity to meet or just beat. Insofar as firms with high share prices (*PRICE*) and greater return volatility (σ*RETURNS*) exhibit greater variance in EPS surprises, I expect a negative relation between share price and the propensity to meet or just beat. Capital market pressures to meet or just beat likely vary across industries, and I include industry fixed effects.

I also include controls for CEOs' incentives, compensation, and characteristics. I include *CEO TENURE* and *CEO TURNOVER*, because capital market pressure likely differs between firms that have recently experienced turnover and firms with no recent turnover. Restricted stock (*CEO RESTRICT STK*), which cannot be sold upon meeting or just beating, reduces executives' incentive to meet or just beat. Research finds evidence consistent with *CEO VEGA* providing incentives for meeting or just beating (e.g., Armstrong et al. 2013). In

addition to equity holdings, equity compensation influences executives' incentives. For example, executives have incentives to manage earnings down to suppress share prices before receiving new option grants. Thus I control for *CEO EQUITY COMP*.

Next, I control for the effects of internal monitoring and corporate governance on the propensity to meet or just beat. I control for board independence (*BOARD IND*), the percentage of voting shares controlled by the board of directors (*DIR OWNERSHIP*), CEO duality (*CEO CHAIR*), and the entrenchment index (*E INDEX*) that Bebchuk et al. (2009) describe.[6] Insofar as high board independence, high director ownership, the absence of CEO duality, and low entrenchment reflect better monitoring, I expect a negative coefficient estimate on board independence and director ownership and positive coefficient estimates on CEO duality and the entrenchment index. Insofar as entrenchment allows managers to focus on long-term goals without short-term pressures, however, entrenchment will associate negatively with the propensity to meet or just beat. I also include the number of directors who sit on the audit committee (*AUDIT MEMBERS*). To control for external monitoring, I include dedicated institutional ownership (*DEDICATED*), the presence of a Big N auditor (*BIGN*), the presence of an audit industry expert (*AUD INDUS EXPRT*), and the passage of The Sarbanes–Oxley Act of 2002 (*SOX*).[7]

The tests in this section use observations from the firms that adopt an ownership plan. To mitigate concerns about selection on unobservable variables that affect the decision to adopt a plan that requires a CEO ownership increase, I use a sample selection model to calculate an inverse Mills ratio (*INVERSE MILLS RATIO*) in all tests containing only firms that adopt an ownership plan (Heckman 1979; Hribar and Yang 2015). Sample selection models require plausible exclusion restrictions for convincing inferences (e.g., Lennox et al. 2011). I choose pre-adoption CEO equity ownership as the exclusion restriction, because it is unclear how pre-adoption CEO ownership would directly affect changes in post-adoption meeting or just beating. I also expect pre-adoption CEO equity ownership to correlate strongly with the likelihood of adopting a stock ownership plan that requires an increase in CEO ownership.

Panel A of Table 4 reports the results of estimating eq. (1) for the adoption firms that require the CEOs to increase their ownership and for those that do not. Consistent with the hypothesis, the coefficient estimates on *POST* are negative and statistically significant for the adoption firms that require an increase in CEO ownership. The estimate in the linear probability model represents a 7.9 percentage point reduction in the propensity to meet or just beat. In contrast, the adoption firms that require no increase in CEO ownership

[6] Krishnan et al. (2011) find that social ties significantly increase firms' propensities to manage earnings to meet or just beat consensus analyst EPS forecasts, and the authors report in Table 3 that the relation disappears after The Sarbanes–Oxley Act of 2002 (SOX). Thus, insofar as social ties drive the results, the results should not hold in the post-SOX period. I delete all observations before SOX, and my inferences are unchanged (untabulated).

[7] Consistent with the work of Hanlon et al. (2003) and Cassell et al. (2013), I set missing governance values equal to zero but include a separate indicator variable (*GOV MISSING*) equal to one when the governance variable is unavailable.

do not exhibit a statistically significant difference in the propensity to meet or just beat after the plan adoptions.

In Panel B of Table 4, I partition my sample according to whether the adoption firm has a stated value of focusing on long-term performance. Insofar as firms' stated values align with their actual values, I expect firms that adopt an ownership plan with a stated value of focusing on long-term performance to reduce their focus on benchmark beating. In contrast, insofar as firms' stated values contradict their actual values (e.g., Loughran et al. 2009; Guiso et al. 2015), I expect no such association. In neither the linear probability model nor the logit regressions do I find evidence that firms with a stated value of focusing on long-term performance actually decrease their propensity to meet or just beat after adoption. This finding reinforces the prior result that, to understand firms' actual values, researchers must examine firms' actions, rather than their stated values (e.g., Loughran et al. 2009).

4.2 Difference-in-differences estimation using the two types of adoption firms

The first set of tests documents that adoption firms that require an increase in CEO ownership exhibit a reduction in the propensity to meet or just beat after plan adoption. To complement the first set of tests, I conduct a difference-in-differences estimation. Specifically, I use adoption firms that required no increase in CEO ownership as a control sample, and I examine changes in the propensity to meet or just beat for adoption firms that required an increase in CEO ownership using the following difference-in-differences approach.

$$\begin{aligned} Pr(MJB_{i,t}) = \alpha + \beta_1 CEO\ INCREASE_{i,t} + \beta_2 POST_{i,t} \\ + \beta_3 CEO\ INCREASE_{i,t} * POST_{i,t} + \Sigma\ CONTROLS + \ \varepsilon, \end{aligned} \tag{2}$$

where *CEO INCREASE* is an indicator equal to one for adoption firms that require an increase in CEO ownership and zero otherwise. *POST* is an indicator variable equal to one for the observations in the year after the plan adoption and zero otherwise. The hypothesis predicts a negative coefficient estimate for β_3, and I include all control variables from eq. (1).

Panel A of Table 5 presents the results of estimating eq. (2). In both the linear probability model and the logit regression, the coefficient estimate for β_1 (*CEO INCREASE*) is not statistically different from zero. Thus there is not a statistically significant difference in the propensity to meet or just beat between the treatment and control firms prior to plan adoption. The coefficient estimate on β_2 (*POST*) is also not statistically different from zero, consistent with no significant change in the propensity to meet or just beat occurring after plan adoption for firms that require no increase in CEO ownership. Consistent with the hypothesis, the coefficient of interest, β_3 (*CEO INCREASE*POST*), is negative and statistically significant. The coefficient on β_3 represents a statistically and economically significant decrease in the propensity to meet or just beat of 8.7 percentage points.

Table 4 Change in meeting and just beating around adoptions

Panel A:	**DV = MJB**		**DV = MJB**		**DV = MJB**		**DV = MJB**	
Requirement partition	**CEO increase required**		**CEO increase required**		**No CEO increase required**		**No CEO increase required**	
	Coeff.	***t*-stat**	**Coeff.**	***t*-stat**	**Coeff.**	***t*-stat**	**Coeff.**	***t*-stat**
POST	−0.079*	(−1.91)	−0.628**	(−2.35)	0.009	(0.52)	0.069	(0.74)
SIZE	−0.010	(−0.64)	−0.145	(−1.05)	0.031***	(2.65)	0.158**	(2.49)
ROA	0.717	(0.82)	5.889	(0.85)	0.552	(0.71)	2.230	(0.48)
RETURN	−0.018	(−0.53)	−0.160	(−0.63)	−0.005	(−1.30)	−0.133	(−0.83)
LEV	−0.079	(−0.41)	0.062	(0.05)	−0.350***	(−4.25)	−1.981***	(−3.90)
PRICE	−0.004***	(−4.84)	−0.033***	(−3.27)	−0.004***	(−5.30)	−0.022***	(−5.53)
DISC EXP	−0.936*	(−1.69)	−4.770	(−1.32)	0.043	(0.14)	0.121	(0.08)
CAPEX	0.047	(0.08)	1.631	(0.39)	−0.588*	(−1.83)	−3.876**	(−1.98)
MTB	0.019*	(1.85)	0.107*	(1.73)	0.018***	(3.95)	0.099***	(4.20)
σRETURNS	−2.993	(−1.52)	−24.543	(−1.61)	−2.099**	(−2.00)	−14.735*	(−1.94)
CEO CHAIR	0.032	(1.09)	0.287	(1.13)	−0.014	(−0.46)	−0.088	(−0.52)
CEO TENURE	−0.002	(−0.37)	−0.031	(−0.84)	−0.001	(−0.90)	−0.007	(−0.83)
CEO TURNOVER	0.005	(0.10)	−0.176	(−0.42)	−0.010	(−0.23)	−0.062	(−0.27)
CEO RESTRICT STK	−0.008	(−1.43)	−0.071	(−1.46)	0.001	(0.29)	0.003	(0.15)
CEO VEGA	0.020	(0.83)	0.129	(0.88)	0.022	(1.61)	0.113	(1.55)
CEO EQUITY COMP	−0.012*	(−1.89)	−0.059	(−1.18)	0.000	(0.03)	−0.002	(−0.06)
E INDEX	−0.013	(−0.75)	−0.219	(−1.27)	0.004	(0.39)	0.013	(0.23)
DIR OWNERSHIP	0.072	(0.41)	0.552	(0.37)	0.007	(0.04)	−0.076	(−0.08)
AUDIT MEMBERS	0.016	(0.67)	0.125	(0.67)	0.009	(0.90)	0.044	(0.74)
BOARD IND	0.027	(0.15)	0.442	(0.50)	−0.374***	(−4.37)	−1.893***	(−4.79)
DEDICATED	0.391	(1.07)	2.117	(0.82)	0.239*	(1.89)	1.429**	(2.14)
BIGN	0.091*	(1.67)	1.052*	(1.79)	0.029	(0.53)	0.122	(0.39)
AUD INDUS EXPRT	0.018	(0.52)	0.284	(1.15)	−0.049**	(−2.35)	−0.249**	(−2.11)
SOX	0.056	(1.08)	0.386	(1.05)	−0.091*	(−1.89)	−0.531**	(−2.04)
INVERSE MILLS RATIO	0.082	(1.21)	0.772*	(1.71)	0.006	(0.44)	0.038	(0.54)
Estimation	LPM		Logit		LPM		Logit	
Cluster by firm	Y		Y		Y		Y	
Cluster by year	Y		Y		Y		Y	
GOV MISSING	Y		Y		Y		Y	
Industry fixed effects	Y		Y		Y		Y	
Observations	800		800		2616		2616	
(Pseudo) R-squared	0.152		0.162		0.125		0.11	
Panel B:	**DV = MJB**		**DV = MJB**		**DV = MJB**		**DV = MJB**	
Stated value partition	**Long-term = 1**		**Long-term = 1**		**Long-term = 0**		**Long-term = 0**	
	Coeff.	***t*-stat**	**Coeff.**	***t*-stat**	**Coeff.**	***t*-stat**	**Coeff.**	***t*-stat**
POST	−0.019	(−0.89)	−0.111	(−0.91)	−0.012	(−0.28)	−0.020	(−0.07)
SIZE	0.032***	(2.61)	0.154**	(2.19)	−0.008	(−0.25)	0.012	(0.06)
ROA	1.393*	(1.74)	9.071*	(1.82)	−1.180	(−1.50)	−6.962*	(−1.78)

Table 4 (continued)

RETURN	−0.007	(−1.07)	−0.402**	(−2.19)	0.050	(1.01)	0.340	(1.09)
LEV	−0.209**	(−2.22)	−0.978	(−1.61)	−0.213	(−1.19)	−1.469	(−1.44)
PRICE	−0.003***	(−5.64)	−0.019***	(−5.34)	−0.005***	(−3.85)	−0.035***	(−4.43)
DISC EXP	−0.243	(−0.79)	−1.100	(−0.68)	−0.076	(−0.16)	−1.768	(−0.70)
CAPEX	−0.128	(−0.56)	−1.164	(−0.81)	−0.899	(−1.19)	−4.935	(−1.31)
MTB	0.015***	(3.22)	0.076***	(3.28)	0.028**	(2.60)	0.177***	(3.34)
σRETURNS	−3.231***	(−3.01)	−24.985***	(−3.22)	−1.332	(−0.80)	−7.619	(−0.63)
CEO CHAIR	−0.008	(−0.32)	−0.069	(−0.51)	0.010	(0.17)	−0.010	(−0.03)
CEO TENURE	−0.001	(−0.54)	−0.004	(−0.48)	−0.000	(−0.11)	0.007	(0.23)
CEO TURNOVER	−0.003	(−0.08)	−0.017	(−0.07)	−0.018	(−0.22)	−0.092	(−0.20)
CEO RESTRICT STK	−0.000	(−0.06)	0.003	(0.17)	−0.005	(−0.82)	−0.031	(−1.10)
CEO VEGA	0.013	(1.05)	0.082	(1.17)	0.034	(0.96)	0.200	(0.97)
CEO EQUITY COMP	−0.004	(−1.42)	−0.025	(−1.49)	0.009	(1.14)	0.028	(0.63)
E INDEX	0.008	(0.79)	0.045	(0.84)	−0.001	(−0.04)	0.003	(0.02)
DIR OWNERSHIP	0.014	(0.08)	−0.034	(−0.04)	−0.247	(−1.39)	−1.367	(−1.29)
AUDIT MEMBERS	0.007	(0.65)	0.022	(0.38)	−0.005	(−0.37)	0.000	(0.00)
BOARD IND	−0.285***	(−3.31)	−1.532***	(−3.44)	−0.415	(−1.57)	−1.953	(−1.40)
DEDICATED	0.229	(1.14)	1.604	(1.43)	0.522	(1.58)	3.306**	(2.00)
BIGN	0.053	(1.14)	0.322	(1.07)	0.196	(1.35)	0.996	(1.45)
AUD INDUS EXPRT	−0.029	(−1.31)	−0.134	(−1.02)	−0.080***	(−3.33)	−0.518***	(−4.13)
SOX	−0.053	(−1.27)	−0.342	(−1.57)	−0.013	(−0.20)	−0.184	(−0.49)
INVERSE MILLS RATIO	0.021	(1.45)	0.113	(1.60)	−0.023	(−0.65)	−0.165	(−0.82)
Estimation	LPM		Logit		LPM		Logit	
Cluster by firm	Y		Y		Y		Y	
Cluster by year	Y		Y		Y		Y	
GOV MISSING	Y		Y		Y		Y	
Industry fixed effects	Y		Y		Y		Y	
Observations	2656		2656		760		760	
(Pseudo) R-squared	0.109		0.103		0.221		0.187	

The dependent variable is *MJB*, which is an indicator equal to one when the I/B/E/S actual minus the mean analyst EPS forecast is between zero and two cents (inclusive) and zero otherwise. Long-term equals one when the firm lists in the proxy statement a focus on long-term performance with the stock ownership plan adoption and zero otherwise. The sample includes quarterly observations for both the year before and after the adoption. In Panel A, the first two models include only observations of firms that adopt a plan requiring an increase in CEO ownership, and the second two models include only observations of firms that adopt a plan that requires no increase in CEO ownership. In Panel B, the first two models include only observations of adoption firms with Long-term equal to one, and the second two models include only observations of adoption firms with Long-term equal to zero. The variable of interest, *POST,* is an indicator equal to one for firm-quarters in post-adoption period and zero otherwise. All variables are defined in Appendix 2. Fama and French (1997) 48-industry fixed effects are included, and ***, **, * represent significance at the 1%, 5%, and 10% levels, respectively, using two-sided tests

Table 5 CEO increase required against no CEO increase required

	DV = MJB			
	Coeff.	t-stat	Coeff.	t-stat
Panel A: Difference in differences estimation				
CEO INCREASE	−0.000	(−0.01)	−0.039	(−0.26)
POST	0.005	(0.32)	0.050	(0.55)
*CEO INCREASE*POST*	−0.087***	(−2.80)	−0.609***	(−2.99)
SIZE	0.024**	(2.11)	0.113*	(1.84)
ROA	0.908	(1.38)	4.722	(1.19)
RETURN	−0.006	(−1.59)	−0.124	(−1.24)
LEV	−0.247***	(−2.83)	−1.360***	(−2.58)
PRICE	−0.004***	(−5.66)	−0.021***	(−5.63)
DISC EXP	−0.202	(−0.86)	−1.200	(−0.99)
CAPEX	−0.325	(−1.18)	−2.245	(−1.32)
MTB	0.017***	(3.51)	0.091***	(3.62)
σRETURNS	−2.138**	(−2.17)	−14.698**	(−2.24)
CEO CHAIR	−0.003	(−0.15)	−0.028	(−0.23)
CEO TENURE	−0.001	(−0.85)	−0.008	(−0.99)
CEO TURNOVER	−0.003	(−0.11)	−0.033	(−0.17)
CEO RESTRICT STK	−0.001	(−0.32)	−0.005	(−0.34)
CEO VEGA	0.018	(1.42)	0.102	(1.47)
CEO EQUITY COMP	−0.002	(−0.64)	−0.013	(−0.64)
E INDEX	−0.000	(−0.04)	−0.011	(−0.18)
DIR OWNERSHIP	0.028	(0.18)	0.096	(0.12)
AUDIT MEMBERS	0.012	(1.14)	0.057	(0.95)
BOARD IND	−0.285***	(−3.59)	−1.470***	(−3.86)
DEDICATED	0.292**	(2.32)	1.806***	(2.60)
BIGN	0.060	(1.21)	0.337	(1.09)
AUD INDUS EXPRT	−0.041*	(−1.84)	−0.200	(−1.54)
SOX	−0.047	(−1.17)	−0.295	(−1.35)
INVERSE MILLS RATIO	0.012	(0.85)	0.063	(0.94)
Estimation	LPM		Logit	
Cluster by firm	Y		Y	
Cluster by year	Y		Y	
GOV MISSING	Y		Y	
Industry fixed effects	Y		Y	
Observations	3416		3416	
(Pseudo) R-squared	0.11		0.099	
Panel B: Falsification test				
CEO INCREASE	0.028	(1.00)	0.164	(1.01)
POST	0.011	(0.69)	0.068	(0.78)
*CEO INCREASE*POST*	0.012	(0.35)	0.056	(0.28)
SIZE	0.031**	(2.52)	0.163***	(2.62)
ROA	2.680***	(8.50)	15.380***	(6.88)

Table 5 (continued)

	DV = MJB			
	Coeff.	t-stat	Coeff.	t-stat
RETURN	−0.001	(−0.05)	−0.020	(−0.17)
LEV	−0.139**	(−2.11)	−0.742**	(−2.03)
PRICE	−0.003***	(−4.43)	−0.016***	(−4.28)
DISC EXP	−0.075	(−0.21)	−0.282	(−0.16)
CAPEX	0.141	(0.59)	0.716	(0.54)
MTB	−0.000**	(−2.51)	−0.001	(−1.64)
σRETURNS	−2.486**	(−2.02)	−15.511*	(−1.95)
CEO CHAIR	−0.061***	(−2.99)	−0.311***	(−3.07)
CEO TENURE	0.003*	(1.73)	0.015*	(1.72)
CEO TURNOVER	0.017	(0.60)	0.081	(0.51)
CEO RESTRICT STK	0.006	(1.63)	0.033	(1.56)
CEO VEGA	0.011	(1.15)	0.056	(1.11)
CEO EQUITY COMP	−0.004	(−0.97)	−0.020	(−0.84)
E INDEX	−0.005	(−0.69)	−0.027	(−0.65)
DIR OWNERSHIP	0.070	(0.39)	0.265	(0.32)
AUDIT MEMBERS	0.012	(1.04)	0.062	(1.13)
BOARD IND	−0.078	(−1.09)	−0.485	(−1.32)
DEDICATED	0.013	(0.11)	0.099	(0.15)
BIGN	0.029	(0.45)	0.181	(0.53)
AUD INDUS EXPRT	−0.064***	(−3.58)	−0.354***	(−3.54)
SOX	−0.036	(−1.43)	−0.219	(−1.50)
INVERSE MILLS RATIO	−0.003	(−0.07)	−0.028	(−0.12)
Estimation	LPM		Logit	
Cluster by firm	Y		Y	
Cluster by year	Y		Y	
GOV MISSING	Y		Y	
Industry fixed effects	Y		Y	
Observations	3048		3048	
Pseudo R-squared	0.101		0.088	

The dependent variable is *MJB*, which is an indicator equal to one when the I/B/E/S actual minus the mean analyst EPS forecast is between zero and two cents (inclusive) and zero otherwise. The sample contains both adoption firms that require a CEO increase in ownership and adoption firms that do not. *CEO INCREASE* is an indicator equal to one for adoption firms that require the CEO to increase ownership and zero otherwise. In Panel A, *POST* is an indicator equal to one for firm-quarters in year $t + 1$ (i.e., after the plan adoptions) and zero for firm quarters in year t-1 (i.e., before the plan adoptions). For the falsification test in Panel B, *POST* is an indicator equal to one for firm-quarters in year t -1 and zero for firm-quarters in year t-2. Fama and French (1997) 48-industry fixed effects are included. All variable definitions are in Appendix 2, and ***, **, * represent significance at the 1%, 5%, and 10% levels, respectively, using two-sided tests

Next, I assess the sensitivity of my results to potential bias from a correlated omitted variable. My analysis thus far controls for differences in time-varying observable firm and CEO characteristics, and my difference-in-differences design removes concerns

that time-invariant firm or CEO characteristics drive my results. I also mitigate concerns regarding selection on unobservable characteristics using the inverse Mills ratio. Nevertheless, my nonexperimental study is susceptible to bias from a relevant time-varying variable. To assess the magnitude of the hidden bias required to invalidate my inferences, I follow Frank (2000) and Feng et al. (2009) and calculate the impact threshold for a confounding variable (ITCV). The ITCV measures how closely a confounding variable would have to be correlated with both meeting or just beating and the interaction of *CEO INCREASE* and *POST* to render the results statistically insignificant. I find the omitted variable would need to be correlated, conditioning on observed covariates, at 0.101 (−0.101) with meeting or just beating and at −0.101 (0.101) with the interaction of *CEO INCREASE* and *POST* to invalidate my inferences. Thus the ITCV is −0.010 (i.e., 0.101 * −0.101). By comparison, the observed covariate with the most negative ITCV is *σRETURNS,* which has ITCV = −0.0021. Thus, to invalidate my inferences, an unobserved omitted confounding variable would need to have an impact 3.9 times greater than the impact of the strongest covariate in Table 5.

To further examine the hypothesis, I perform falsification tests to (1) assess the appropriateness of a difference-in-differences estimator in my setting and (2) provide evidence on whether a violation of the parallel trends assumption biases my results (e.g., Roberts and Whited 2013). To perform a falsification test, I examine the changes in the propensity to meet or just beat around a false adoption date. I choose one year prior to the actual adoptions as the false adoption dates, because this choice maximizes the closeness to the true adoption date while preventing any adoption years or post adoption years from entering the post period of my falsification sample. Evidence of a reduction in meeting or just beating in this falsification test would suggest that pre-existing trends, rather than a shift in firms' focus toward long-term performance, drive my results. Under this alternative explanation, β_3 would be negative for the year immediately prior to plan adoption. Inconsistent with this alternative explanation, the coefficient estimate on β_3 in Panel B of Table 5 is insignificantly different from zero.

4.3 Estimation using entropy balancing

As a final test of the hypothesis, I estimate the change in the propensity to meet or just beat using entropy balancing (e.g., Hainmueller 2012; McMullin and Schonberger 2015; Bonsall and Miller 2017). Similar to propensity-score matching, entropy balancing identifies control firms that share relevant characteristics with the treatment firms, except for the treatment itself. Also similar to propensity-score matching, entropy balancing allows researchers to balance the distribution of observable covariates relevant to the treatment (e.g., Rosenbaum and Rubin 1983; Rosenbaum 2002). In contrast to propensity-score matching, however, entropy balancing achieves precise covariate balance by re-weighting control firms and thus avoids forcing researchers to manually check matched control sample observations to reduce covariate imbalance. Entropy balancing also ensures that higher-order moments of the covariate distribution are similar across treated and control samples.

To begin the entropy balancing procedure, I identify a vector of covariates that relate to the propensity to adopt an ownership plan that requires an increase in CEO ownership. My covariates measure four constructs that I expect to affect firms' propensities to adopt an ownership plan that requires an increase in CEO ownership:

(1) internal monitoring, (2) external monitoring, (3) investment opportunities and recent performance, and (4) CEO characteristics.

I expect that firms with more internal and external monitoring will be more likely to adopt a plan that requires an increase in CEO ownership. To measure internal corporate governance, I include the entrenchment index (*E INDEX*) that Bebchuk et al. (2009) describe, director ownership (*DIR OWNERSHIP*), number of audit committee members (*AUDIT MEMBERS*), and board independence (*BOARD IND*). I expect firms with lower levels of entrenchment and independent boards as well as those with boards with more audit committee members and higher ownership to be more likely to adopt governance reforms. Demsetz and Lehn (1985) argue that monitoring managers is more costly in firms that transact in volatile markets, which suggests that firms with high stock volatility will be more likely to adopt ownership plans. Nevertheless, the board of directors may be hesitant to require an increase in CEO ownership if the firm has recently experienced high stock price volatility. I match on firms' stock volatility, (*σRETURNS*), but make no directional prediction. Larger firms have greater resources to implement governance reforms, and I match on firm size (*SIZE*). To mitigate concerns that differences in the pre-adoption propensity to meet or just beat drive my results, as well as to control for differences in both internal and external monitoring that affect the propensity to meet or just beat, I also match on the pre-adoption propensity to meet or just beat.

To measure external monitoring, I match on dedicated institutional ownership (*DEDICATED*) using Bushee's (1998) classification scheme. Consistent with dedicated institutional ownership serving a monitoring role, Chen et al. (2007) document that institutions with longer investment horizons, concentrated shareholdings, and greater independence from management are most likely to monitor management. In contrast to dedicated institutions, transient institutions and quasi-indexers are unlikely to monitor (Chen et al. 2007). To control for monitoring from the external auditor, I match on auditor industry expert (*AUD INDUS EXPRT*) and the presence of a Big N auditor (*BIGN*). Leverage exposes firms to bankruptcy risk and monitoring from creditors, and I include leverage (*LEV*). The adoption of SOX and the corporate governance changes around SOX increased the external pressure on firms to improve their governance.

Next, I match on investment opportunities and recent performance. I match on the market-to-book ratio (*MTB*) to control for investment opportunities (e.g., Smith and Watts 1992) and on *CAPEX* to control for observed investment activities, but I do not predict whether firms with extensive investment opportunities will be more or less likely to adopt a plan that requires an increase in CEO ownership. I expect the likelihood of adopting a plan that requires the CEO to increase ownership to associate negatively with a firm's recent performance, and I match on *ROA* and the most recent 12 months of raw returns (*RETURN*). I also match on variables that may relate to future meeting or just beating, including pre-adoption meeting or just beating behavior (*MJB*), discretionary expenditures (*DISC EXP*), and stock price (*PRICE*).

Finally, I match on CEO characteristics. Core and Larcker (2002) argue boards adopt stock ownership plans to mitigate a perceived governance problem. Research documents that firms that adopt stock ownership plans exhibit low executive equity ownership prior to plan adoption (e.g., Core and Larcker 2002; Brown et al. 2017). I include variables that measure the level of CEO ownership (*CEO OWNERSHIP*), the CEO's restricted stock (*CEO RESTRICT STK*), and the CEO's vega (*CEO VEGA*). To

further control for CEO characteristics and time horizon, I include *CEO EQUITY COMP*, *CEO TENURE*, *CEO CHAIR*, and *CEO TURNOVER*.

Table 6 provides the covariate balance before and after the entropy balancing procedure. Panel A of Table 6 provides the mean and variance for the pre-adoption firm and CEO characteristics for the firms with ownership plans that require CEOs to increase ownership and those with plans that do not. Panel A presents descriptive statistics consistent with observable differences existing between firms that require an increase in CEO ownership and firms that do not. For example, firms that require a CEO ownership increase tend to have lower CEO ownership (0.002 vs. 0.015) and lower stock returns (0.104 vs. 0.258). Panel B of Table 6 presents the means and variances of variables that relate to the adoption of plans requiring a CEO ownership increase after entropy balancing. Panel B documents that entropy balancing converges with a high degree of precision, because it matches the mean of each variable to at least three decimal places between the two sets of firms.

To examine the hypothesis, I estimate the following linear probability model and logit regressions with the adoption firms and the associated entropy-balanced control firms.

$$Pr\left(MJB_{i,t}\right) = \alpha + \beta_1 CEO\ INCREASE_i + \Sigma\ CONTROLS + \varepsilon, \tag{3}$$

where *CEO INCREASE* is an indicator variable equal to one for firms that require an increase in CEO ownership and zero otherwise. The hypothesis predicts $\beta_1 < 0$. Panel B of Table 6 documents that entropy balancing successfully weights observations such that the two sets of firms exhibit nearly identical observable characteristics related to binding ownership plan adoptions in the pre-adoption period.[8] Using the entropy balanced sample, I examine for differences between the two types of adoption firms in the propensity to meet or just beat in the post-adoption period. Although entropy balancing selects firms with similar observable characteristics as the firms that require an increase in CEO ownership, I conduct a procedure akin to doubly robust estimation and include determinants of the propensity to meet or just beat listed in Table 5 in the estimation of eq. (3). Doubly robust estimation produces consistent estimation as long as either the first-stage or the second-stage model is correctly specified (e.g., Bang and Robins 2005). Table 7 provides the results of estimating eq. (3). Consistent with the hypothesis, β_1 is negative and statistically significant in both models. The coefficient in the linear probability model represents a decrease of 10.6 percentage points at firms that adopt a plan that requires an increase in CEO ownership.

5 Additional analysis

5.1 Cultural shift: idiosyncratic CEO style or selected CEO style?

The results suggest that firms that require an increase in CEO ownership are shifting the corporate culture to reduce incentives to meet or just beat. Insofar as a shift in culture is occurring, firms that require an increase in CEO ownership could shift their culture by hiring a new CEO with a different style or by keeping the same CEO. Bertrand and Schoar (2003) argue that CEOs exhibit stable personality characteristics (i.e., the

[8] See Hainmueller (2012) for details on the weighting procedure.

Table 6 Entropy-balancing descriptive statistics

	CEO increase required		No CEO increase required	
	Mean	**Variance**	**Mean**	**Variance**
Panel A: Before balancing				
AUD INDUS EXPRT	0.290	0.206	0.318	0.217
AUDIT MEMBERS	2.050	4.138	2.419	4.039
BIGN	0.980	0.020	0.973	0.027
BOARD IND	0.464	0.137	0.531	0.108
CAPEX	0.059	0.003	0.056	0.002
CEO CHAIR	0.350	0.228	0.499	0.250
CEO EQUITY COMP	2.665	7.723	3.332	9.057
CEO OWNERSHIP	0.002	0.000	0.015	0.003
CEO RESTRICT STK	2.866	12.560	4.428	16.070
CEO TENURE	3.400	18.230	5.627	41.160
CEO TURNOVER	0.190	0.154	0.190	0.154
CEO VEGA	1.129	1.317	1.533	1.543
DEDICATED	0.099	0.005	0.094	0.005
DIR OWNERSHIP	0.037	0.017	0.045	0.014
DISC EXP	0.035	0.002	0.040	0.002
E INDEX	1.160	2.661	1.596	3.099
LEV	0.559	0.038	0.545	0.029
MJB	0.258	0.192	0.290	0.206
MTB	2.620	5.764	3.435	11.280
PRICE	30.87	369.0	35.23	397.9
RETURN	0.104	0.184	0.258	2.510
ROA	0.013	0.000	0.016	0.000
SIZE	7.629	1.893	8.134	1.790
SOX	0.620	0.236	0.645	0.229
σRETURNS	0.023	0.000	0.022	0.000
Panel B: After balancing				
AUD INDUS EXPRT	0.290	0.206	0.290	0.206
AUDIT MEMBERS	2.050	4.138	2.050	4.066
BIGN	0.980	0.020	0.980	0.020
BOARD IND	0.464	0.137	0.464	0.119
CAPEX	0.059	0.003	0.059	0.002
CEO CHAIR	0.350	0.228	0.350	0.228
CEO EQUITY COMP	2.665	7.723	2.665	7.848
CEO OWNERSHIP	0.002	0.000	0.002	0.000
CEO RESTRICT STK	2.866	12.560	2.866	12.960
CEO TENURE	3.400	18.230	3.400	13.480
CEO TURNOVER	0.190	0.154	0.190	0.154
CEO VEGA	1.129	1.317	1.129	1.143
DEDICATED	0.099	0.005	0.099	0.006
DIR OWNERSHIP	0.037	0.017	0.037	0.007

Table 6 (continued)

	CEO increase required		No CEO increase required	
	Mean	**Variance**	**Mean**	**Variance**
DISC EXP	0.035	0.002	0.035	0.002
E INDEX	1.160	2.661	1.160	2.469
LEV	0.559	0.038	0.559	0.031
MJB	0.258	0.192	0.258	0.191
MTB	2.620	5.764	2.620	4.489
PRICE	30.87	369.0	30.87	319.2
RETURN	0.104	0.184	0.104	0.118
ROA	0.013	0.000	0.013	0.000
SIZE	7.629	1.893	7.629	1.634
SOX	0.620	0.236	0.620	0.236
σRETURNS	0.023	0.000	0.023	0.000

Panel A provides descriptive statistics for both types of adoption firms before the entropy-balancing procedure. The entropy-balancing procedure balances the covariates related to meeting or just beating and to adopting a stock ownership plan that required an increase in CEO ownership. The iterative optimization achieved convergence. Variable definitions appear in Appendix 2

Panel B presents the descriptive statistics for both types of adoption firms after the entropy-balancing procedure. Appendix 2 contains variable definitions

idiosyncratic style hypothesis), and Graham et al. (2017) provide survey evidence that current CEOs have the largest influence over corporate culture. Together, these studies suggest that the mechanism for changes in corporate culture is a change in CEO. In contrast, Fee et al. (2013) document that the tests of Bertrand and Schoar (2003) are misspecified, and they present evidence that the boards induce changes in corporate policy through the selection of corporate policies (i.e., the selected style hypothesis).

To examine which hypothesis better describes my setting, I delete all observations with CEO turnover in years *t*-1, *t*, and *t* + *1*. Insofar as the idiosyncratic-style hypothesis is descriptive, I expect to find no significant results after deleting adopters that experience a change in CEO. In contrast, if the selected-style hypothesis is descriptive, I expect to continue to find significant results when holding the CEO constant through the sample. Consistent with the selected-style hypothesis, the results are robust to deleting observations with CEO turnover (untabulated).

5.2 Corroborating evidence of the cultural shift

In this section, I further examine whether firms that require an increase in CEO ownership are shifting their focus toward long-term performance. First, I examine changes in CEOs' selling of their firms' stock around the adoption of plans that require an increase in CEO ownership. I replace the dependent variable in eq. (3) with the natural log of the market value of CEO sales after adoption (*LOG CEO SALES*). Consistent with CEOs reducing stock sales and with a cultural shift toward long-term performance, Table 8 documents a statistically significant negative coefficient on *CEO INCREASE*.

Table 7 Change in meeting and just beating around adoptions

Dep. Variable = *MJB*	Coeff.	*t*-stat	Coeff.	*t*-stat
CEO INCREASE	−0.106***	(−4.00)	−0.880***	(−4.05)
SIZE	0.004	(0.27)	0.037	(0.42)
ROA	−0.874	(−0.99)	−6.374	(−1.07)
RETURN	0.028	(0.86)	0.210	(0.89)
LEV	0.058	(0.62)	0.257	(0.42)
PRICE	−0.001	(−0.95)	−0.011	(−1.42)
DISC EXP	−0.294	(−0.75)	−2.415	(−0.99)
CAPEX	−0.389	(−1.08)	−2.154	(−0.72)
MTB	0.007	(1.45)	0.065*	(1.79)
σRETURNS	6.912***	(3.60)	46.657***	(3.49)
CEO CHAIR	−0.054*	(−1.69)	−0.338	(−1.42)
CEO TENURE	0.012***	(3.04)	0.075***	(3.32)
CEO TURNOVER	0.154***	(3.91)	0.989***	(3.86)
CEO RESTRICT STK	0.008**	(2.00)	0.063**	(2.17)
CEO VEGA	0.017	(1.24)	0.116	(1.13)
CEO EQUITY COMP	−0.018***	(−3.38)	−0.123***	(−3.18)
E INDEX	−0.016	(−1.08)	−0.149	(−1.25)
DIR OWNERSHIP	0.209	(1.31)	1.429	(1.32)
AUDIT MEMBERS	0.004	(0.26)	0.007	(0.06)
BOARD IND	−0.068	(−0.54)	−0.559	(−0.61)
DEDICATED	0.090	(0.49)	0.819	(0.65)
BIGN	−0.006	(−0.06)	0.016	(0.03)
AUD INDUS EXPRT	−0.052*	(−1.82)	−0.413*	(−1.75)
SOX	−0.132***	(−3.65)	−0.906***	(−3.50)
First-stage convergence achieved	Y		Y	
Second-stage estimation	LPM		Logit	
Robust standard errors	Y		Y	
GOV MISSING	Y		Y	
Industry fixed effects	Y		Y	
Observations	1708		1708	
R-squared	0.149			
F statistic			2.63***	

The dependent variable is *MJB*, which is an indicator equal to one when the I/B/E/S actual minus the mean analyst EPS forecast is between zero and two cents (inclusive) and zero otherwise. This sample includes only post-adoption observations, where firms are re-weighted according to the entropy-balancing procedure in Table 6. The variable of interest, *CEO INCREASE*, is equal to one for the adoption firms that require an increase in CEO ownership and zero for the entropy-balanced control sample. Appendix 2 includes definitions of all variables. Fama and French (1997) 48-industry fixed effects are included, and ***, **, * represent significance at the 1%, 5%, and 10% levels, respectively, using two-sided tests

Second, I investigate whether firms that adopt plans requiring an increase in CEO ownership are also associated with a decrease in stock sales by CEOs immediately after meeting or just beating. Insofar as the adoptions of plans that require an increase in

CEO ownership represent changes in corporate culture, rather than window dressing, I expect a decrease in selling stock immediately after meeting or just beating. Campbell Soup Company notes, in its 1995 proxy statement, that its stock ownership plan aims to encourage executives to act as long-term investors, rather than short-term traders. Insofar as a cultural shift toward long-term performance redirects executives' focus away from short-term trading profits, I expect a reduction in CEOs' propensity to meet or just beat and then immediately sell shares. To test this, I replace the dependent variable in Table 7 (i.e., meeting or just beating) with the interaction of meeting or just beating and the natural log of one plus the market value of stock sold by the CEO between the date of the earnings announcement and one day before the following quarter's earnings announcement.[9]

In Table 9, I find evidence of a decrease in selling following meeting or just beating for increase-required adoption firms, following adoption, relative to the entropy-balanced control firms (coefficient = −0.380). The evidence is consistent with cultural shifts toward long-term performance not only being associated with a reduction in benchmark beating behavior but also with a decrease in CEO short-termism.

5.3 Activities to meet or just beat

In this section, I examine several mechanisms that are consistent with a decrease in executives' incentives to meet or just beat. First, I examine executives' forecasting to avoid negative surprises around ownership plan adoptions (e.g., Matsumoto 2002). To examine whether the decrease in the propensity to meet or just beat stems from a change in forecast behavior, I use I/B/E/S management forecast data to identify firm-quarters with a management forecast. Next, I delete all such observations from my analysis, leaving only observations with no management forecast. My inferences are unaffected when examining this subset of firms (untabulated).

Second, I examine whether the change in the propensity to meet or just beat reflects a change in earnings management. To examine for changes in earnings management, I estimate discretionary accruals in a quarterly setting using a modified Jones model (Jones 1991; Dechow et al. 1995). Collins et al. (2016) document that including nonlinear controls provides researchers with well-specified and high-power models of quarterly earnings management, and I follow Collins et al. (2016) and control for the nonlinear effects of firm performance and firm growth on innate accruals. To identify instances in which meeting or just beating was achieved through income-increasing discretionary accruals, I examine the propensity to meet or just beat with income-increasing discretionary accruals (*DISC ACC*). Next, I replace the propensity to meet or just beat in eq. (2) with an indicator variable equal to one if the firm meets or just beats and has positive discretionary accruals and zero otherwise. Consistent with the reduction in the propensity to meet or just beat being at least partially attributable to a reduction in earnings management, I find a statistically significant negative term on *CEO INCREASE*POST* (untabulated).

[9] An alternative dependent variable is the interaction of meet or just beat and an indicator variable equal to one when the CEO sold shares in the subsequent quarter and zero otherwise. Inferences are qualitatively similar when using this alternative dependent variable (untabulated).

Table 8 Do CEOs reduce selling after adoption?

Dep. Variable = *LOG CEO SALES*	Coeff.	*t*-stat
CEO INCREASE	−0.916***	(−3.93)
SIZE	−0.130	(−1.29)
ROA	2.941	(0.35)
RETURN	1.310***	(4.32)
LEV	1.363*	(1.80)
PRICE	0.018***	(2.80)
DISC EXP	6.693*	(1.72)
CAPEX	8.502***	(2.83)
MTB	0.026	(0.48)
σRETURNS	32.593**	(2.08)
CEO CHAIR	0.691**	(2.44)
CEO TENURE	−0.003	(−0.18)
CEO TURNOVER	−0.020	(−0.07)
CEO RESTRICT STK	−0.050	(−1.38)
CEO VEGA	0.092	(0.71)
CEO EQUITY COMP	−0.019	(−0.40)
E INDEX	−0.019	(−0.14)
DIR OWNERSHIP	0.280	(0.32)
AUDIT MEMBERS	0.129	(0.88)
BOARD IND	1.656	(1.47)
DEDICATED	−0.959	(−0.59)
BIGN	−1.320	(−1.31)
AUD INDUS EXPRT	1.041***	(3.81)
SOX	0.161	(0.47)
First-stage convergence achieved	Y	
Robust standard errors	Y	
GOV MISSING	Y	
Industry fixed effects	Y	
Observations	1708	
R-squared	0.174	

The dependent variable is *LOG CEO SALES*. This sample includes only post-adoption observations, where firms are re-weighted according to the entropy-balancing procedure in Table 6. The variable of interest, *CEO INCREASE*, is equal to one for the adoption firms that require an increase in CEO ownership and zero for the entropy-balanced control sample. Appendix 2 includes definitions of all variables. Fama and French (1997) 48-industry fixed effects are included, and ***, **, * represent significance at the 1%, 5%, and 10% levels, respectively, using two-sided tests

Third, increasing required equity ownership may induce executives to undertake additional value-maximizing risky projects. Insofar as firms that require an increase in CEO ownership simultaneously take on riskier projects, these projects likely increase the propensity to miss near-term analyst forecasts. I control for the effect of capital expenditures (*CAPEX*), return volatility (*σRETURNS*), discretionary expenditures (*DISC EXP*), and *CEO VEGA* on the propensity to meet or just beat in eq. (1). In the

Table 9 Do CEOs reduce selling after MJB after adoption?

Dep. Variable = $LOG\ CEO\ SALES_{q+1} * MJB_q$	Coeff.	*t*-stat
CEO INCREASE	−0.380***	(−3.25)
SIZE	0.050	(1.08)
ROA	3.100	(0.96)
RETURN	0.268***	(2.82)
LEV	0.610	(1.59)
PRICE	0.007*	(1.73)
DISC EXP	−0.943	(−0.68)
CAPEX	2.74*	(1.77)
MTB	0.004	(0.18)
σRETURNS	22.111**	(2.18)
CEO CHAIR	0.115	(0.79)
CEO TENURE	−0.002	(−0.30)
CEO TURNOVER	−0.100	(−0.58)
CEO RESTRICT STK	−0.022	(−1.03)
CEO VEGA	−0.048	(−0.68)
CEO EQUITY COMP	−0.034	(−1.35)
E INDEX	−0.122*	(−1.96)
DIR OWNERSHIP	0.044	(0.08)
AUDIT MEMBERS	0.070	(1.40)
BOARD IND	−0.867	(−1.13)
DEDICATED	0.996	(1.04)
BIGN	−0.752	(−1.52)
AUD INDUS EXPRT	0.118	(1.06)
SOX	−0.206	(−1.52)
First-stage convergence achieved	Y	
Robust standard errors	Y	
GOV MISSING	Y	
Industry fixed effects	Y	
Observations	1708	
R-squared	0.116	

The dependent variable is the interaction of $LOG\ CEO\ SALE_{q+1}$ and *MJB*. This sample includes only post-adoption observations, where firms are re-weighted according to the entropy-balancing procedure in Table 6. The variable of interest, *CEO INCREASE*, is equal to one for the adoption firms that require an increase in CEO ownership and zero for the entropy-balanced control sample. Appendix 2 includes definitions of all variables. Fama and French (1997) 48-industry fixed effects are included, and ***, **, * represent significance at the 1%, 5%, and 10% levels, respectively, using two-sided tests

entropy balancing procedure, which I describe in Section 4.3, I match treatment and control firms on firm characteristics that reflect risky investments. The results are robust to the inclusion of various measures of risky investments and CEO incentives for risky investments, and thus it does not appear that risky projects are the mechanism through which a reduced propensity to meet or just beat occurs.

Fourth, I examine for changes in pay-to-earnings sensitivity. If the pay-to-earnings sensitivity decreased at the firms that require an increase in CEO ownership, relative to the control firms around the adoption, then the incentives to meet or just beat for CEOs who must increase their ownership will also decrease. To examine for changes in pay-to-earnings sensitivity, I modify the model of Core et al. (2008). Core et al. (2008) include both current and prior-year earnings in their model of determinants of total compensation. For both types of adoption firms, I interact both current earnings (*ROA*) and lagged earnings with *POST*. If firms that require an increase in CEO ownership (no increase in CEO ownership) systematically reduced (increased) the pay-to-earnings sensitivity, I would expect a negative (positive) and significant term on the earnings terms that are interacted with *POST*. My (untabulated) results are inconsistent with a systematic reduction (increase) of pay-to-earnings sensitivity occurring concurrent with plan adoptions that require an increase in ownership (no increase). I also investigate the sensitivity of pay to earnings in a difference-in-differences setting. If firms that require an increase in CEO ownership systematically reduced the sensitivity of pay to earnings, I would expect a negative and significant coefficient on the earnings terms that are interacted with *CEO INCREASE*POST*. The results are inconsistent with a systematic reduction of pay-to-earnings sensitivity occurring concurrent with plan adoptions that require an increase in CEO ownership (untabulated).

6 Conclusion

The corporate culture of large publicly traded companies affects shareholders, employees, suppliers, and customers around the world. When corporate culture focuses on short-term earnings benchmarks, rather than long-term performance, firms squander resources and divert attention from maximizing firm value. Despite the importance of a corporate culture that promotes the maximization of shareholder value, little research examines the how a corporate culture of focusing on long-term performance mitigates executives' short-termism. Firms commonly adopt executive stock ownership plans with a stated goal of focusing managers on long-term performance.

The adoption of these plans requires executives to own a specified amount of firm stock within a specified period. To examine whether a shift in corporate culture toward long-term performance occurred around the adoption of ownership plans, I collect the precise CEO ownership requirements and CEO ownership levels for 427 plan adoptions. Some firms adopted plans that required an increase in CEOs' ownership, and others adopted plans that required no such increase. For firms that adopt ownership plans that require an increase, I find evidence consistent with them reducing CEOs' incentives for meeting or just beating short-term analyst earnings benchmarks. When examining firms that adopt ownership plans that require no such increase, I find no evidence of a reduction in meeting or just beating short-term analyst earnings benchmarks.

This paper has limitations. The sample of S&P 1500 firms focuses on a combination of the largest public firms in the U.S. economy (S&P 500), mid-cap firms (S&P 400), and small-cap firms (S&P 600), and the results may not be generalizable to smaller public firms or firms outside the United States. Nevertheless, this paper provides new evidence on corporate culture and incentives for meeting or just beating. My study also exploits changes in executives' incentives both to extend the argument in prior work that trading incentives

causally affect earnings management and to inform boards as they write contracts to align executives' interests with the interests of external shareholders.

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Appendix 1 Background and disclosure examples

Stock ownership plans require executives to hold a minimum amount of firm stock within a specified amount of time and maintain at least that amount afterwards. In a survey of 440 companies, Ayco (2012) reports that approximately 80% of companies use a multiple-of-salary approach, in which the plan requires the named executives to own shares proportional to their salaries. The multiple is typically higher for the CEO than for the other executives. Among firms that employ the multiple-of-salary approach, Ayco (2012) reports that plans require CEOs to retain stock ownership between two and 25 times their annual salary. Ownership requirements of five and six times salary are the most common, representing 42% and 16% of all plan requirements, respectively. The second tier of requirements, typically for executives such as the chief financial officer and the chief operating officer, range from 0.5 to eight times annual salary. For this tier, 56% of plans set minimum ownership between three and four times salary (Ayco 2012). For companies with volatile returns, a drawback of the multiple-of-salary approach is that the number of shares that an executive must own will fluctuate substantially.

The specific-number-of-shares approach addresses this drawback. This approach requires that executives named in the plan own a specified number of shares, and the amount is typically higher for the CEO than for the other executives. The following are two examples of stock ownership plan disclosures that come from my sample.

Example 1: Omnicom Group Inc.

"We have adopted Executive Stock Ownership Guidelines that require the named executive officers to hold shares of Omnicom common stock with a value equal to the specified multiples of base salary indicated below. These guidelines ensure that executives in the positions listed below build and maintain a long-term ownership stake in Omnicom's stock that will align their financial interests with the interests of the Company's shareholders. For the named executive officers the guidelines are as follows:

> President and Chief Executive Officer of Omnicom: 6 x Annual Base Salary
> Chief Financial Officer of Omnicom: 3 x Annual Base Salary
> Chief Executive Officer of Diversified Agency Services: 3 x Annual Base Salary
> Chief Executive Officer of BBDO Worldwide: 3 x Annual Base Salary
> Chief Executive Officer of Omnicom Media Group: 3 x Annual Base Salary

The guidelines were adopted in the first quarter of 2010 and the executives have five years from the date of the adoption of these guidelines or from the date of their appointment as an executive officer, whichever is later, to attain the ownership levels." Definitive 14A of Omnicom Group Inc. (2010).

Example 2: Compaq Computer Corp.

"In addition, effective September 29, 1995, the Board of Directors adopted an Executive Stock Ownership Policy that requires executive officers to own a certain number of shares of Common Stock. Mr. Pfeiffer is required to own 45,000 shares and each of the other executive officers is required to own 10,000 shares. Each employee subject to this policy has the greater of three years from the effective date of the policy or five years from election to a covered position to comply with the ownership requirement." Definitive 14A of Compaq Computer Corp. (1996)

Appendix 2 Variable definitions

AUD INDUS EXPRT	Indicator equal to one when a firm uses an audit industry expert, zero otherwise
AUDIT MEMBERS	Number of members of board who serve on audit committee
BIGN	Indicator equal to one for firms that use a Big N audit firm, zero otherwise
BOARD IND	Proportion of board members who are independent directors
CAPEX	Capital expenditures divided by ending total assets
CEO CHAIR	Indicator equal to one for firms where the CEO is also the chair of the board of directors
CEO EQUITY COMP	For years before 2006, the natural logarithm of the sum of one, the dollar value of restricted stock grants, and the Black-Scholes dollar value of options granted. For years equal to or after 2006, the natural logarithm of the sum of one, the dollar value of stock awards under FAS 123R, and the dollar value of option awards under FAS 123R (in thousands)
CEO INCREASE	Indicator equal to one for firms that require the CEO to increase ownership, zero for firms that adopt a plan requiring no increase in CEO ownership
CEO RESTRICT STK	Natural logarithm of one plus the CEO's restricted stock (in thousands)
CEO OWNERSHIP	CEO's stock ownership value scaled by market value of equity
CEO TENURE	CEO tenure (in years)
CEO TURNOVER	Indicator equal to one for CEO turnovers in the current year, zero otherwise
CEO VEGA	Sensitivity of executive wealth to equity volatility, calculated following Core and Guay (2002)
DEDICATED	Dedicated ownership percentage following Bushee (1998)
DIR OWNERSHIP	Proportion of voting shares held by the board of directors
DISC EXP	R&D plus advertising divided by ending total assets, with missing values of R&D or advertising set equal to zero
E INDEX	Sum of the number of the following six provisions in place at a firm: poison pills, staggered boards, golden parachutes, limits to shareholder bylaw amendments, supermajority requirements for mergers, and supermajority requirements for charter amendments

GOV MISSING	Vector of indicator variables equal to one when a particular governance variable (e.g., *BOARD IND* or *DIR VOTING*) is missing, zero otherwise
LEV	Total liabilities divided by total assets
LOG CEO SALES	Natural log of one plus the market value of stock sold by the CEO (i.e., Thomson Reuters Insiders Data rolecode "CEO") between the date of the earnings announcement and one day before the following quarter's earnings announcement
MJB	Indicator equal to one when a firm's EPS is between zero and two cents above the I/B/E/S consensus analyst forecast, zero otherwise
MTB	Market value of equity divided by book value of equity
POST	Indicator equal to one for firm-years in post-adoption period, zero otherwise
PRICE	Stock price as of the fiscal year-end
RETURN	Buy-and-hold stock return measured over 12 months
ROA	Income before special items divided by average total assets
SIZE	Natural logarithm of one plus total assets (in millions)
SOX	Indicator equal to one for years after the enactment of the Sarbanes-Oxley Act of 2002, zero otherwise
σRETURNS	Standard deviation of daily stock returns measured over one year

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