Table 6

Comparison of characteristics between the sample firm, the real peer group and the propensity score match (PSM) peer group. Logistical regression in Table 5 outputs predicted probability (propensity score) for every potential peers. PSM peer group is formed by matching each of real peers to a potential peer that has closest propensity score. Characteristics of the median firm(s)[1] – based on total compensation – are used in the comparison. Financial data comes from Compustat and compensation data is from Execucomp. Medians across sample firms are reported. ***, **, * represents differences at the 1%, 5%, and 10% levels. For test statistics the Wilcoxon signed rank test is used.

Panel A: Whole sample (800 firms)

	Median of Difference Between Real Peer Group Median Firm and Sample Firm	Median of Difference Between PSM Peer Group Median Firm and Sample Firm	Median of Difference Between Real Peer Group and PSM Peer Group Median Firms
Sales revenue	0.177***	0.092***	0**
ROA	0.250***	-0.047	0.040**
Salary & Bonus (logs)	0.081***	0.014**	0.017**
Salary & Bonus (dollars)	147,000***	56,000	11,000***
Total Compensation (logs)	0.067***	0.000	0.036***
Total Compensation (dollars)	249,000	12,000**	153,000***

Panel B: SP500 (307 firms)

	Median of Difference Between Real Peer Group Median Firm and Sample Firm	Median of Difference Between PSM Peer Group Median Firm and Sample Firm	Median of Difference Between Real Peer Group and PSM Peer Group Median Firms
Sales revenue	0	-0.075*	0*
ROA	0.211*	-0.127	0.272***
Salary & Bonus (logs)	0.051	-0.059	0.017*
Salary & Bonus (dollars)	180,000	-109,000	6,000**
Total Compensation (logs)	-0.012	-0.093**	0.049***
Total Compensation (dollars)	-105,000*	-629,000***	451,000***

[1] Peer groups with even number of peers have two median firms. In this case the mean of the two median firms is used.

Table 6 (continued)

Comparison of characteristics between the sample firm, the real peer group and the propensity score match (PSM) peer group. Logistical regression in Table 5 outputs predicted probability (propensity score) for every potential peers. PSM peer group is formed by matching each of real peers to a potential peer that has closest propensity score. Characteristics of the median firm(s)[1] – based on total compensation – are used in the comparison. Financial data comes from Compustat and compensation data is from Execucomp. Medians across sample firms are reported. ***, **, * represents differences at the 1%, 5%, and 10% levels. For test statistics the Wilcoxon signed rank test is used.

Panel C: Not-SP500 (493 firms)

	Median of Difference Between Real Peer Group Median Firm and Sample Firm	Median of Difference Between PSM Peer Group Median Firm and Sample Firm	Median of Difference Between Real Peer Group and PSM Peer Group Median Firms
Sales revenue	0.273***	0.186***	0
ROA	0.254**	0.021	0
Salary & Bonus (logs)	0.095***	0.047***	0.018
Salary & Bonus (dollars)	137,000***	108,000***	17,000*
Total Compensation (logs)	0.146***	0.107***	0.017***
Total Compensation (dollars)	408,000***	273,000	54,000***

Table 7

Comparison of characteristics between the sample firm and sub-median peer. A sub-median peer is define as the peer that is the first firm just below (under) the median peer(s) when the peer group is sorted by total compensation from high to low. Column (1) and (2) report the medians of sample firm's and sub-median firm's characteristics. Column (3) reports the median of the difference between sample firm and sub-median-firm. Financial data comes from Compustat and compensation data is from Execucomp ***, **, * represents differences at the 1%, 5%, and 10% levels. For the test statistics the Wilcoxon signed rank test is used.

Panel A: sp500 (307 firms)

	Sample Firms	Sub-median Peer	Difference Between Sub-median Peer and Sample Firm
	(1)	(2)	(3)
Sales revenue	9.006	8.985	-0.126***
ROA	5.084	5.859	0.103
Salary & Bonus (logs)	7.841	7.840	0.003
Total Compensation (logs)	8.982	8.746	-0.187***

Panel B: not-SP500 (493 firms)

	Sample firms	Sub-median-peer	Difference Between Sub-median Peer and Sample Firm
	(1)	(2)	(3)
Sales revenue	6.949	7.051	0.081***
ROA	4.164	4.962	0.103
Salary & Bonus (logs)	7.129	7.087	0.005
Total Compensation (logs)	7.870	7.871	-0.031

Table 8

Effect of corporate governance and peer group composition on size bias and compensation bias. Two dependent variables are investigated. The first is the size difference between the actual peer group median firm(s) and the sample firm. The second is the total compensation difference between the real peer group and PSM peer group median firm(s). Industry median ROA is determined using Fama-French 49 industry classification and Compustat 2005 firm universe. Results are reported for S&P 500 firms and nonS&P500 firms. Financial data comes from Compustat, compensation data is from Execucomp, and governance data from the Investor Responsibility Research Center. p-values are reported in parentheses.

	Difference in size between the median compensation peer and the sample firm				Difference in compensation between the median compensation peers of the real peer group and PSM peer group			
	SP500		Not-SP500		SP500		Not-SP500	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	0.346	0.477	0.522	0.068	0.324	0.177	-0.084	-0.268
	(0.268)	(0.157)	(0.073)	(0.807)	(0.075)	(0.358)	(0.636)	(0.163)
CEO Ownership	-0.791	-0.451	-1.777	-1.692	0.626	0.321	-0.499	-0.459
	(0.484)	(0.697)	(0.189)	(0.211)	(0.433)	(0.700)	(0.567)	(0.614)
CEO Tenure	0.007	0.007	-0.012	-0.016	-0.008	-0.007	-0.004	-0.005
	(0.434)	(0.431)	(0.226)	(0.135)	(0.068)	(0.101)	(0.598)	(0.459)
Dummy equal to one if CEO is also Chair of the Board	-0.095	-0.116	0.023	0.028	-0.088	-0.082	0.025	0.027
	(0.314)	(0.217)	(0.785)	(0.738)	(0.084)	(0.110)	(0.657)	(0.625)
Board Size	-0.028	-0.027	-0.018	-0.011	-0.007	-0.007	-0.008	-0.005
	(0.058)	(0.066)	(0.256)	(0.534)	(0.383)	(0.391)	(0.405)	(0.592)
Fraction of the board that is independent	0.057	0.101	-0.224	-0.262	-0.088	-0.144	0.092	0.077
	(0.843)	(0.726)	(0.475)	(0.382)	(0.550)	(0.320)	(0.627)	(0.685)
Fraction of the board hired during tenure of current CEO	-0.040	-0.032	0.045	0.065	0.150	0.143	0.143	0.152
	(0.841)	(0.871)	(0.796)	(0.694)	(0.135)	(0.139)	(0.195)	(0.159)
GIM Index	-0.008	-0.008	0.020	0.022	-0.006	-0.005	0.013	0.013
	(0.619)	(0.603)	(0.199)	(0.164)	(0.454)	(0.552)	(0.263)	(0.231)

Table 8 (continued)

Effect of corporate governance and peer group composition on size bias and compensation bias. Two dependent variables are investigated. The first is the size difference between the actual peer group median firm(s) and the sample firm. The second is the total compensation difference between the real peer group and PSM peer group median firm(s). Industry median ROA is determined using Fama-French 49 industry classification and Compustat 2005 firm universe. Results are reported for S&P 500 firms and nonS&P500 firms. Financial data comes from Compustat, compensation data is from Execucomp, and governance data from the Investor Responsibility Research Center. p-values are reported in parentheses.

	Difference in size between the median compensation peer and the sample firm				Difference in compensation between the median compensation peers of the real peer group and PSM peer group			
	SP500		Not-SP500		SP500		Not-SP500	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dummy equal to one if firm's ROA is less than industry median	0.260 (0.070)	0.236 (0.108)	-0.128 (0.315)	-0.184 (0.136)	0.004 (0.966)	0.026 (0.762)	-0.170 (0.040)	-0.193 (0.018)
(CEO Tenure)*(Dummy equal to one if firm's ROA is less than industry median)	-0.023 (0.304)	-0.021 (0.364)	0.026 (0.065)	0.027 (0.041)	-0.004 (0.768)	-0.005 (0.686)	0.013 (0.117)	0.013 (0.096)
Portion of peers that are from different industry than that of the sample firm		-0.002 (0.986)		0.029 (0.787)		0.138 (0.021)		0.004 (0.947)
Portion of peers that have sales greater than twice or less than half that of sample firms		-0.377 (0.083)		1.071 (0.000)		0.240 (0.018)		0.439 (0.000)
Number of observation	276	276	360	360	276	276	360	360
Adjusted R-squared	0.029	0.043	0.030	0.118	0.036	0.072	0.032	0.071

Table 9

Analysis of changes in peer group characteristic between 2006 and 2007. Firms are sorted into quartiles based on the frequency with which they changed the composition of the peer group between years. Panel A indicates the fraction of peer groups that remain the same between 2006 and 2007 broken down by quartiles. Zero-percentile represent the group with the greatest change in peer group composition between years while 100-percentile represents the group with the least change. In panels B and C, Group 1 represents the quartile with the greatest number of replacements or additions to the peer group between years. Group 2 represents the remaining 3 quartiles. Panel B reports the differences and change in differences of sales revenue between the actual peer group median firm(s) and the sample firm. Panel C reports differences and change in differences of total compensation between the actual peer group median firm(s) and the sample firm. Medians are reported in panel B and C. ***, **, * represents differences at the 1%, 5%, and 10% levels (Wilcoxon signed rank test is used comparing median to 0). P-values are in parentheses (Wilcoxon two-sample test comparing two group medians).

Panel A: Fraction of the peer group that remains the same from 2006 to 2007

Mean fraction of similar peers between 06 and 07				
0 – 100 percentile	0 – 25 percentile	25 – 50 percentile	50 – 75 percentile	75 – 100 percentile
0.813 (735 observations)	0.491	0.817	0.930	1.000

Panel B: Median of Differences and Change in Differences of Sales Revenue Between Real Peer Group Median Firm(s) and Sample Firm

Group	Median of Sales Difference in 2006	Median of Sales Difference in 2007	Median of Change in Sales Differences
1	0.155***	0.022	-0.117**
2	0.187***	0.096***	-0.038**
p-value	(0.325)	(0.153)	(0.181)

Panel C: Median of Differences and Change in Differences of Total Compensation Between Real Peer Group Median Firm(s) and Sample Firm

Group	Median of Compensation Difference in 06	Median of Compensation Difference in 07	Median of Change in Compensation Differences
1	0.105**	0.082*	-0.05
2	0.043***	0.048***	0
p-value	(0.196)	(0.388)	(0.227)

Beating the Target: A Closer Look at Annual Incentive Plans[1]

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Abstract

This paper documents the characteristics of newly disclosed performance measures and performance targets used in the annual incentive (bonus) plans for CEOs. Our sample includes the S&P 500 constituent firms in the first three years after the compliance deadline of December 15, 2006, with 1,600 performance targets for 773 firm-years. Top five performance measures are earnings per share (EPS), revenue, operating income, net income, and free cash flow. Our detailed analysis using EPS shows that EPS (growth) targets are set consistently lower than earnings expectations. In particular, EPS (growth) targets are lower than analyst consensus, and EPS growth targets are lower than historical EPS growths for the firm and its industry. In addition, we find that 59% of firms exceed their performance targets ex post. As a result, the ex-post annual incentive payouts (bonuses) are on average 114% of the target payouts. Moreover, firms' incentive plans provide higher ex-ante values and lower pay-for-performance sensitivities than hypothetical incentive plans that use analyst consensus as performance targets. After controlling for firm and CEO characteristics, we find that EPS targets are less challenging in firms with busy boards.

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1. Introduction

The recent disclosure of the handsome bonus packages for top executives at Merrill Lynch and AIG, in light of the firms' multi-billion dollar losses, has provoked public protests and political outcries.[2] As a result, one attachment to the stimulus plan was the limiting of incentive compensation to one-third of total pay at all financial firms that have received funds from the Troubled Assets Relief Program (*TARP*). Many scholars expressed their concerns about the effectiveness of such pay restrictions. Even Lucian Bebchuk, an adamant corporate governance critic, described this move as "concerning" and "a step in the wrong direction."[3] The key objective in this debate should not be to reduce the amount of performance-based pay but rather to design compensation schemes to reward great performance.

Performance benchmarks and the formulas used to calculate annual bonuses for top executive have only recently been disclosed. We still know very little about the details of firms' bonus plans, except in a few cases with public disclosure. The well-publicized case of the former NYSE chairman Richard Grasso offers some insight into the potential bias in setting performance targets in the annual incentive plans. Of Mr. Grasso's bonuses, 65% was based on quantitative factors and 35% on qualitative factors. Interestingly, during his tenure of over eight years, NYSE exceeded quantitative performance targets every year by an average of 27%. Moreover, the qualitative part (generally judged by Mr. Grasso himself) exceeded performance targets every year by an average of 53%. Putting these two factors together, NYSE achieved 135% of performance targets on average. Even some of the compensation committee members questioned whether this would have been realistic had the performance targets been set fairly challenging. Mr. Grasso's case clearly raised a question of whether the incentive payouts were truly "at-risk."[4] On the other hand, one might argue that NYSE consistently outperformed for eight years even with challenging performance targets. To guide the current debate on executive compensation, we need to investigate in great detail whether the performance metrics used in annual incentive plans truly reflect performance expectations.

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[2] The ten highest paid employees at Merrill Lynch pocketed $209 million in bonuses while the company lost $26 billion, and executives at the Financial Product Division of AIG received $165 million in bonuses in 2008 while the company accepted $170 billion from the taxpayers.

[3] "Congress Gets Punitive on Executive Pay," *The Wall Street Journal*, February 17, 2009.

[4] "Report to the New York Stock Exchange on Investigation Relating to the Compensation of Richard A. Grasso" by Dan K. Webb, *Winston & Strawn LLP*, December 15, 2003.

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Annual incentive payouts (bonuses) are an important component of executive compensation (21.7% of ex-ante total pay; see Figure 1 for the breakdown of CEO compensation for our sample firms), and they have been at the center of the current debate. In addition, examining annual incentive payouts along with performance metrics gives a clearer view of pay-for-performance sensitivities because other components of compensation plans, such as restricted stock and stock options, are designed not only for incentive but also for retention purposes (Oyer, 2004). Furthermore, it is relatively straightforward to verify performance outcomes and ex-post payouts against the ex-ante ones in annual incentive plans.

Effective on December 15, 2006, the Securities and Exchange Commission (SEC) required firms to disclose more information related to executive compensation contracts. In particular, firms need to disclose material information on

> What specific items of corporate performance are taken into account in setting compensation policies and making compensation decisions... How specific forms of compensation are structured and implemented to reflect these items of the registrant's performance, including whether discretion can be or has been exercised (either to award compensation absent attainment of the relevant performance goal(s) or to reduce or increase the size of any award or payout), identifying any particular exercise of discretion, and stating whether it applied to one or more specified named executive officers or to all compensation subject to the relevant performance goal(s). — SEC final rules 33-8732a, Item 402(b) (2) (v-vi), August 29, 2006.

This paper is, to our best knowledge, the first to comprehensively examine the performance metrics used in annual incentive plans in large US corporations. The annual incentive plans discussed in this paper are equivalent to the *bonus programs* referred to by the media. Annual incentive (bonus) plans are designed to improve firms' short-term performance. "Virtually every for-profit company offers a bonus plan covering its top executives and paid annually based on a single-year's performance" (Murphy, 1999). A typical executive annual incentive plan contains performance measures, performance targets, and the structure of the pay-performance relation. In particular, no bonus is paid until a performance threshold is reached, and the minimum bonus is awarded at the performance threshold. The target bonus (often expressed as percentage of salary payment) is paid for achieving the target performance, and there is typically a "cap" on bonus payment. The range between the performance threshold and performance stretch is labeled as the *incentive zone*. Figure 2 depicts the structure of a typical annual incentive plan.

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We focus on the S&P 500 constituent firms (as of 2006) in the first three years after the compliance date of information disclosure and collect the structure of the plan, performance measures, performance targets, target payouts, and ex-post payouts used in annual incentive plans from firms' proxy statements filed at the SEC (via the EDGAR database). We document a list of performance measures used in annual incentive plans and analyze the targets for earnings per share (EPS), the most popular performance metric, in great detail. Our research examines whether performance targets truly reflect the expected performance, how the gap between the performance targets and expected performance is affected by corporate governance characteristics, and how this gap affects CEO compensation.

We compare EPS (growth) targets specified in the annual incentive plans with three sets of EPS (growth) benchmarks: analyst forecasts on EPS (growth), corporate issued earnings guidance, and historical EPS performance. For analyst forecasts, we use the average of prevailing analyst forecasts (*analyst consensus*) issued in the first 90 days of the fiscal year, as reported in the First Call database. Firms typically determine their annual incentive plans during the first 90 days of the year to be eligible for tax deductibility of executive compensation exceeding $1 million according to IRS Code Section 162(m). We find that EPS targets are set consistently lower than analyst forecasts, though the evidence becomes weaker over our sample period. In a sub-sample of firms with known approval dates of annual incentive plans, EPS (growth) targets specified in annual incentive plans are set even lower relative to analyst consensus issued prior to the approval dates. In addition, we show that analyst forecasts are mostly downward biased for the full sample. Therefore, our findings that EPS targets are lower than analyst consensus are not driven by optimistic analyst forecasts.

One potential issue in comparing EPS targets with analyst earnings forecasts is that the vast majority of S&P 500 firms issues earnings guidance, which substantially influences the formation of analyst forecasts. Thus, we examine separately firms that do and firms do not issue earnings guidance. We find that even in firms with earnings guidance, EPS targets are lower than analyst consensus, and the difference is statistically different. This evidence suggests that even under the influence of the management, the market still believes that firms are capable of achieving better performance than indicated by the performance targets in the annual incentive plans.

Comparing EPS and EPS targets with historical EPS and EPS growths, we find somewhat mixed results. EPS targets are set significantly higher than the EPS in the previous year. EPS growth targets, however, are substantially lower than the EPS growths implied by analyst consensus. They are also lower than historical EPS growths over one-, three-, and five-year periods of the firm and the firm's industry in most specifications. Examining realized EPS over the period of 2001 – 2007, we find an increasing pattern, suggesting that firms set EPS targets higher than EPS levels in the previous year, but that EPS growth targets are not set as high as the momentum in EPS.

After comparing EPS targets with various proxies for EPS expectations, we compare EPS targets with realized EPS. We find that 59% of the firms in our sample outperform their EPS targets, 24% of firms exceed the EPS stretch, and 25% of firms miss EPS threshold specified in annual incentive plans. As a result, CEOs receive payouts that are on average 114% of the target payouts (with a median of 120%). In dollar terms, realized annual incentive payouts are higher than target payouts by $254,000 (1.05*1.21*0.2=$0.254 million) at the mean and $235,000 (1.11*1.51*0.14=$0.235 million) at the median.

In addition, we show that the incentive zones given in annual incentive plans are significantly wider than the ranges of analyst forecasts, attenuating the pay-for-performance sensitivity. Comparing ex-ante values and pay-for-performance sensitivities of the annual incentive plans with those of hypothetical incentive plans that use analyst consensus as performance targets, we show that annual incentive plans provide higher values of payouts and lower pay-for-performance sensitivities ex ante. Moreover, low performance targets are not associated with low levels of target payouts. Analyzing the dynamics of performance target setting, we find that on average firms increase EPS targets by 0.465 cents if EPS targets were exceeded by one cent, but decrease EPS targets by 1.37 cents if EPS targets were missed by one cent in the previous year. EPS targets are further shown to be particularly low in firms with busy boards.

This paper contributes to the literature on executive compensation in several aspects. First, this is the first paper that examines performance metrics in annual incentive plans for large U.S. public corporations. With newly disclosed detailed information on annual incentive plans, we are able to look at the structure of annual incentive plans: the correspondence between payout and performance. Second, this paper looks at annual incentive payouts ex ante, whereas most

previous studies look at ex-post incentive payouts. Because actual payouts are influenced by various factors during the year, the results using ex-post values could be misleading in judging the effectiveness and rationality of incentive plans. Third, this paper shows that corporate governance affects performance target setting.[5]

Based on the agency theory, managerial compensation plans should be designed to align the interests of managers with the interests of shareholders. However, the debate on whether executive compensation contracts are properly structured has not been resolved yet; see Lewellen and Huntsman (1970), Murphy (1985), Aggarwal and Samwick (1999), and Hall and Liebman (2000) for positive evidence on pay-for-performance, and Baker, Jensen, and Murphy (1988) as well as Jensen and Murphy (1990) for the lack of evidence on pay-for-performance.[6]

Among the few papers that have sufficient information to study annual incentive plans for top executives, Murphy (1999) is the first to describe detailed information on performance measures in annual incentive plans, using a comprehensive survey conducted by Towers Perrin in 1996 – 1997 that includes a sample of 177 publicly traded U.S. corporations. Murphy (1999) argues that internal performance targets are problematic if executives can participate in setting performance targets. Along this line, Anderson, Dekker, and Sedatole (2008) suggest that the benefits of pay-for-performance will be attenuated if managers are given the opportunity to influence performance goals. However, in a field study of 54 profit centers in 12 corporations, Merchant and Manzoni (1989) argue that achievable performance targets might actually be more desirable in terms of corporate reporting, resource planning, and, when combined with other system elements, even motivation.

Murphy (2000) compares internal and external performance measures and finds that firms using internal measures have less variable incentive payouts and a higher likelihood of earnings smoothing. Examining the dynamics of target bonuses, Indjejikian and Nanda (2002) infer that the design of annual incentive plans is largely consistent with the predictions of the agency theory. However, these two papers on annual incentive (bonus) plans do not analyze performance targets because this information was unavailable at the time. In a similar vein,

[5] See Core, Holthausen, and Larker (1999), Bebchuk and Fried (2003), and Bebchuk, Fried, and Walker (2002) for the effect of corporate governance on executive compensation.

[6] Several studies examine pay-for-performance sensitivities using stock options, while other studies show the limitations of stock options and the associated corporate practices; see, for example, Yermack (1997), Hall and Murphy (2003), and Heron and Lie (2006).

Abowd (1990) shows that when the increase in compensation is linked to the increase in after-tax gross return or stock return, future performance of after-tax gross return or stock return is enhanced. However, the *link* in Abowd (1990) is inferred based on regressions. The availability of the newly disclosed information allows us to examine performance measures and performance targets in annual incentive plans in great detail. We hope to shed further light on the current debate on bonus plans, and more generally, on how to improve the design of compensation schemes for top executives.

It is important to discuss the literature on the potential biases in analyst forecasts, the main performance benchmark used in our study. While several early studies suggest positive analyst forecast biases, more recent studies yield conflicting evidence on whether analyst forecasts are biased; see Brown (1993), Brown (1998), Lim (2001), and Abarbanell and Lehavy (2003) for the evolvement of the literature on analyst forecast biases. A related literature shows that firms manage earnings to meet or beat analyst consensus by one cent.[7] Moreover, firms manage earnings around incentive plan performance kinks (Healy, 1985; Gaver, Gaver, and Austin, 1995; and Holthausen, Larker, and Sloan, 1995).

The rest of the paper is organized as follows. Section 2 details the data used throughout the paper. Section 3 examines the relationship between performance targets and various proxies for performance expectations. Section 4 provides simulated values on the ex-ante value and pay-for-performance sensitivity of the annual incentive plans, analyzes the dynamics of performance target setting, and examines the effect of corporate governance on setting performance targets. Section 5 concludes. The appendix describes industry distributions of our sample firms.

2. Data

Performance measures and performance targets used in annual incentive plans are typically disclosed in companies' annual proxy statements, filed on the SEC's EDGAR database: http://idea.sec.gov/cgi-bin/srch-edgar. The section titled "Compensation Discussion and Analysis (CD&A)" in the proxy statement includes compensation philosophy, compensation peers, as well as "Compensation Elements" and other information. In the subsection of "Compensation

[7] See Degeorge, Patel, and Zeckhauser (1999), Cheng and Warfield (2005), and Bhojraj, Hribar, Picconi, and McInnis (2009), for earnings management around analyst consensus. According to the survey conducted by Graham, Harvey, and Rajgopal (2004), over 40% of the 401 senior financial officers are willing to forgo a positive NPV project that would lead them to miss the analyst consensus by 10 cents.

Elements," plan details including performance targets are described under "Annual Incentive Plan Component." If there are multiple annual incentive plans for a firm, we keep the plan for the CEO. We collect information on performance measures, performance targets, target payout amount, and ex-post payouts for the S&P 500 constituent firms (as of 2006) in fiscal years ending December 2006 – November 2009, the first three years after the disclosure compliance deadline of December 15, 2006.

The "Summary Compensation Table" in the CD&A of the proxy statement includes the amount expensed for each component of executive compensation. This is the source where we obtain salary payment, discretionary bonuses, [8] and non-equity incentive payouts. The ExecuComp database also includes the corresponding payout values but they are not always reliable for our purposes. For example, when a firm also has a long-term cash incentive plan, the numbers under "Non-Equity Incentive Payout" in the ExecuComp database include not only the annual incentive payout but also the cash portion of the long-term incentive payout during the year.[9] We obtain the target (expected) incentive payout and the minimum and maximum of the ex-ante payouts from the "Grants of Plan-Based Awards" table, unless the numbers are stated in the text or footnotes. We also collect the committee approval dates from this table or the company's 8-K filings.

As shown in Table 1, we are able to find 1,297 firm-years with proxy statements (or 10-K filings that contain the information on executive compensation) of which 1,235 firm-years have annual incentive plans in place and 1,175 firm-years disclose performance measures used in the plans. [10] In total, there are 2,867(234+2,633) quantitative performance measures and 920 qualitative measures. The average number of performance measures is 3.22 ((2,867+920)/1,175) of which 2.44 (2,867/1,175) are quantitative measures. The median number of performance

[8] Discretionary bonuses (bonuses that are not linked to performance measures and are solely subject to the discretion of the board of directors) are currently reported under "bonuses" while performance-based bonuses (our variable of interest) are reported under "non-equity incentive pay". Among all sample firm-years, only 148 awarded discretionary bonuses with a mean of $3.0 million and a median of $0.66 million. In the sub-sample of 371 firm-years that we have EPS targets, only 25 firms awarded discretionary bonuses with a mean of $0.58 million and a median of $0.4 million.

[9] Firms sometimes report numbers in the wrong columns: incentive payouts are reported in the "Bonus" column before December 2006 and should be reported under the "Non-equity incentive payouts" column after December 2006. The ExecuComp database does not always correct the inconsistency in firm filings, thus we obtain these numbers from the proxy statements.

[10] Out of 203 firm-years without proxy statements, 84 firm-years' proxy statements were not yet available by the time data were collected (June 2009); four firms redomesticated and thus did not file proxy to SEC, and proxy statements for 115 firm-years were unavailable due to mergers with, or acquisition/buyout by, other public or private entities.

measures used in annual incentive plans is 3. In our sample, 234 out of 1,175 firm-years use a single performance measure, all quantitative. In the order of popularity, the top five measures used by these firms are earnings per share (EPS), profit before taxes, operating income, net income, and economic value added (EVA).[11] The remaining 941 firm-years use multiple performance measures, quantitative or a mix of quantitative and qualitative measures. The top five quantitative measures for these firms are EPS, revenue, operating income, net income, and free cash flow. The top five qualitative measures are individual, strategic, customer, safety, and employee goals.

A sub-sample of 773 firm-years (226 in Year 1, 305 in Year 2, and 242 in Year 3) disclosed a sum of 1,600 (132+1,468) performance targets.[12] For the most popular measure, EPS, we have 371 (51+320) firm-years with performance targets. These correspond to 172 unique firms. If the EPS target itself is not disclosed but both the threshold and stretch of the EPS goal are given, we assign the midpoint of the incentive zone as the EPS target. In total, there are nine firms in this category. The next widely used performance is revenue (with targets reported in 242 firm-years). About 50% of firms did not disclose their performance targets in Year 1. This fraction went down to 29% in Year 3. A significant fraction of firms still does not disclose performance targets used in their annual incentive plans despite the new SEC rules. Some firms state that they do not disclose performance targets because the information is confidential in a competitive environment, but other firms simply do not disclose any information on performance targets.[13]

Below is the disclosed information in the proxy statement of *Colgate-Palmolive* in fiscal year 2007:

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[11] For the purposes of the performance measure classification, all performance measures which are defined as operating income less finance charges are classified as economic value added regardless of how they are termed in the proxy statements.

[12] Throughout the paper, the "Full Sample" is all the S&P 500 constituents that filed a proxy statement during the three-year period, while "Year 1" denotes fiscal years ending December 2006 – November 2007. "Year 2" denotes fiscal years ending December 2007 – November 2008, and "Year 3" denotes fiscal years ending December 2008 – November 2009. Out data collection stopped in June 2009.

[13] For example, Affiliated Computer Services stated the following on page 26 of its fiscal 2007 proxy statement. "We have not disclosed target levels with respect to specific quantitative or qualitative performance-related factors considered by the Compensation Committee because disclosure of the specific performance goals would give our competitors information that could be leveraged for competitive advantage which would result in competitive harm to the Company."

> Bonus payouts for a particular year are determined ... by a formula based on the level of growth achieved the prior year in Base Business Earnings-Per-Share or the applicable division's net sales and net profit after tax. The P&O Committee has discretion to adjust the calculated awards downward, but not upward.
>
> For 2007, in order for Named Officers with corporate-wide responsibilities to earn bonuses at the top end of their range, Base Business Earnings-Per-Share had to grow by 11.0% above the 2006 Base Business Earnings-Per-Share. The 11.0% goal was set based on the Company's business strategy to deliver consistent double-digit earnings per share growth each year. Since Base Business Earnings-Per-Share grew by 16.2% in 2007, bonuses for the Named Officers, before the supplemental award opportunity referred to above, were awarded at the maximum level allowed, and ranged from 130% to 220% of salary...

Other variables used in our study include firm characteristics, CEO compensation, and corporate governance measures. Company financial data are obtained from the COMPUSTAT North America Fundamentals Annual database, and CEO's equity exposure data are obtained from the Standard & Poor's ExecuComp database. Governance characteristics including the board characteristics are obtained from RiskMetrics. Information on institutional investor holdings is obtained from Thomson Reuters.

Table 2 describes summary statistics of the main variables. Panel A includes variables on firm characteristics and CEO compensation, and Panel B includes variables on corporate governance. "With EPS targets" is the subset of firms that used EPS as their performance measure (or one of the performance measures) and disclosed EPS targets or EPS growth targets. As shown in Panel A, compared to the full sample, *disclosing firms* (firms that disclosed EPS targets) have higher EPS, lower historical EPS volatility, lower book-to-market, lower leverage, higher ROA, lower uncertainty in earnings, higher salary payment, and lower CEO equity exposure. As shown in Panel B, the boards of disclosing firms are more likely to have the CEO serving as the chairman, and have more directors and higher percentages of independent directors than non-disclosing firms.

The average (median) of EPS in disclosing firms is \$2.81 (\$2.69), while the average (median) of EPS growth is 11.20% (11.40%). The average (median) target annual incentive payout (AIP) to base salary ratio is 1.51 (1.21), while the average (median) of the realized AIP to target AIP ratio is 1.14 (1.20). The average (median) growth of target AIP is 14% (7%) over three years. The average (median) length of the incentive zone is 59 (42) cents, while the incentive zone (performance stretch – performance threshold) is on approximately 23% of the

performance target. On average, performance threshold is 11% below the performance target, and performance stretch is 12% above the performance target.

Analyst forecast data are mainly from the Thomson First Call database, which includes quarterly and annual EPS consensus, detailed forecasts, actual results, and corporate issued earnings guidance. We also use data in the I/B/E/S database for robustness tests. Both databases use non-GAAP EPS measures for actual results, which are adjusted for special and non-recurring items, similar to the measures used by firms for compensation purposes. We use the actual results reported in these two databases (rather than from the COMPUSTAT database) so that the matching of forecasted value to actual value is less problematic; see Bhojraj, Hribar, Picconi, and McInnis (2009). In a handful of cases where the actual EPS results reported in the databases differ from the values reported in the firm's proxy statement, we use the reported value by the firm.[14] The number of analysts is the head count of security analysts who followed the firm over the previous year. The mean (median) number of analysts is 20.73 (20) in our sample with EPS targets. Analyst forecast dispersion, which is the standard deviation of analyst forecasts for the firm in the first 90 days of the fiscal year, is often used as a proxy for the uncertainty in future earnings (Behn, Choi, and Kang, 2008). Firms with EPS targets have lower analyst forecast dispersions (with an average of eight and a median of six cents) than the full sample (with an average of 17 and a median of seven cents).

3. Performance Targets Versus Performance Expectations

Our main goal in this section is to compare the performance targets as specified in annual incentive plans for CEOs with the proxies for expected performance to see whether the performance targets are less challenging than expectations. Our first empirical hypothesis is

Hypothesis 1: Firms set performance targets lower than expectations to increase the likelihood of achieving the targets.

[14] For robustness, we test the results using the difference between the value reported in the databases and that reported by the firm to adjust analyst forecasts, and the results are qualitatively similar. There are in total 289 firm-years with company reported EPS results, which are used to calculate incentive payouts. For example, assume that the analyst forecast on EPS is $2.55 and the actual EPS is $2.5 in the First Call database, whereas the realized EPS in the firm's proxy statement is $2.48. We use $2.48 as realized EPS and adjust the analyst forecast downward by the difference of 2.5-2.48 = $0.02. As a result, the analyst forecast on EPS becomes 2.55 – 0.02 = $2.53.

We use several proxies for performance expectations: analyst consensus on EPS, corporate issued earnings guidance, and historical EPS of the firm and the firm's industry. We compare EPS targets with the expected EPS, and EPS growth targets with the expected growth rates of EPS. A finding that EPS (growth) targets are consistently lower than their corresponding benchmarks would confirm Hypothesis 1.

3.1 EPS targets versus analyst consensus

The first set of proxies for EPS expectations is the analyst forecasts provided in the First Call database. According to O'Brian (1988), the most recent forecast given by an analyst is more accurate than other prevailing forecasts, implying the importance of forecast timing. Thus, our analysis only uses the latest EPS forecast of each analyst. We then calculate *analyst consensus* by taking the average of the most recent forecasts of all analysts covering the firm. We transform EPS targets to EPS growth targets and vice versa using the EPS result in the previous year as reported in the First Call database.

The results presented in Table 3 include both the mean and median differences of EPS targets and analyst consensus. While interpreting the results, we focus on median differences, which are less sensitive to outliers. Panel A presents the results using analyst consensus at the end of the first quarter, and Panel B presents the results using analyst consensus on the approval date of the annual incentive plan for a subset of companies that disclosed the approval dates. In 31 out of 32 specifications, EPS (growth) targets are set lower than analyst consensus.

As shown in Panel A, the median EPS target is lower than analyst consensus at the end of the first quarter by two cents for the full sample. One may argue about the magnitude of the difference between EPS targets and analyst consensus. To put this into perspectives, the dispersion of analyst forecasts on EPS in the first quarter has a mean of eight cents and a median of six cents. What difference could a difference of two cents in EPS make? As the literature on analyst consensus and earnings management shows, even one cent can be critical for firms' investment decisions as well as reporting choices.[15] Given that EPS has received the most attention from financial analysts, active investors, and the media, a difference of two cents between the expected EPS and EPS target is substantial and economically meaningful.

[15] See Degeorge, Patel, and Zeckhauser (1999), Graham, Harvey, and Rajgopal (2004), Cheng and Warfield (2005), and Bhorjaj, Hribar, Picconi, and McInnis (2009).

In addition, the median target EPS growth is 0.66% (0.66 percentage points) lower than the EPS growth of analyst consensus. Given that the sample mean (median) of EPS growth is 11.20% (11.40%), the difference of 0.66% (about 6% of historical growth) is economically meaningful. Over time, EPS targets become closer to analyst forecasts and the differences become insignificant in Year 3. This suggests that the board of directors and its compensation committee have become more cautious in setting up performance targets in incentive plans, perhaps due to the increased scrutiny in executive compensation in the past few years.

For a sub-sample of 251 firms, the approval dates of annual incentive plans are available in the firms' 8-K or proxy filings. The approval date is on average 47 days (with a median of 45 days) into the fiscal year. Because the correct benchmark with which to compare EPS targets is the analyst consensus prevailing at the point when the EPS targets were set, we believe the tests reported in Panel B are more appropriate than those reported in Panel A. In the sub-sample with approval dates, EPS targets and EPS growth targets are set even lower than analyst consensus at that time. The EPS targets are lower than analyst consensus by two to nine cents, and the EPS growth targets are 1.11 – 2.99% lower than the EPS growth rates forecasted by the analysts. Out of 16 specifications, 15 are statistically significant, including the four specifications for firms in Year 3.

Our un-tabulated results using analyst forecasts reported in the I/B/E/S database are slightly weaker, but the conclusion remains the same: EPS targets are set consistently lower than analyst forecasts. Furthermore, the results are strengthened when we only use the forecasts from top brokers (including Morgan Stanley, Citi Group, Deutsche Bank, Barclays Capital, Goldman Sachs, Bear Sterns, Bank of America, JP Morgan, Nomura Securities, UBS, and ABN Amro). Interestingly, our results are weaker in the financial services industry, perhaps because EPS is not the main performance measure used in the annual incentive plans for the industry (see the Appendix), or perhaps the pay practice in the financial services industry is not worse than that in other industries.

In interpreting the results that EPS targets are lower than analyst consensus, our concern is that if analyst forecasts are upward biased, we would find the same results even if EPS targets are set correctly. *Forecast bias* is then defined as analyst forecast less actual EPS result. Next, we compare analyst forecast biases for firms with EPS targets and firms without EPS targets. Table 4 reports the results. Not surprisingly, analyst consensus is downward biased for Year 1

and upward biased for Year 3 given the changing macroeconomic conditions in our sample period. Interestingly, analyst consensus has been more downward biased for firms with EPS targets than for firms without EPS targets. The difference between the two groups is statistically significant in 11 out of 16 specifications; see Panel C of Table 4.

Moreover, for firms in our sample, the median of historical EPS forecast at the end of the first quarter (since 1992) was one cent higher than actual EPS. Un-tabulated results show that even after adjusting the analyst forecast bias for each firm, EPS targets used in annual incentive plans are still lower than analyst consensus, and the difference is statistically significant at the 5% level.

3.2 EPS targets versus corporate issued earnings guidance

One might argue that analyst forecasts are often influenced by corporate issued earnings guidance. As a result, analyst consensus may not truly reflect market expectation at the time EPS targets in annual incentive plans are determined. *Earnings guidance* is the publicly announced managerial belief on expected EPS performance. While earnings guidance is the commitment to the capital market, EPS targets in annual incentive plans are messages sent to the board for compensation purposes. These two values should be consistent during the same time period.

We first compare the descriptive statistics of firms with and without corporate issued earnings guidance. The results are presented in Panel A of Table 5. Out of the 371 firms that disclose EPS targets, 80 firms do not issue earnings guidance during the year. Not surprisingly, these 80 firms have more security analysts, probably due to higher information asymmetry; higher analyst forecast dispersions, and higher historical EPS volatilities.

We consider corporate issued earnings guidance another proxy for earnings expectation. Panel B shows that EPS targets are consistent with earnings guidance at the median. However, at the end of the first quarter, earnings guidance is higher than the EPS target in 108 firms, equal to the EPS target in 50 firms, and lower than the EPS target in 81 firms. It seems puzzling why some firms set internal performance targets lower than the earnings guidance they provide publicly.

In addition, as shown in Panel B and Panel C of Table 5, we find that at the median EPS targets are lower than analyst consensus by two cents in firms with earnings guidance. This difference is statistically significant at greater than 1%. This evidence suggests that even with the

influence from the management, analysts still believe that firms can do better than indicated by the performance targets. At the median, EPS targets are lower than analyst consensus by three cents in firms without earnings guidance, but the difference is not statistically significant given the small sample size and high forecast dispersions.

Figure 3 depicts the dynamics of corporate earnings guidance and analyst forecasts for the full sample. The horizontal axis represents the number of days into the fiscal year. Both corporate earnings guidance and analyst forecast are normalized by the EPS target specified in the annual incentive plan. We draw the graph using the median data in our sample. The dashed black line represents the target earnings guidance issued by the firm, the solid blue line represents analyst consensus, and dotted red lines represent the lower bound and upper bound of earnings guidance. It is clear that analyst consensus is at or above earnings guidance throughout the year. The median earnings guidance is equal to that of EPS targets for the first 120 days of the year. The guidance generally increases over time (especially for Year 1 and Year 2). Analyst consensus follows a similar pattern. The gap between the lower bound and upper bound of earnings guidance narrows as the uncertainty on firm earnings decreases over time.

3.3 EPS (growth) targets versus historical EPS (growth)

Having shown that EPS targets are lower than analyst consensus, as well as corporate issued earnings guidance in many cases, we next compare EPS (growth) targets with the EPS (growth) of the firm in the previous one, three, and five years. We also compare EPS growth targets with the historical EPS growths of the firm's industry based on Fama-French 12 industry classification. The results presented in Table 6 show mixed evidence. While the EPS targets are higher than the EPS levels in the previous year, EPS growth targets are lower than the EPS growth rates in the previous years in 45 out of 48 specifications. The setting of EPS targets appears to have taken into account good economic conditions but not to the full extent: target EPS growth rates are set lower than the momentum in historical EPS.

Plotting the actual EPS over the period of 2001 – 2007, we find that the EPS of our sample firms has increased. In particular, our sample firms experienced very low EPS growth during December 2001 – November 2002, with an average of 1% and a median of 4%. In contrast, the average (median) EPS growths of our sample firms are 18% (15%) for December 2002 – November 2003, 30% (14%) for December 2003 – November 2004, 33% (18%) for

December 2004 – November 2005, and 25% (14%) for December 2005 – November 2006, respectively. The extremely low EPS growth during December 2001 – November 2002 is the main reason EPS growth targets are higher than the historical 5-year growth rate in three specifications for Year 1. Given that these EPS targets are used in annual incentive plans, and most firms have long-term incentive plans as well for their top executives, we believe it is more appropriate to compare EPS growth targets against historical EPS growth rates over short periods. Overall, the results comparing to historical EPS growth rates suggest that the EPS targets in annual incentive plans are set lower than earnings expectations.

3.4 EPS targets versus ex-post EPS performance

After comparing EPS targets with performance expectations, we next compare EPS targets with EPS results to see how frequently EPS targets are achieved or missed ex post. As reported in Table 7, at the median, actual EPS is higher than the EPS performance target by five cents for the full sample and nine cents for Year 1. The comparison reverses in Year 3 when market conditions worsen. In addition, we find that 59% of our sample firms exceed the EPS target, 24% of firms exceed the EPS stretch goal, and 25% of firms miss the EPS threshold. The asymmetric pattern in the distribution of EPS results relative to each performance hurdle is more striking in Year 1 (fiscal year ending December 2006 – November 2007): 73% of firms exceed the EPS target, 36% of firms exceed the EPS stretch, and only 14% of firms miss the EPS threshold. This pattern changes dramatically in Year 3: 38% of firms exceed the performance target, 18% of firms exceed the EPS stretch, and 38% of firms miss the EPS threshold.

Interestingly, we observe clustering of reported earnings to the right of the EPS targets used in annual incentive plans; see Figure 4a. In comparison, Figure 4b depicts the histogram of the last analyst forecast of the fiscal year relative to actual EPS outcome. It is clear that there are jumps at zero, consistent with earnings management shown in the accounting literature. Although the histogram in Figure 4a is more dispersed and the pattern less distinct, considering that EPS targets are set nine months prior to the last analyst forecast of the year, the graph depicted in Figure 4a suggests some evidence of earnings management to meet or beat EPS targets in annual incentive plans.

4. Additional Analysis on Annual Incentive Plans

Given the evidence that performance targets (EPS in particular) used in annual incentive plans are lower than performance expectations, our next goal is to examine the effect of these low performance targets on CEO compensation, and identify which firms have their EPS targets set particularly low for their CEOs.

4.1 Incentive zone and the range of analyst forecasts

We first compare the EPS range (incentive zone) specified in the annual incentive plan with the range of analyst forecasts. Results presented in Table 8 show that the incentive zone is wider than the range of analyst forecasts: the EPS threshold is lower than the minimum analyst forecast, and the EPS stretch is higher than the maximum analyst forecast, at both the mean and median in all specifications. In addition, the slack at the low end is about twice the size of the stretch in the high end. For the full sample, the median EPS threshold used in the annual incentive plan is 13 cents lower than that of the minimum analyst forecast, while the median EPS stretch is only six cents higher than the maximum analyst forecast on EPS. Recall that the mean (median) length of the incentive zone is 59 (42) cents, the difference of 19 cents between the length of the incentive zone in the annual incentive plan and the range of analyst forecasts is economically relevant. While this wider incentive zone may provide better incentives for executives in firms with more volatile earnings, it is also likely to reward CEOs with mediocre performance, attenuating pay-for-performance sensitivity. The results using EPS growth rates are similar. Moreover, the incentive zone in the annual incentive plan is wider than the 95% confidence interval of analyst forecasts, as provided in the First Call database.

4.2 Target performance and the ex-ante value of annual incentive payout

We next demonstrate the effect of the discrepancy between EPS targets and analyst consensus on the ex-ante value of annual incentive payout, which depends on the structure of the incentive plans (including the performance target) and the distribution of earnings. A sub-sample of 148 firm-years has all the required information: performance threshold, target, and stretch goals as well as the payout for the performance at each of the threshold, target, and stretch goals.

We simulate 1,000 normally distributed annual EPS using three different methods. First, assuming that historical EPS performance of a firm represents EPS performance in the future, we use EPS growth over the previous three and five years, respectively, as the drift term of the

normal distribution. In both cases, we use the volatility of EPS growth in the previous five years as the standard deviation of the normal distribution. Second, assuming that analyst consensus closely reflects current economic conditions and firms' abilities to generate earnings; we use the EPS growth rate implied by analyst consensus as the drift term, and the dispersion of analyst forecasts on EPS growth rate as the standard deviation of the normal distribution. The payout corresponding to each of these 1,000 simulated EPS results is obtained (intermediate points between EPS threshold and EPS target, as well as between EPS target and EPS stretch goals are linearly interpolated). The sample average of these 1,000 simulated payout amounts is the ex-ante value of the incentive payout at the time of compensation decisions.

For comparison purposes, we calculate two sets of ex-ante values and their difference. The first set uses the EPS target specified in the annual incentive plan, and the second set uses analyst consensus at the end of the first quarter as the performance target (the lower bound of the incentive zone is the minimum analyst forecast and the upper bound is the maximum analyst forecast).

Table 9 presents the results. When the historical three-year EPS growth is used for simulation, the ex-ante value of the annual incentive payout is on average $80,000 (with a median of $60,000) higher than the ex-ante value when analyst consensus is used as the target performance. When the historical five-year EPS growth is used for simulation, the difference is on average $90,000 (with a median of $50,000). When analyst forecasted EPS growth is used for simulation, the ex-ante value of annual incentive plans is on average $210,000 (with a median of $40,000) higher than the ex-ante value using analyst consensus as the target performance. Scaling the dollar difference by the ex-ante value of the original plan, we obtain percentage differences ranging from 3.22% to 5.64% for the full sample, with a much greater magnitude for Year 1.

Looking at the slope difference, it is clear that the pay-for-performance sensitivity is always lower under the annual incentive plans compared to what it would be using analyst consensus as target performance. The slope represents the change in annual incentive payout, expressed in thousands of dollars, for an increase of one cent in EPS. For example, using the three-year historical EPS growth rate, for a change of one cent in EPS, the change in the annual incentive payout is $5,670 less than the change under the plan using analyst consensus as

performance target. The results in Table 9 suggest that using analyst consensus rather than the EPS target specified in the annual incentive plan enhances the link between pay and performance.

Using historical EPS data over the previous five years of one sample firm, we depict the structure of the annual incentive plan, the ex-ante values of incentive payouts under the annual incentive plan, and the ex-ante values of payouts under the hypothetical incentive plan that uses analyst consensus as target performance in Figure 5. The dotted-dashed curve in the left represents the ex-ante value of the annual incentive plan over a range of EPS result in the previous year ($1.00 – $2.50), and the dashed curve in the right represents the ex-ante value of the hypothetical incentive plan. The vertical dashed line marks the firms' EPS was in the previous year. The vertical distance between the two curves at this reference point is the difference of ex-ante payout under the original annual incentive plan and that under the hypothetical plan. The slope difference of the two curves at the previous year's EPS level represents the difference of pay-for-performance sensitivity under these two plans. For this specific firm, the ex-ante value of the annual incentive plan is higher than that of the hypothetical plan by about one half million dollars. In addition, the pay-for-performance sensitivity of the original plan is lower than that of the hypothetical plan.

4.3 EPS targets and the level of CEO compensation

Less challenging performance targets may not necessarily be a problem if the corresponding target annual incentive payouts are also low. When target annual incentive payouts and performance targets are jointly determined, examining performance targets alone does not capture the whole decision making process. We next compare the difference of EPS target and analyst consensus for firms with high ex-ante compensation with firms with low ex-ante compensation to see whether less challenging targets are associated with lower target payouts.[16] The first set of analyses characterizes CEO compensation as high if the benchmark (e.g., median or 75th percentile) that a firm uses to match against compensation peers for determining CEO salary and bonuses is higher than its size rank (by sales in the previous year) among its compensation peer companies. For example, if a firm is at the median (ranked by size) among its compensation peers but matches its CEO pay against the 75th percentile of CEO pay at its peer companies, we categorize this firm as having high CEO compensation ex ante.

[16] Target annual incentive payout includes target annual incentive amount and discretionary bonuses.

Compensation peer lists are obtained from firms' proxy statements for Year 1 and Year 2 (see Faulkender and Yang, 2009). The second set of analyses characterizes CEO compensation as high if the increase in target payout is higher than the sample median increase. The results presented in Table 10 show that less challenging performance targets are not employed to compensate for low levels of target annual incentive payouts.

4.4 Dynamics of EPS target setting

We now examine the dynamics of performance target setting: the adjustments of EPS targets based on whether the EPS targets were achieved or missed in the previous year. In our sample, 195 firms disclose their EPS targets in two consecutive years. First, we divide these 195 firms into four quadrants based on whether the EPS targets were achieved or missed in the previous year, and whether the performance targets are adjusted upward or downward in current year. As shown in Panel A of Table 11, there are 157 upward adjustments for EPS targets, 132 of which are at firms that exceeded their EPS targets in the previous year. On the other hand, there are 38 downward adjustments of EPS targets, 29 of which are at firms that missed their EPS targets in the previous year. Next, we regress the adjustment in EPS targets on the difference of actual EPS and EPS targets in the previous year, allowing the sensitivities to be different for firms that missed their EPS targets and firms that achieved their EPS targets.

$$\begin{aligned} &\textit{EPS target} - \textit{EPS target in the previous year} \\ &= \alpha + \beta_1 * D(\textit{target missed}) + \beta_2 * (\textit{Previous year actual EPS} - \textit{EPS target}) \\ &\quad + \beta_3 * (\textit{Previous year actual EPS} - \textit{EPS target}) * D(\textit{target missed}) + \varepsilon. \end{aligned} \tag{1}$$

As shown in Panel B of Table 11, the sensitivity of EPS target adjustment to the difference between the realized EPS and EPS target in previous year is greater when the target was missed (0.465+0.905=1.370) than when the target was exceeded (0.465). The striking difference in the adjustment sensitivity between these two groups of firms describes another aspect of performance target setting practice. When a firm missed its EPS target by one cent in the previous year, it adjusts the EPS target downward by 1.37 cents. However, when the EPS target was exceeded by one cent, the firm only adjusts the EPS target upward by 0.465 cents. This evidence suggests that firms tend to set less challenging performance targets.

4.5 Corporate governance and EPS target setting

Because the compensation committee of the board sets the performance targets in annual incentive plans with inputs from the management, performance targets in incentive plans are likely to be less challenging in firms where CEOs have more power relative to the board. Our second empirical hypothesis is

Hypothesis 2: Firms with weaker corporate governance are more likely to set performance targets lower than expectations.

We use analyst consensus in the First Call database as the proxy for EPS expectation. The dependent variable of the regression is (EPS targets - analyst consensus on EPS). Independent variables include firm characteristics (number of analysts, analyst forecast dispersion, ln(sales), leverage, book-to-market ratio of equity, ROA, and stock return), compensation variables (CEO salary payment, the ratio of target annual incentive payout to salary payment, and the percentage of CEO equity ownership), and corporate governance measures (whether the CEO is the chairman of the board, number of directors, percentage of independent directors, percentage of directors serving on three or more corporate boards, and total percentage of common stock owned by the top five institutional shareholders). To ensure the availability of data at the approval time of annual incentive plans, we take values in the previous year for firm characteristics (except analyst forecast dispersion) and governance variables. The regression is described in Equation (2) and the results are reported in Table 12.

EPS Target – Analyst consensus on EPS

$$= \alpha + \beta_1 * (\textit{Number of analysts}) + \beta_2 * (\textit{Analyst forecast dispersion}) \quad (2)$$
$$+ \beta_3 * (\textit{CEO salary}) + \beta_4 * (\textit{CEO target annual incentive payout /salary}) + \beta_5 * (\textit{CEO equity exposure})$$
$$+ \beta_6 * \textit{Ln(Sales)} + \beta_7 * (\textit{Leverage}) + \beta_8 * (\textit{Book-to-market}) + \beta_9 * (\textit{ROA}) + \beta_{10} * (\textit{Stock return})$$
$$+ \beta_{11} * \textit{Dummy (CEO is chair)} + \beta_{12} * (\textit{Board size}) + \beta_{13} * (\textit{Independent board}) + \beta_{14} * (\textit{Busy board})$$
$$+ \beta_{15} * (\textit{Top 5 institutional ownership}) + \varepsilon.$$

Analyst consensus on EPS is calculated at the end of the first quarter in Panel A, and at the approval date of the annual incentive plan in Panel B. Models (1), (3), and (5) contain only firm characteristics and CEO compensation variables, and Models (2), (4), and (6) add corporate governance measures. All specifications include industry fixed effects (based on the Fama-

French 12 industry classification) and year fixed effects. Standard errors are clustered at the firm level.

Several results depend on which year we examine, with more distinct patterns in Year 1 and Year 2. We find that EPS targets are much lower than analyst consensus in firms where directors are busier serving on multiple boards. These busy directors, lacking time and energy to monitor, tend to set less challenging performance targets for their CEOs (see Fich and Shivdasani, 2006).

Interestingly, in firms with higher leverage, the EPS targets are set closer to expectations, suggesting perhaps lenders also have some influence on setting performance targets. Also, firms with higher ROA set targets closer to expectations. Perhaps managers in firms with better performance are more confident in setting performance targets closer to expectations. It is unclear, however, why more independent boards are associated with less challenging performance targets. Perhaps because the boards of most firms in our sample are already dominated by independent directors (with a mean of 76% and median of 80% independent directors), even greater independence may not be helpful for effective board decisions (see Baranchuk and Dybvig, 2009).

Furthermore, firms with higher analyst forecast dispersions set less challenging performance targets in the first two years, as well as in Year 3 when analyst consensus is calculated on the approval date of the annual incentive plan. There are two contrasting interpretations of this result. On the one hand, firms with higher uncertainties in future earnings should use lower EPS targets (or wider target performance ranges) to provide incentives to risk-averse managers.[17] On the other hand, less challenging targets are easier to justify in these firms even though they may reward mediocre performance, especially when the economy is thriving. Year 3 is unique because the market condition was extremely volatile in the first quarter of 2009, with a dramatic bounce around March 6, which lies between the approval date of the annual incentive plan and the end of the first quarter for the majority of our sample firms. The results using EPS growth targets are qualitatively the same.

5. Conclusion

[17] This is consistent with the findings of Bol et al (2009) who find that the performance targets are set lower with higher information asymmetry and environmental uncertainties with postal office data in South Korea.

We examine the newly disclosed performance metrics used in the annual incentive (bonus) plans for CEOs of the S&P 500 firms in the first three years after the compliance deadline of December 15, 2006. We document that performance (earnings per share) targets specified in the annual incentive plans are lower than expectations. Low performance targets result in attenuated pay-for-performance links and higher ex-ante values of the annual incentive payouts. In addition, we find that EPS targets are set particularly low in firms with busy boards of directors. We hope that this study sheds further light on the current debate regarding executive compensation; in particular, the debate on the controversial annual incentive plans. Going forward, it will be interesting to observe whether incentive payouts will be better linked to performance due to the enhanced disclosure, as partially shown in Year 3 of our sample. We leave the question on how to design optimal incentive plans to future research.

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Table 1 Descriptive statistics of annual incentive plans

This table presents summary statistics of performance measures used in the annual incentive plans of CEOs at the S&P 500 constituent companies (as of 2006). Panel A shows the number of firms with proxy statements, disclosing annual incentive plans, disclosing performance measures used in annual incentive plans, and disclosing performance targets used in annual incentive plans (firms disclosing either the performance target or both the threshold and stretch of performance so that we can infer the performance target using the midpoint). Panel B lists quantitative as well as qualitative performance measures used in disclosed annual incentive plans. Firms using a single performance measure and firms using multiple performance measures are separately reported. Column 1 is the statistics on quantitative measures of all firms that disclosed quantitative measures; Column 2 includes only the subset of firms that disclosed performance *targets* used in annual incentive plans. Column 3 is the statistics on qualitative performance measures. Panel C reports the statistics on the number of performance measures. Column 4 counts the total number of quantitative and qualitative performance measures used by our sample firms.

Table 1 Descriptive statistics of annual incentive plans (continued)

Panel A. Annual incentive plan disclosure

	All Firms	Firms with proxies	Firms with annual incentive plan	Firms with performance measures	Firms with performance targets
Overall	1,381	1,297	1,235	1,175	773
Year 1 (Dec.06–Nov. 07)	479	479	454	432	226
Year 2 (Dec.07–Nov. 08)	463	462	441	422	305
Year 3 (Dec.08–Nov. 09)	439	356	340	321	242

Panel B. Performance measures and performance targets used in annual incentive plans

	Quantitative measures		Qualitative measures	
	All	With target	All	
Single performance measure				
EPS	65	51		
Profit before taxes	36	10		
Operating income	33	18		
Net income	30	14		
Economic value added	13	6		
Other	57	33		
Subtotal (number of firms)	234	132		
Multiple performance measures				
EPS	439	320	Individual	213
Revenue	384	242	Strategic	76
Operating income	221	129	Customer	70
Net income	196	84	Safety	58
Free cash flow	106	73	Employee	50
Other	1,287	620	Other	453
Subtotal	2,633	1,468		920
Number of firms	941	641		473

Panel C. Number of performance measures and performance targets used in annual incentive plans

	Quantitative measures			
	All	With target	Qualitative measures	All measures
Mean	2.44	2.07	1.95	3.22
Minimum	1	1	1	1
Median	2	2	1	3
Maximum	8	8	6	13

Table 2 Descriptive statistics of firm characteristics, CEO compensation, and corporate governance

This table presents the descriptive statistics of sample firms, S&P 500 constituents as of 2006. Panel A presents statistics on firm characteristics and CEO compensation, and Panel B presents statistics on governance characteristics. Firm characteristics and corporate governance variables are from the previous year, and CEO compensation is from the current year. *EPS (growth)* is the on-going diluted EPS (growth rate), *Historical EPS (growth) volatility* is the time-series volatility of annual EPS (growth rate) measured over the past five years. *Ln(Revenue)* is the natural logarithm of total turnover for the year, *Book-to-market* is the book value of equity to market value of equity, *Leverage* is the ratio of debt to market capitalization, *Return-on-assets (ROA)* is operating income divided by average total assets, and *Stock return* is the annual total shareholder return including dividend yield. *Number of analysts* indicates the number of security analysts following the firm in the previous year, and *Forecast dispersion* is the standard deviation of analyst forecasts in the first quarter if there are at least five different brokers issuing forecasts. *Salary* is the salary payment to the CEO, *CEO equity exposure* is the CEO's equity stake (excluding options) in the firm, *Annual incentive payout (AIP)* is the ex-post payout of the annual incentive plan, *Target AIP/Salary* is the target annual incentive pay divided by salary, *AIP/Target AIP* is the ex-post annual incentive payout over the target amount, *Target AIP/Lagged target AIP* is the ratio of target AIP to the target AIP in previous year, *(EPS stretch – EPS threshold)* is the range of the incentive zone, *(EPS stretch –EPS threshold)/EPS target* is the range of the incentive zone scaled by EPS target, *EPS threshold/EPS target* is the EPS threshold scaled by EPS target, and *EPS stretch/EPS target* is the EPS stretch scaled by EPS target. *Dummy(CEO is chair)* is one if the CEO is also the chairman of the board and zero otherwise, *Board size* is the number of directors, *Independent board* is the percentage of independent directors, *Busy board* is the percentage of directors who have three or more corporate board seats, and *Top 5 institutional ownership* indicates the percentage ownership of the largest five institutional investors. Statistics are separately reported for the full sample and the sub-sample of firms with EPS targets. Units are provided in the parenthesis next to variable names. The differences between the mean (median) values of the full sample and sub-sample are reported in the right-most columns along with statistical significance. The statistical significance is derived based on student's *t*-test (if variances are equal) or Satterthwaite test (if variances are not equal) for the mean difference, and Wilcoxon signed rank sum test for the median difference. * (c), ** (b), and *** (a) denote statistical significance at 10%, 5%, and 1% for the mean (median) difference, respectively. All observations are winsorized at the 1% level in both tails.

Table 2 Descriptive statistics of firm characteristics, CEO compensation, and corporate governance (continued)

Variables	Full sample (A)				With EPS Target (B)				Difference (B-A)			
	Obs	Mean	Median	Std. dev.	Obs	Mean	Median	Std. dev.	Mean		Median	
Panel A. Firm characteristics and CEO compensation												
EPS ($)	1,335	2.57	2.38	2.22	371	2.81	2.69	1.71	0.24	**	0.31	a
EPS growth (%)	1,253	10.08	10.67	35.03	360	11.20	11.40	26.02	1.12		0.73	
Historical EPS volatility (5-year)	1,324	0.75	0.49	0.81	369	0.56	0.44	0.45	-0.19	***	-0.05	a
Historical EPS growth volatility (%)	1,284	50.49	21.05	105.77	369	43.47	14.16	117.82	-7.02		-6.89	a
Ln(Revenue)	1,350	9.09	9.09	1.09	371	9.11	9.08	0.96	0.02		-0.01	
Book-to-market	1,346	0.52	0.42	0.44	371	0.46	0.37	0.38	-0.06	**	-0.05	b
Leverage	1,345	0.80	0.25	1.68	371	0.54	0.24	1.00	-0.26	***	-0.02	
ROA (%)	1,336	11.42	10.03	8.93	365	12.83	11.59	8.43	1.41	***	1.57	a
Stock return previous year (%)	1,314	11.62	8.49	34.92	364	11.36	8.26	28.20	-0.26		-0.23	
Number of analysts	1,325	21.50	21.00	8.50	371	20.73	20.00	7.60	-0.77		-1.00	
Forecast dispersion	1,342	0.17	0.07	0.27	343	0.08	0.06	0.12	-0.08	***	-0.02	a
Salary ($MM)	1,297	1.04	1.00	0.37	371	1.11	1.05	0.32	0.07	***	0.05	a
CEO equity exposure (%)	1,249	1.25	0.39	2.89	344	0.85	0.37	1.77	-0.40	***	-0.02	
Annual incentive payout ($MM)	1,284	1.80	1.44	1.98	371	1.80	1.60	1.79	0.00		0.16	c
Target AIP/Salary	1,081	1.56	1.25	1.11	364	1.51	1.21	1.03	-0.06		-0.04	
AIP/Target AIP	1,050	1.12	1.13	0.64	359	1.14	1.20	0.65	0.02		0.07	
Target AIP/Lagged target AIP	639	1.15	1.06	0.42	276	1.14	1.07	0.34	-0.02		0.01	
EPS stretch - EPS threshold ($)					186	0.59	0.42	0.58				
(EPS stretch - EPS threshold) /EPS target (%)					186	22.95	23.00	23.69				
EPS threshold/EPS target (%)					210	88.93	90.95	11.82				
EPS stretch/EPS target (%)					202	111.90	107.56	13.95				
Panel B. Corporate governance characteristics												
Dummy(CEO is chair)	1,297	0.60	1.00	0.49	371	0.66	1.00	0.47	0.06	**	0.00	b
Board size	1,270	10.75	11.00	2.28	350	11.00	11.00	2.44	0.24	*	0.00	
Independent board (%)	1,270	80.00	81.81	15.09	350	81.67	84.62	14.44	1.67	*	2.81	b
Busy board (%)	1,270	11.98	10.00	11.72	350	11.26	9.09	11.72	-0.72		-0.91	
Top 5 institutional ownership (%)	1,089	25.42	24.80	8.62	323	24.78	23.93	7.64	-0.64		-0.87	

Table 3 EPS targets vs. analyst consensus

This table tests the difference between the earnings per share (EPS) targets used in annual incentive plans and analyst consensus on EPS. Analyst forecast data are obtained from the Thomson First Call database and *Analyst consensus* is constructed based on the mean of each analyst's most recent forecast. In Panel A, analyst consensus is calculated over the first quarter of the fiscal year. In Panel B, it is calculated from the beginning of the fiscal year to the approval date of the annual incentive plan, which was disclosed in 8-K or proxy filings by a subset of firms. *Year 1* is the first fiscal year after the SEC regulation became effective (fiscal years ending December 2006 – November 2007), *Year 2* is fiscal years ending December 2007 – November 2008, and *Year 3* is fiscal years ending December 2008 – November 2009. *P*-values are based on *t*-test for means and Wilcoxon signed rank sum test for medians. All observations are winsorized at the 1% level in both tails.

	Full sample		Year 1		Year 2		Year 3	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Panel A. All firms with EPS targets								
EPS target -	-0.04	-0.02	-0.05	-0.02	-0.06	-0.02	-0.01	-0.01
Analyst consensus	**(0.00)**	**(0.00)**	**(0.01)**	**(0.00)**	**(0.00)**	**(0.00)**	(0.57)	(0.34)
EPS growth target -	-1.27%	-0.66%	-2.41%	-0.83%	-1.74%	-0.70%	0.47%	-0.35%
Analyst consensus	**(0.01)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	(0.64)	(0.49)
Number of observations		370		118		139		113
Panel B. Subset of firms with approval dates of annual incentive plans								
EPS target -	-0.07	-0.03	-0.06	-0.02	-0.09	-0.03	-0.06	-0.04
Analyst consensus	**(0.00)**	**(0.00)**	**(0.03)**	**(0.02)**	**(0.00)**	**(0.00)**	**(0.02)**	**(0.01)**
EPS growth target -	-1.95%	-1.21%	-1.85%	-1.24%	-2.99%	-1.11%	-1.75%	-1.21%
Analyst consensus	**(0.00)**	**(0.00)**	(0.15)	**(0.01)**	**(0.00)**	**(0.00)**	**(0.06)**	**(0.01)**
Number of observations		251		87		92		72

Table 4 Analyst consensus vs. actual performance

This table reports the results of univariate tests on the difference between analyst consensus and the actual EPS performance, commonly phrased as "forecast bias." Panel A presents the results using firms that disclosed EPS targets in their incentive plans. (*Analyst consensus – Actual EPS*) is the difference between the analyst consensus and actual EPS of the year. Panel B compares analyst consensus with actual EPS for firms that did not disclose EPS performance target or did not use EPS as performance measures. Panel C compares the values across firms in Panel A and firms in Panel B using *t*-test (for equal variance) or Satterthwaite test (for unequal variance) for mean difference and Wilcoxon signed rank sum test for median difference. *P*-values presented Panel A and Panel B are based on *t*-test for means, and Wilcoxon signed rank sum test for medians. All observations are winsorized at the 1% level in both tails.

	Full sample		Year 1		Year 2		Year 3	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Panel A. Firms with EPS targets **(A)**								
Analyst consensus -	0.16	-0.02	-0.13	-0.08	0.11	-0.03	0.50	0.08
Actual EPS	**(0.00)**	(0.83)	**(0.00)**	**(0.00)**	**(0.05)**	(1.00)	**(0.00)**	**(0.00)**
Analyst consensus -	6.19%	-1.21%	-4.99%	-4.72%	7.27%	-1.67%	29.97%	3.40%
Actual EPS growth	**(0.02)**	(0.32)	**(0.01)**	**(0.00)**	**(0.06)**	(0.56)	**(0.00)**	**(0.00)**
Number of observations		370		118		139		113
Panel B. Firms without EPS targets **(B)**								
Analyst consensus -	0.46	0.02	0.14	-0.03	0.48	0.01	0.90	0.21
Actual EPS	**(0.00)**	**(0.00)**	**(0.07)**	**(0.04)**	**(0.00)**	**(0.05)**	**(0.00)**	**(0.00)**
Analyst consensus -	12.20%	0.66%	1.26%	-1.55%	12.58%	0.15%	27.35%	10.10%
Actual EPS growth	**(0.00)**	**(0.00)**	(0.76)	**(0.03)**	**(0.00)**	**(0.09)**	**(0.00)**	**(0.00)**
Number of observations		958		369		325		264
Panel C. Difference between the two groups **(A-B)**								
Analyst consensus -	-0.31	-0.05	-0.27	-0.05	-0.37	-0.04	-0.39	-0.13
Actual EPS	**(0.00)**	**(0.02)**	**(0.00)**	**(0.02)**	**(0.00)**	(0.40)	**(0.04)**	**(0.02)**
Analyst consensus -	-6.01%	-1.87%	-6.25%	-3.17%	-5.31%	-1.82%	2.62%	-6.69%
Actual EPS growth	**(0.10)**	**(0.01)**	(0.18)	**(0.05)**	(0.31)	(0.43)	(0.79)	**(0.05)**

Table 5 Performance targets, analyst consensus, and corporate issued earnings guidance

This table reports test results comparing firms with corporate issued earnings guidance and firms without earnings guidance. Panel A presents descriptive statistics on the number of analysts following the firm, analyst forecast dispersion, and historical EPS volatility of firms with earnings guidance and firms without earnings guidance. The difference between the two sub-samples is provided in Column 3 along with the statistical significance based on Student's *t*-test or Satterthwaite test for means and Wilcoxon signed rank sum test for medians. Panel B and Panel C repeat the analysis in Panel A of Table 3 for the sub-samples of firms with and firms without earnings guidance, respectively. Panel B also includes the difference between EPS target and the prevailing corporate issued earnings guidance. *P*-values presented are based on *t*-test for means, and Wilcoxon signed rank sum test for medians. * (c), ** (b), and *** (a) denote statistical significance at 10%, 5%, and 1% for the mean (median) difference, respectively. All observations are winsorized at the 1% level in both tails.

Panel A. Analyst forecasts and historical EPS volatility

	With guidance (A)	Without guidance (B)	Difference (B-A)	
Number of analysts following				
Mean	19.85	24.03	4.18	***
Median	19.00	23.00	4.00	a
Standard deviation	7.45	7.27	-0.18	
Number of observations	291	80		
Analyst forecast dispersion				
Mean	0.06	0.16	0.10	***
Median	0.05	0.10	0.05	a
Standard deviation	0.07	0.20	0.14	***
Number of observations	264	79		
Historical EPS volatility				
Mean	0.52	0.73	0.22	***
Median	0.43	0.52	0.09	a
Standard deviation	0.38	0.63	0.25	***
Number of observations	290	79		

Panel B. Firms with earnings guidance

	Full sample		Year 1		Year 2		Year 3	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
EPS target -	-0.03	-0.02	-0.04	-0.02	-0.03	-0.01	-0.01	-0.01
Analyst consensus	**(0.00)**	**(0.00)**	**(0.00)**	**(0.01)**	**(0.00)**	**(0.00)**	(0.58)	(0.16)
EPS target -	-0.01	0.00	-0.03	-0.01	-0.01	0.00	0.01	0.00
Earnings guidance	(0.26)	**(0.08)**	**(0.10)**	(0.14)	(0.43)	(0.17)	(0.39)	(0.99)
EPS growth target -	-1.02%	-0.62%	-1.89%	-0.67%	-1.28%	-0.62%	0.38%	-0.36%
Analyst consensus	**(0.03)**	**(0.00)**	**(0.01)**	**(0.00)**	**(0.01)**	**(0.00)**	(0.72)	(0.22)
Number of observations		291		94		109		88

Panel C. Firms without earnings guidance

EPS target -	-0.07	-0.03	-0.03	-0.04	-0.14	-0.04	-0.01	0.02
Analyst consensus	**(0.06)**	(0.18)	(0.52)	(0.35)	**(0.06)**	(0.15)	(0.84)	(0.78)
EPS growth target -	-1.58%	-1.04%	-1.91%	-2.81%	-3.48%	-1.88%	0.64%	0.37%
Analyst consensus	(0.21)	(0.11)	(0.26)	(0.20)	**(0.03)**	**(0.07)**	(0.75)	(0.66)
Number of observation		80		25		30		25

Table 6 Performance targets vs. historical performance

This table reports the results of univariate tests on the difference between EPS (growth) targets used in annual incentive plans and historical EPS performance. For EPS growths, performance targets are compared to historical 1-year, 3-year, and 5-year EPS growth rates of the firm as well as the historical 1-year, 3-year, and 5-year EPS growth rates of S&P 1,500 firms in the Fama-French 12 industry of the firm. *P*-values presented are based on *t*-test for means, and Wilcoxon signed rank sum test for medians. All observations are winsorized at the 1% level in both tails.

	Full sample		Year 1		Year 2		Year 3	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Previous year EPS								
EPS target -	0.24	0.23	0.27	0.23	0.22	0.24	0.24	0.24
Lagged EPS	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**
Historical EPS growth								
EPS growth target -	-7.63%	-4.71%	-8.65%	-6.52%	-10.96%	-5.06%	-0.05%	-3.17%
1-year growth	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.01)**	**(0.00)**	(0.99)	**(0.02)**
EPS growth target -	-7.25%	-5.04%	-6.06%	-5.17%	-9.79%	-5.10%	-5.07%	-3.28%
3-year growth	**(0.00)**	**(0.00)**	**(0.06)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.07)**	**(0.00)**
EPS growth target -	-1.76%	-2.78%	4.52%	-1.10%	-4.73%	-4.85%	-6.34%	-2.41%
5-year growth	(0.19)	**(0.00)**	**(0.05)**	(0.78)	**(0.02)**	**(0.00)**	**(0.01)**	**(0.00)**
Historical industry EPS growth								
EPS growth target -	-2.09%	-3.17%	-4.07%	-4.96%	-3.36%	-2.79%	0.50%	-2.00%
1-year industry growth	**(0.06)**	**(0.00)**	**(0.03)**	**(0.00)**	**(0.03)**	**(0.00)**	(0.79)	(0.45)
EPS growth target -	-3.18%	-3.47%	-1.78%	-4.02%	-4.59%	-3.87%	-2.94%	-2.99%
3-year industry growth	**(0.00)**	**(0.00)**	(0.32)	**(0.01)**	**(0.00)**	**(0.00)**	(0.15)	**(0.01)**
EPS growth target -	-0.42%	-1.25%	4.34%	1.75%	-2.77%	-2.68%	-3.34%	-1.82%
5-year industry growth	(0.69)	**(0.05)**	**(0.01)**	**(0.03)**	**(0.06)**	**(0.00)**	(0.11)	**(0.03)**
Number of observations		371		119		139		113

Table 7 Performance targets vs. actual performance

This table reports the results of univariate tests on the difference between EPS (growth) targets used in annual incentive plans and actual EPS performance. *P*-values presented are based on *t*-test for means, and Wilcoxon signed rank sum test for medians. All observations are winsorized at the 1% level in both tails.

	Full sample		Year 1		Year 2		Year 3	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Panel A. All firms with EPS targets								
EPS target -	0.07	-0.05	-0.15	-0.09	0.01	-0.07	0.51	0.05
actual EPS	**(0.06)**	**(0.08)**	**(0.00)**	**(0.00)**	(0.76)	(0.10)	**(0.00)**	**(0.00)**
EPS growth target -	4.44%	-2.07%	-6.39%	-4.83%	-0.58%	-3.00%	23.00%	2.25%
actual EPS growth	**(0.03)**	**(0.05)**	**(0.00)**	**(0.00)**	(0.69)	**(0.07)**	**(0.00)**	**(0.00)**
Number of firms		371		119		139		113

Table 8 Incentive zones vs. consensus range

In Panel A, the minimum value of analyst forecasts is compared with the threshold goal (*Threshold – Minimum forecast*), and maximum value of analyst forecasts is compared with the stretch goal (*Stretch – Maximum forecast*) for both EPS and EPS growth targets. In Panel B, the lower bound and upper bound of the 95% confidence interval of analyst forecasts are compared with the threshold and stretch goals used in the annual incentive plans. (*Threshold – Lower bound*) is the difference between the threshold goal and two standard deviations below the mean forecast, and (*Stretch – Upper bound*) is the difference between the stretch goal and two standard deviations above the mean forecast. *P*-values presented are based on *t*-test for means and Wilcoxon signed rank sum test for medians. All observations are winsorized at the 1% level in both tails.

	Full sample		Year 1		Year 2		Year 3	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Panel A. Using minimum and maximum of analyst forecasts								
EPS								
Threshold -	-0.20	-0.13	-0.16	-0.12	-0.24	-0.16	-0.16	-0.12
Minimum forecast	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**
Stretch -	0.12	0.06	0.09	0.05	0.13	0.05	0.14	0.10
Maximum forecast	**(0.00)**	**(0.00)**	**(0.08)**	**(0.01)**	**(0.00)**	**(0.00)**	**(0.01)**	**(0.00)**
EPS growth								
Threshold -	-7.56%	-5.56%	-8.43%	-5.38%	-9.46%	-6.91%	-4.06%	-4.96%
Minimum forecast	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.10)**	**(0.01)**
Stretch -	5.70%	2.70%	5.20%	2.33%	5.19%	2.66%	7.03%	3.83%
Maximum forecast	**(0.00)**	**(0.00)**	**(0.03)**	**(0.01)**	**(0.00)**	**(0.01)**	**(0.01)**	**(0.00)**
Number of observations (Threshold)		228		68		91		69
Number of observations (Stretch)		210		67		80		63
Panel B. Using lower and upper bounds of the 95% confidence interval of analyst forecasts								
EPS								
Threshold -	-0.19	-0.11	-0.13	-0.08	-0.24	-0.15	-0.16	-0.11
Lower bound	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**
Stretch -	0.10	0.05	0.01	0.03	0.12	0.04	0.13	0.09
Upper bound	**(0.00)**	**(0.00)**	(0.77)	(0.19)	**(0.01)**	**(0.01)**	**(0.01)**	**(0.00)**
EPS growth								
Threshold -	-6.76%	-4.74%	-6.93%	-3.58%	-8.74%	-6.34%	-3.34%	-4.63%
Lower bound	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	(0.12)	**(0.01)**
Stretch -	4.66%	2.22%	3.80%	1.53%	4.85%	2.16%	5.41%	3.30%
Upper bound	**(0.00)**	**(0.00)**	**(0.08)**	**(0.09)**	**(0.00)**	**(0.00)**	**(0.03)**	**(0.01)**
Number of observations (Threshold)		215		59		89		67
Number of observations (Stretch)		196		57		78		61

Table 9 Ex-ante value and pay-for-performance sensitivity of annual incentive plans

This table compares the ex-ante value and pay-for-performance sensitivities under original annual incentive plans with those under hypothetical incentive plans based on simulations of annual EPS. A hypothetical incentive plan is constructed using the minimum analyst forecast as performance threshold, analyst consensus as performance target, and maximum analyst forecast as performance stretch goal. Assuming a normal distribution, we draw 1,000 random numbers based on the EPS in the previous year, a drift term and standard deviation to obtain simulated annual EPS. Three different assumptions are used for the drift term and standard deviation. In the first two specifications, historical annual EPS growth rates in the previous three years and the previous five years are used as the drift terms, respectively, while the volatility of EPS growths in the previous five years is used as the standard deviation for the simulation. In the third specification, analyst consensus on annual EPS growth is used as the drift term and analyst forecast dispersion in the first quarter is used as the standard deviation for the simulation. *Difference* ($millions) is the difference of the ex-ante value of the annual incentive payout using EPS target specified in the annual incentive plan and that using analyst consensus, expressed in millions of dollars. *Difference* (%) is the difference in ex-ante values between the two plans scaled by the ex-ante value using company's original incentive plan, expressed in percentage. *Slope difference* indicates the pay-for-performance sensitivity difference of the two plans, where pay-for-performance sensitivity is measured as the change in the ex-ante value of annual incentive payout, expressed in thousands of dollars, for an increase of one cent in EPS. *P*-values of the statistical significance on the differences are provided in the parenthesis. All observations are winsorized at the 1% level in both tails.

	Full sample		Year 1		Year 2		Year 3	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Using previous 3-year EPS growth for simulation								
Difference ($millions)	0.08	0.06	0.19	0.11	0.11	0.05	-0.02	0.04
	(0.02)	**(0.00)**	**(0.00)**	**(0.00)**	**(0.04)**	**(0.05)**	(0.78)	(0.80)
Difference (%)	3.22	3.26	12.50	6.93	9.16	3.90	-13.48	1.59
	(0.29)	**(0.00)**	**(0.00)**	**(0.00)**	**(0.03)**	**(0.02)**	(0.11)	(1.00)
Slope difference ($thousands)	-5.67	-1.27	-8.31	-2.19	-5.47	-1.36	-2.94	-1.13
	(0.00)	**(0.00)**	**(0.01)**	**(0.02)**	**(0.02)**	**(0.01)**	**(0.03)**	**(0.02)**
Using previous 5-year EPS growth for simulation								
Difference ($millions)	0.09	0.05	0.21	0.14	0.11	0.03	0.00	0.03
	(0.02)	**(0.01)**	**(0.01)**	**(0.00)**	**(0.08)**	(0.15)	(0.99)	(0.61)
Difference (%)	4.86	3.76	14.18	12.42	8.36	3.35	-10.40	1.35
	(0.11)	**(0.00)**	**(0.00)**	**(0.00)**	**(0.07)**	**(0.06)**	(0.19)	(0.64)
Slope difference ($thousands)	-5.10	-1.15	-7.21	-2.51	-4.82	-0.92	-3.70	-0.98
	(0.00)	**(0.00)**	**(0.01)**	**(0.01)**	**(0.01)**	**(0.04)**	**(0.02)**	**(0.03)**
Using analyst consensus on EPS for simulation								
Difference ($millions)	0.21	0.04	0.63	0.22	0.16	0.02	-0.05	0.00
	(0.01)	**(0.01)**	**(0.00)**	**(0.00)**	**(0.07)**	**(0.07)**	(0.67)	(0.80)
Difference (%)	4.41	5.64	31.52	25.17	15.37	4.86	-56.22	0.00
	(0.58)	**(0.00)**	**(0.00)**	**(0.00)**	**(0.04)**	**(0.09)**	(0.17)	(0.95)
Slope difference ($thousands)	-31.50	-0.88	-27.74	-1.51	-40.73	-1.60	-11.84	-0.06
	(0.00)	**(0.00)**	**(0.02)**	**(0.06)**	**(0.04)**	**(0.06)**	**(0.08)**	(0.23)
Number of observations		148		41		54		53

Table 10 Target annual incentive payouts and performance targets

This table links the amount of target payout in the annual incentive plan to whether the performance target used in the plan is challenging. A performance target is defined as challenging if it is higher than analyst consensus. In Panels A and B, a firm is categorized as having "high compensation" if the benchmark used to match against its compensation peers for determining CEO compensation is higher than its size ranking (by sales in the previous year) among these peer companies. Compensation peers and benchmarks are reported in the firm's proxy statements; see Faulkender and Yang (2009). Panel A reports the number of firms in each of these four categories. Panel B reports the univariate test results of the difference between the EPS target and analyst consensus for two sub-samples based on whether a firm has high compensation or low compensation. Panel C and D are similar to Panel A and Panel B, with CEO compensation level classified as high if the increase in target payout is higher than the sample median. *P*-values presented in the parentheses are based on *t*-test for means and Wilcoxon signed rank sum test for medians of *EPS (growth) target – Analyst consensus*. For the difference between the high and low compensation groups, we use *t*-test or Satterthwaite test for means. All observations are winsorized at the 1% level in both tails.

Panel A Compensation benchmark and sales rank among compensation peers

	Less challenging target	Challenging target	Total
Compensation benchmark higher than sales rank among compensation peers	57	32	89
Compensation benchmark lower than sales rank among compensation peers	81	43	124
Total	138	75	213

Panel B Compensation benchmark and sales rank: EPS target - Analyst consensus

	Mean	Median
Firms with compensation benchmark higher than sales rank (high compensation) **(A)**		
EPS target - Analyst consensus	-0.04	-0.02
	(0.02)	**(0.02)**
EPS growth target - Analyst consensus	-2.23%	-0.76%
	(0.01)	**(0.00)**
Number of observations		89
Firms with compensation benchmark lower than sales rank (low compensation) **(B)**		
EPS target - Analyst consensus	-0.07	-0.02
	(0.00)	**(0.00)**
EPS growth target - Analyst consensus	-1.80%	-0.95%
	(0.00)	**(0.00)**
Number of observations		124
Difference between the two groups **(A-B)**		
EPS target - Analyst consensus	0.03	0.00
	(0.52)	(0.76)
EPS growth target - Analyst consensus	-0.43%	0.19%
	(0.98)	(0.93)

Table 10 Target annual incentive payouts and performance targets (continued)

Panel C Change in target annual incentive payout

	Less challenging target	Challenging target	Total
High increase in target annual incentive payout	58	35	93
Low increase in target annual incentive payout	49	28	77
Total	107	63	170

Panel D Increase in target annual incentive payout: EPS target - Analyst consensus

	Mean	Median
Firms with high increase in target annual incentive payout (high compensation) **(A)**		
EPS target - Analyst consensus	-0.05	-0.02
	(0.04)	**(0.04)**
EPS growth target - Analyst consensus	-1.42%	-0.70%
	(0.07)	**(0.03)**
Number of observations		93
Firms with low increase in target annual incentive payout (low compensation) **(B)**		
EPS target - Analyst consensus	-0.03	-0.02
	(0.01)	**(0.01)**
EPS growth target - Analyst consensus	-1.33%	-0.95%
	(0.03)	**(0.01)**
Number of observations		77
Difference between the two groups **(A-B)**		
EPS target - Analyst consensus	-0.02	0.00
	(0.86)	(0.78)
EPS growth target - Analyst consensus	-0.09%	0.25%
	(0.86)	(0.97)

Table 11 Adjustments of EPS targets based on EPS performance in the previous year

This table reports the adjustments of performance targets based on whether the previous year's EPS targets were achieved or missed. In Panel A, each firm that reported EPS performance target for both Year 1 and Year 2 (100 firms in total) or for both Year 2 and Year 3 (95 firms in total) is grouped based on whether the firm's EPS target is elevated or lowered, and whether the previous year's EPS target was achieved or missed. Panel A reports the number of firms in each of these four categories. Panel B reports the regression results of (EPS target – EPS target in the previous year) on whether the EPS target was achieved or missed in the previous year. *D(target missed)* is one if the previous year's EPS target was missed, and zero otherwise; (*Lagged actual EPS – EPS target*) is the EPS result in the previous year less EPS target specified in the annual incentive plan of the previous year; and (*Lagged actual EPS – EPS target*)**D(target missed)* is their interaction term. Standard errors are reported in the parenthesis below the coefficient estimates. *, **, and *** denote 10%, 5%, and 1% significance, respectively. All observations are winsorized at the 1% level in both tails.

Panel A Adjustments of EPS targets and the EPS results in the previous year

	Previous year target achieved	Previous year target missed	Total
Firms that increased EPS targets	132	25	157
Firms that decreased EPS targets	9	29	38
Total	141	54	195

Panel B Adjustments of EPS targets based on whether EPS targets were missed in the previous year

Intercept	0.341	***
	(0.04)	
D(target missed)	-0.097	
	(0.09)	
(Lagged actual EPS – EPS target)	0.465	***
	(0.09)	
(Lagged actual EPS – EPS target)* D(target missed)	0.905	***
	(0.23)	
Observations	195	
Adjusted R-squared	0.441	

Table 12 Effect of corporate governance on the selection of performance targets

This table presents the regression results of the difference between EPS targets and analyst consensus on firm and governance characteristics. The dependent variable in Panel A is *EPS target – Analyst consensus* at the end of first quarter, and in Panel B is *EPS target – Analyst consensus* on the approval date of the annual incentive plan. In both panels, Models (1), (3), and (5) use characteristics of CEO compensation, security analysts, and firm characteristics as independent variables, and Models (2), (4), and (6) add governance variables. Models (1) and (2) include all sample firms, Models (3) and (4) include firms in the first two years, and Models (5) and (6) include firms in the third year. All compensation variables are constructed using the current year's data. All variables on firm characteristics and governance characteristics are constructed using the previous year's data. *Number of analysts* is the number of analysts who followed the company over the previous year; *Analyst forecast dispersion* is the standard deviation of analyst forecasts issued within the first quarter. *CEO salary* is the salary paid to CEO, *CEO target AIP/Salary* is the ratio of target annual incentive payout to salary payment, *CEO equity exposure* is the percentage of CEO ownership (excluding options). *Ln(Sales)* is the natural log of annual revenue, *Leverage* is the debt-equity ratio, *Book-to-market* is the book-to-market ratio of equity, *ROA* is net income over average assets, and *Stock return* is the total annual shareholder return including the dividend yield. *Dummy(CEO is chair)* is one if CEO serves as the chairman of the board and zero otherwise, *Board size* is the number of directors, *Independent board* is the percentage of independent directors, *Busy board* is the percentage of directors who have three or more corporate board seats, and *Top 5 institutional ownership* is the percentage ownership of five largest institutional investors. All models include year fixed effects and industry fixed effects (Fama-French 12 industry classifications). Standard errors are clustered at the firm level, and are provided in the parenthesis. *, **, and *** denote 10%, 5%, and 1% significance, respectively. All observations are winsorized at the 1% level in both tails.

Table 12 Effect of corporate governance on the selection of performance targets (continued)

Panel A EPS target – Analyst consensus at the end of 1Q as dependent variable	All years		Year 1 and Year 2		Year 3	
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Compensation and analyst characteristics						
Number of analysts	-0.005	-0.004	-0.006	-0.004	-0.004	-0.005
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Analyst forecast dispersion	-0.067	-0.014	-0.758 **	-0.920 **	0.757 **	0.698 **
	(0.23)	(0.28)	(0.33)	(0.37)	(0.34)	(0.34)
CEO salary	0.059	0.031	0.056	0.001	-0.044	0.106
	(0.07)	(0.07)	(0.07)	(0.10)	(0.11)	(0.11)
CEO target AIP/Salary	0.011	0.009	0.021	0.019	0.003	0.009
	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
CEO equity exposure	-0.867	-1.156 *	-0.813	-1.309 **	-0.378	0.427
	(0.55)	(0.62)	(0.59)	(0.62)	(1.20)	(1.10)
Firm characteristics						
Ln(Sales)	-0.036 **	-0.026	-0.055 ***	-0.050 **	0.025	0.028
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
Leverage	0.018	0.022	0.032	0.038	-0.001	0.001
	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.04)
Book-to-market	0.055	0.024	0.017	-0.119	0.082	0.119
	(0.06)	(0.06)	(0.08)	(0.09)	(0.09)	(0.09)
ROA	0.304 *	0.254	0.092	-0.099	0.607	0.797
	(0.17)	(0.19)	(0.25)	(0.19)	(0.44)	(0.52)
Stock return	-0.035	-0.043	-0.029	-0.047	-0.028	0.015
	(0.06)	(0.05)	(0.06)	(0.06)	(0.13)	(0.13)
Governance characteristics						
Dummy(CEO is chair)		-0.039		-0.019		-0.117 **
		(0.02)		(0.03)		(0.05)
Board size		0.003		0.010		-0.006
		(0.01)		(0.01)		(0.01)
Independent board		-0.111		-0.180		-0.242
		(0.11)		(0.12)		(0.23)
Busy board		-0.327 *		-0.337 *		-0.030
		(0.18)		(0.20)		(0.23)
Top 5 institutional ownership		0.145		0.360 *		-0.340
		(0.17)		(0.20)		(0.33)
Number of observations	310	281	214	188	96	93
Adjusted R-squared	0.134	0.143	0.224	0.285	0.164	0.175
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Table 12 Effect of corporate governance on the selection of performance targets (continued)

Panel B EPS target – Analyst consensus at the actual approval date as dependent variable												
	All years				Year 1 and Year 2				Year 3			
	Model (1)		Model (2)		Model (3)		Model (4)		Model (5)		Model (6)	
Compensation and analyst characteristics												
Number of analysts	-0.009	*	-0.007	*	-0.011	*	-0.007		-0.009		-0.009	
	(0.00)		(0.00)		(0.01)		(0.01)		(0.01)		(0.01)	
Analyst forecast dispersion	-0.648	***	-0.608	**	-0.811	**	-0.802	**	-0.771	**	-0.839	**
	(0.25)		(0.28)		(0.32)		(0.33)		(0.33)		(0.36)	
CEO salary	0.100		0.023		0.153		0.042		-0.176		-0.058	
	(0.09)		(0.10)		(0.10)		(0.13)		(0.14)		(0.15)	
CEO target AIP/Salary	0.021		0.028		0.026		0.043	*	0.004		-0.005	
	(0.02)		(0.02)		(0.03)		(0.03)		(0.04)		(0.03)	
CEO equity exposure	-1.189		-2.015	***	-1.172		-2.383	**	-0.280		0.290	
	(0.83)		(0.73)		(0.89)		(0.99)		(1.12)		(1.21)	
Firm characteristics												
Ln(Sales)	-0.063	***	-0.061	***	-0.076	***	-0.079	***	0.000		-0.003	
	(0.02)		(0.02)		(0.03)		(0.03)		(0.03)		(0.04)	
Leverage	0.042	*	0.037	*	0.055		0.050	**	0.018		0.004	
	(0.02)		(0.02)		(0.03)		(0.03)		(0.03)		(0.04)	
Book-to-market	-0.013		-0.072		-0.067		-0.188		0.033		0.092	
	(0.06)		(0.08)		(0.11)		(0.11)		(0.09)		(0.09)	
ROA	0.720	*	0.413		0.524		0.336		0.766		0.624	
	(0.40)		(0.30)		(0.55)		(0.37)		(0.56)		(0.67)	
Stock return	-0.015		-0.052		-0.034		-0.092		0.204		0.326	**
	(0.07)		(0.07)		(0.09)		(0.09)		(0.15)		(0.16)	
Governance characteristics												
Dummy(CEO is chair)			0.013				0.034				-0.154	***
			(0.04)				(0.04)				(0.06)	
Board size			0.015				0.018				0.016	
			(0.01)				(0.01)				(0.02)	
Independent board			-0.254	*			-0.319	*			-0.131	
			(0.15)				(0.18)				(0.21)	
Busy board			-0.540	***			-0.605	**			0.052	
			(0.16)				(0.23)				(0.26)	
Top 5 institutional ownership			0.200				0.363				-0.411	
			(0.22)				(0.25)				(0.41)	
Number of observations	207		187		147		129		60		58	
Adjusted R-squared	0.264		0.355		0.272		0.385		0.285		0.308	
Year fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
Industry fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	

Appendix: Industry distribution of sample firms

The table below reports industry distributions of our sample firms based on Fama-French 12 industry classification. *With proxy* is the firm with proxy statements disclosed, *With EPS measure* is the firm with EPS as performance standard and *With EPS target* is the firm with EPS as performance standard and disclosed its EPS target. *% of proxy* is the percentage of firms with proxy statements who disclosed EPS performance target.

	With proxy	With EPS measure	With EPS target	
	Frequency	Frequency	Frequency	Percentage of proxy
Consumer non-durable	94	46	34	36.17%
Consumer durable	27	12	3	11.11%
Manufacturing	138	66	55	39.86%
Oil, gas, & coal	72	16	13	18.06%
Chemicals and allied products	45	27	20	44.44%
Business equipment	203	57	39	19.21%
Telephone and television Transmission	47	11	9	19.15%
Utilities	90	51	41	45.56%
Wholesale, retail and some services	128	26	20	15.63%
Healthcare, medical equipment	99	61	47	47.47%
Finance	246	92	63	25.61%
Other	108	39	27	25.00%
	1,297	504	371	