

Cost Shielding in Executive Bonus Plans

Matthew Bloomfield
mjbloom@wharton.upenn.edu
The Wharton School
University of Pennsylvania

Brandon Gipper
gipperbr@stanford.edu
Graduate School of Business
Stanford University

John D. Kepler
jdkepler@stanford.edu
Graduate School of Business
Stanford University

David Tsui*
david.tsui@marshall.usc.edu
Marshall School of Business
University of Southern California

Draft: January 24, 2020

* Corresponding author. We thank Eric Allen, Chris Armstrong, Jon Bonham, Sarah Bonner, Judson Caskey, Patty Dechow, Shane Dikolli, Henry Friedman, Wayne Guay, Bob Holthausen, Chris Ittner, Jinhwan Kim, Rick Lambert, Dave Larcker, Clive Lennox, Iván Marinovic, Kevin Murphy, Zach Sautner (discussant), Karen Sedatole (discussant), Richard Sloan, Kevin Smith, and Regina Wittenberg Moerman, as well as workshop participants at Bar-Ilan University, the MAS Midyear Meetings, UCLA, and USC for helpful comments and suggestions. We thank the authors of Peters and Wagner (2014) and Jenter and Kanaan (2015) for providing the data used in their papers. We thank Sara Malik, Shawn Shi, Xuan Su, and the Stanford Graduate School of Business Data, Analytics, and Research Computing team for outstanding research assistance. We gratefully acknowledge financial support from the Wharton School of the University of Pennsylvania, the Stanford Graduate School of Business, and the University of Southern California Marshall School of Business and Leventhal School of Accounting.

Cost Shielding in Executive Bonus Plans

Abstract: Executive bonus plans often incorporate performance measures that disregard certain costs—a phenomenon we refer to as “cost shielding.” We develop measures of cost shielding and examine whether boards use cost shielding to alleviate agency conflicts between executives and shareholders. Consistent with predictions from agency theory, we find that boards select performance measures to shield executives from costs that are (i) incurred prior to their associated benefits, or (ii) the result of previous executives’ actions. We also find that many of these patterns are more pronounced among firms with more financial expertise on the board. Collectively, our results provide evidence that boards use cost shielding in executive bonus plans in response to potential agency conflicts and suggest that directors’ financial expertise facilitates incentive-compensation contracting efficiency.

JEL classification: G34; J3; M12

Keywords: executive compensation; cost shielding; managerial incentives; performance measurement; bonus contracts; agency theory

1. Introduction

Executive bonus plans provide an important source of many executives' incentives by linking their pay to performance on specific corporate objectives (Murphy and Jensen, 2011; Guay et al., 2019). The majority of the variation between firms in these bonus plan performance measures arises from heterogeneity in the choice of specific income statement ("IS") measures, such as net income versus earnings before interest, taxes, depreciation, and amortization ("EBITDA"). For instance, although nearly all plans incorporate an IS performance measure, the majority of these measures are not "bottom line" net income, but rather performance measures "higher up" on the income statement, such as EBITDA or operating income. While a large literature in accounting and finance examines performance measures in executive compensation plans, little is known about how boards select from among different IS measures.¹

The primary distinction among different IS measures is the extent to which they exclude particular expenses (or costs).² For example, sales-based measures, such as total revenue, exclude the most expenses, while EBITDA excludes more expenses than operating income, which in turn excludes more expenses than net income. Thus, when executives are compensated based on metrics "higher up" on the income statement, certain expenses are either given less weight or ignored entirely—which we refer to as "cost shielding."³ In this paper, we examine whether—and

¹ For example, see Lambert and Larcker (1987), Dechow et al. (1994), Bushman et al. (1996), Ittner et al. (1997), Core et al., (2003), Banker et al. (2009), Indjejikian and Matějka (2009), Ederhof (2010), De Angelis and Grinstein (2015), Bennett et al., (2017), and Guay et al. (2019).

² In this study, we use the terms "cost" and "expense" synonymously.

³ This discussion assumes that all income statement items besides revenue reflect expenses (i.e., reduce income). In some cases, however, these non-revenue-based items may increase income, such as non-operating gains. Boards might also ignore these gains when choosing performance measures; that is, implement some "income shielding." We do not believe this is a major issue for our study as in our sample, non-operating gains are relatively rare and typically small in magnitude—approximately 15% of firm-years have such gains, and the median gain is less than 1% of assets and sales (untabulated).

to what extent—boards use cost shielding to facilitate incentive alignment between their executives and shareholders.⁴

Our empirical analysis uses a broad sample of CEO compensation contracts from 8,009 public U.S. firm-years between 2006 and 2017.⁵ Consistent with recent literature on executive bonuses, we focus on performance measures in executives' cash bonus plans (e.g., Guay et al., 2019). Because the specific expenses included in or excluded from these performance measures are determined early in the year, prior to the realization of the firm's actual performance, these plans reflect boards' *ex ante* decisions and are therefore more indicative of boards' contract design intentions rather than responses to *ex post* shocks to the firm examined in other studies (e.g., Morse et al., 2011). We use the expenses excluded from executives' performance measures to develop a summary measure of average bonus plan cost shielding as well as examine the use of specific cost exclusions in isolation.

Over our sample period, cost shielding has increased significantly and the relative frequency of each IS measure has varied substantially. There has been a secular trend away from bottom-line earnings toward metrics higher on the income statement, such as sales or EBITDA, indicating that in recent years boards have become increasingly likely to shield executives from particular expenses (e.g., depreciation/amortization) when designing executives' cash-based bonus

⁴ Prior literature suggests several potential explanations for the observed nature of compensation contracts beyond mitigating agency conflicts between shareholders and managers, such as inefficient rent-seeking behavior (e.g., Bebchuk and Fried, 2003), value relevance (e.g., Banker et al, 2009), or strategic delegation (e.g., Fershtman and Judd, 1987; Bloomfield, 2019). Our analysis explores the extent to which optimal contracting theory appears descriptive of compensation plans in practice, but does not explicitly rule out these other explanations. We focus on agency theory in this study, but acknowledge the possibility that other factors also affect the choice of bonus plan performance measures.

⁵ While we use data from CEO bonus contracts in our empirical tests, bonus contracts are designed to incentivize all top executives to pursue firm-wide strategies (e.g., Murphy, 2001; Guay et al., 2019), and our results apply more generally to other named executive officers. We focus on CEO contracts in our tests because the board has the most *direct* influence over setting CEO compensation structures and, in many cases, delegates compensation structure design for lower-level employees to the CEO. However, our inferences are unchanged when we replicate our main tests using the lowest paid NEO (untabulated); see additional analyses in Section 4.8.

plans. We find that boards tend to *substitute* among different types of earnings-based measures (i.e., IS measures that incorporate at least some expenses), such that the addition of one earnings-based measure often corresponds to the removal of another. In contrast, sales measures (i.e., earnings excluding *all* expenses) tend to *complement* earnings-based measures, such that the addition of an earnings-based measure often coincides with the addition of a sales measure. Thus, variation in cost shielding in bonus plans largely reflects the extent to which boards add sales measures and substitute among different earnings-based measures.

We first validate our measures of cost shielding by extending the well-documented result that bonus contracts tend to put smaller relative weights on noisier performance metrics—e.g., Holmström, 1979; Lambert and Larcker, 1987; Banker and Datar, 1989; Sloan, 1993—to our particular research setting.⁶ Consistent with economic theory and prior empirical studies, we find more cost shielding in bonus plans when costs are more volatile. We further find that bonus plans tend to exclude the specific costs that are most volatile. For example, firms with high depreciation volatility are more likely to evaluate performance based on sales or EBITDA and therefore exclude depreciation expenses, and less likely to use IS measures that include these expenses (e.g., net income) in their executive bonus plans. Similarly, firms with higher earnings volatility are more likely to evaluate performance based on sales and less likely to use the earnings metrics we examine. These tests help validate our empirical measures of cost shielding and also suggest that prior findings on how noise influences performance measure choice extend to the choice of IS measures in executive bonus plans (Bushman et al., 1996; Ittner et al., 1997).

Having validated our measures, we next develop and test two hypotheses regarding the role of cost shielding in improving executive-shareholder incentive alignment. First, we examine

⁶ Noisier performance metrics provide less precise information about an agent's actions, thereby exposing the agent to outcome risk, for which a risk premium is demanded.

whether temporal mismatches between costs and their associated benefits influence specific choices of IS measures in incentive design. Value-maximizing corporate strategies frequently involve upfront costs with delayed benefits (e.g., investment in intangibles, growth options, or new products). If held fully responsible for these upfront costs, managers are likely to underinvest in the activities that generate these future benefits (e.g., Dye, 1988; Stein, 1989; Bushman et al., 1996; Ittner et al., 1997; Goldman and Slezak, 2006). To avoid adverse incentive consequences from these temporal mismatches and encourage executives to pursue these investments, boards can shield executives from investment-related costs, such as R&D or advertising. Consistent with these arguments, we find that at firms with larger intangible investments, more growth options, or more recently introduced products, boards tend to select performance measures that are “higher up” the income statement (e.g., sales or EBITDA), which shield executives from more investment-related costs. These results are consistent with boards using cost shielding as a mechanism to mitigate agency conflicts that arise due to differences in the time horizons of managers and shareholders.

Second, we examine the role of historical or “sunk” costs in boards’ choice of IS measures in executive bonus plans. Sunk costs from prior investment choices tend to reduce current net earnings but do not reflect the executives’ current actions or efforts (e.g., Wagenhofer, 2003). As a result, boards might choose to exclude such costs when evaluating executive performance, especially for relatively new executives who are unlikely to have had control over those prior investment decisions.⁷ Consistent with boards shielding newer executives from sunk costs, we find greater cost shielding among newly hired executives. In particular, measuring performance based

⁷ Alternatively, if the performance effect of these sunk costs is perfectly forecastable (e.g., straight-line depreciation), the board could reduce the performance target to offset the impact of these costs rather than adjust the performance metric. However, the precise performance effects of these costs are often uncertain and therefore solely adjusting the target would not fully account for them. For example, changes to the firm’s strategy could result in disposal, impairments, and/or changes in the productive horizon of these legacy assets, creating uncertainty in the exact timing of cost recognition. In these cases, selecting performance measures that exclude these costs would be more effective than adjusting performance targets to shield executives from sunk costs.

on EBITDA (i.e., excluding depreciation and amortization costs from prior investments) is common for new executives, but becomes decreasingly likely over the course of an executive's tenure. Furthermore, this pattern of greater cost shielding for new executives is more pronounced when the new executive is externally hired and therefore bears little responsibility for prior investments. These results suggest that boards use cost shielding to reduce the sensitivity of executives' pay to the consequences of their predecessors' actions.

Variation in CEO tenure—i.e., time since the prior CEO turnover—can be driven by a variety of unobservable forces, some of which may also influence bonus plan cost shielding. Our prior results on CEO tenure and cost shielding may partially reflect such unobserved heterogeneity. In order to mitigate these concerns and better isolate how boards consider historical or sunk costs when designing bonus plans, we next look at two distinct but complementary CEO turnover settings. First, we examine CEO turnovers for medical reasons (unexpected death or health reasons; Fee et al., 2013), which are unlikely to be related to firm or manager characteristics that drive bonus plan design and are therefore plausibly exogenous. Second, we examine forced CEO departures (Peters and Wagner, 2014), which represent instances where the incoming CEO may require more shielding from the prior CEO's actions. In both settings, we find significant year-over-year increases in cost shielding subsequent to these specific CEO departures. These results suggest that our prior findings are attributable to variation in CEO tenure, *per se*, rather than driven by correlated omitted factors or one particular reason for turnover.

Having provided evidence that boards consider cost shielding when designing executive bonus plans, we next turn our attention to examining one specific channel that facilitates these considerations. We conjecture that boards with more financial expertise are more likely to recognize the specific distinctions among different IS measures and hence the cost shielding

implications of performance measure choices in bonus plans. Thus, we expect cost shielding considerations to be particularly evident among firms with greater financial expertise on the board. Consistent with this conjecture, we find that many of our results are more pronounced among firms with a greater proportion of financial experts on the board. In particular, financial expertise appears to facilitate cost shielding through substitution among different earnings measures. In contrast, boards appear to implement cost shielding through the addition of sales-based measures regardless of their degree of financial expertise.

Finally, we conduct several additional tests to show that our findings are robust to alternative variable definitions and model specifications, and therefore our inferences are not driven by any particular research design choice. For example, we find similar results using several alternative summary cost shielding measures (e.g., computing the measure using the actual performance measure weights in the bonus plan or the magnitude of actual costs excluded from the bonus plan), as well as when we examine bonus plans for the firm's lowest-paid NEO rather than the CEO. Our inferences are also unchanged when we control for the number of performance measures in the executive's bonus plan, and therefore our findings do not reflect a mechanical relation between cost shielding and the number of performance measures included in a bonus plan.

Our findings contribute to the accounting and executive incentive-compensation literatures in three primary ways. First, our study provides new insight into the purpose of the specific financial performance measures included in executives' incentive-compensation plans. Several studies find that boards use a diverse set of performance measures (e.g., Lambert and Larcker, 1987; Ittner et al., 1997; Banker et al., 2009; Indjejikian and Matějka, 2009; De Angelis and Grinstein, 2015). However, this literature typically relies on relatively coarse classifications of performance measures, such as earnings versus cash flow or price versus non-price. These broad

classifications mask much of the variation in executives' incentive-compensation contract design. Our results suggest that boards deliberately select specific IS performance measures based on the incentive benefits of shielding executives from specific costs on the income statement. In other words, boards appear to recognize the contracting deficiencies of bottom-line earnings (e.g., including irrelevant or sunk costs; recognizing many costs prior to the associated economic benefits) and exclude specific costs accordingly. Collectively, our results are consistent with boards deliberately selecting among a "menu" of IS performance measures to use cost shielding in response to potential agency conflicts between executives and shareholders.

Second, we contribute to the emerging literature on the role of bonus plans in implementing, incentivizing, and communicating corporate objectives (e.g., Armstrong et al., 2019; Bloomfield, 2019; Gipper, 2019; Guay et al., 2019). Although much of executives' monetary incentives come from stock price (Murphy, 1999; Core et al., 2003), contracts based on non-price performance measures allow boards to clearly communicate—both internally and externally—specific objectives. In particular, cost shielding through the deliberate use of specific IS-based performance measures can provide meaningful incentives by focusing executives on more directly controllable objectives (Murphy and Jensen, 2011). In this regard, we respond to prior literature's call for research to explore the role of bonuses in motivating managers to focus their "efforts on performance measures more directly under their control" (Guay et al., 2019, p. 463).

Finally, our results highlight a previously unexplored benefit of directors' financial expertise—namely facilitating the design of incentive-compensation contracts that better align executives' and shareholders' interests. In particular, boards with greater financial expertise are more likely to construct bonus plans in line with our cost shielding predictions. These findings are consistent with the notion that directors' financial expertise facilitates incentive-compensation

contracting efficiency, and enhance our understanding of the role that directors serve beyond the typical monitoring or strategic functions typically ascribed to the board (e.g., Adams et al., 2010).

The remainder of this paper proceeds as follows. Section 2 discusses institutional features of our setting, related literature, and empirical predictions. Section 3 describes our sample and measurement choices. Section 4 describes our research design and presents results. Section 5 provides concluding remarks.

2. Background and Empirical Predictions

2.1. Background

Prior literature classifies the performance measures used in executive compensation contracts across a variety of dimensions. For instance, one of the most common classifications is stock price versus non-stock price-based measures, such as earnings (e.g., Lambert and Larcker, 1987; Sloan, 1993; Core et al., 2003; De Angelis and Grinstein, 2015). Studies using this classification predict and show that measures with relatively less noise are more frequently used for cash compensation (Adams, 1986; Lambert and Larcker, 1987; Sloan, 1993) but not total compensation (Core et al., 2003), and price is given more weight when the firm has greater growth opportunities.

Another common classification differentiates between financial and non-financial performance measures (e.g., Bushman et al., 1996; Ittner et al., 1997; De Angelis and Grinstein, 2015), which represents a subclassification of non-price performance measures. These studies find that, similar to price-based measures, non-financial measures are given more weight when the firm has growth opportunities or noise in financial measures, such as when the firm has long product lifecycles. Some studies further classify financial performance measures by distinguishing

between accrual-based and cash flow-based measures (e.g., Banker et al., 2009; Huang et al., 2017). Banker et al. (2009) predict and find that the value relevance of cash flows and earnings are correlated with their “incentive relevance” for cash compensation, while Huang et al. (2017) predict and find that boards consider their firm’s liquidity needs, whether from capital intensity or financial constraints, when choosing between earnings and cash flow performance measures.⁸

These relatively coarse performance measure classifications from prior studies typically ignore distinctions among different income statement-based (“IS”) performance measures. For example, one board might choose to include net income as a performance measure in executives’ bonus plans, while another might choose earnings before interest and taxes (“EBIT”). This heterogeneity in IS measures accounts for a large portion of the total variation in executive bonus plan performance measures. For example, while only 8% of bonus plans contain no IS measures, over 40% do not evaluate executives based on bottom-line net income, and plans based on other IS measures such as sales, EBITDA, and operating income are common (37%, 31%, and 14% of plans, respectively).⁹ By ignoring these distinctions, prior studies discard a significant portion of the variation in performance measure choice.

We develop a new performance measure classification that focuses on variation among different income statement-based (“IS”) measures (i.e., accrual-based financial performance measures). Using this classification, we examine how boards select from among different IS performance measures in executive bonus plans. Analyzing executives’ bonus plan performance

⁸ Relatedly, Potepa (2014) and Curtis et al. (2018) both examine the determinants of *ex post* adjustments to performance measures in CEO bonus plans and find that boards make *ex post* adjustments to earnings used for compensation purposes in order to mitigate the effect of unfavorable events that are outside of executives’ control.

⁹ These percentages do not sum to one because many firms incorporate multiple IS measures in their bonus plan (e.g., both sales and net income). In addition, the prevalence of IS measures in incentive plans is not limited to cash compensation, as performance-vested equity pay is also commonly based on IS measures (e.g., Bettis et al., 2018).

measures allows us to better understand boards' contract design intentions by focusing on their *ex ante* decisions regarding the specific expenses included in or excluded from these plans.

A common concern with examining performance measure choice is that the measure might be chosen after observing corporate performance.¹⁰ However, this is unlikely to be a concern in our setting, because the performance measures in bonus plans are typically determined within the first three months of the firm's fiscal year, at least partly due to tax incentives in place throughout our sample period. This institutional feature limits the concern that variation in performance measure choice captures opportunistic *ex post* selection of beneficial measures rather than *ex ante* contracting objectives (e.g., Morse et al., 2011; Guest et al., 2019). We examine IS performance measures that precede these deviations, consistent with our interest in design intentions.

2.2. Empirical predictions

Variation in the choice of IS performance measures primarily reflects the extent to which boards choose to exclude particular expenses when evaluating executives—which we refer to as “cost shielding.” For example, sales measures exclude the most expenses, while EBITDA excludes more expenses than operating income, which in turn excludes more expenses than net income. Accordingly, we focus on cost shielding theories of incentive-compensation contract design. Contract theory suggests that performance measures should be used if they, among other things, (i) provide incremental information about an executive's actions; (ii) encourage the executive to take value-creating actions, and/or (iii) facilitate efficient risk sharing (e.g., Holmström, 1979;

¹⁰ There are at least three types of deviations from the specified contract that could have some relation to our analysis. First, boards give themselves the option *ex ante* to remove unexpected gains or losses *ex post*. This deviation could incentivize value enhancing actions, like restructuring a firm (Dechow et al., 1994), or be opportunistically used to asymmetrically include one-time gains and exclude one-time losses (Gaver and Gaver, 1998). Second, boards *ex post* could switch the performance measure; again, this switch could be an appropriate change to better measure effort or opportunism (e.g., “rigging” from Morse et al., 2011). Third, boards *ex post* could decide not to use an observable performance measure, e.g., discretionary bonus grants (Ederhof, 2010).

Diamond and Verrecchia, 1982; Banker and Datar, 1989; Feltham and Xie, 1994). Using this economic framework, we develop and test two hypotheses regarding boards' choice of performance measures from among the various IS measures that involve varying degrees of cost shielding.¹¹

First, we examine whether timing differences between costs and their associated benefits play a role in determining the performance measures in executives' bonus plans. Shareholders and executives often differ with respect to their time horizons (e.g., discount rates), as executives tend to be relatively more myopic than shareholders (e.g., Dechow and Sloan, 1991; Laverly, 1996; Grinyer et al., 1998; Chen et al., 2015). If this divergence in time horizons is not addressed, executives can have incentives to take nearsighted actions that increase near-term profits at the expense of long-term firm value. For example, corporate executives may neglect efficient R&D or advertising, because the benefits of a successful investment do not accrue until too far into the future (e.g., Stein, 1989). Thus, we expect boards to be more likely to shield executives from R&D and/or advertising costs when the firm has higher levels of these costs via the use of sales-based performance measures.

Similarly, myopic managers might sacrifice firm value by setting product prices too high if, for example, they fail to fully internalize the long-term benefits of building brand loyalty (e.g., Villas-Boas, 2004; Dubé et al., 2009; 2010). For mature firms with established product lines, the divergence between the near-term profit-maximizing action and the value-maximizing action are

¹¹ As mentioned above, we acknowledge that agency theory is only one of several possible frameworks for examining executive pay. Incentive pay could also be designed according to other considerations, such as inefficient rent-seeking behavior (e.g., Bebchuk and Fried, 2003), value relevance (e.g., Banker et al, 2009), or strategic delegation (e.g., Fershtman and Judd, 1987; Bloomfield, 2019). Predictions from these frameworks could overlap with predictions from agency theory; for instance, a firm might both try to influence competitors—e.g., by signaling product market strategy—and incentivize executives to build market share when introducing a new product. As another example, a firm might exclude a particular expense from a bonus plan if the executive has little ability to control that expense *and* undue influence when setting pay.

muted. For younger firms, and/or those with new product offerings, the divergence is more pronounced—demand for the firm’s products or services tends to build upon itself, thus a value-maximizing young firm should market its product(s) more aggressively than would be profit maximizing in the near-term (e.g., Klemperer, 1987; Villas-Boas, 2004; Freimer and Horsky, 2008). Similar arguments can be made for firms with relatively more growth options in general. Because pursuing growth can be costly due to timing mismatches of costs and benefits, shielding executives from the costs of marketing, research, and/or production (e.g., through the use of sales-based performance measures) can be an effective way to mitigate agency conflicts between executives and shareholders. That is, deliberate cost shielding can incentivize an otherwise myopic executive to maximize long-term value. Accordingly, we expect that cost shielding is more prevalent among high growth or younger firms, as well as for firms with newer products.

Second, we consider how executives’ bonus plans can be used to shield managers from costs for which they are arguably not responsible. Agency theory argues that executives should be evaluated based on outcomes over which they have control—i.e., executives should be shielded from costs over which they do not have control (e.g., Antle and Demski, 1988; Lambert, 2001). For example, a recently hired executive typically inherits a capital stock that does not reflect his or her own investment decisions, but rather those of previous managers (Wagenhofer, 2003). Therefore, the legacy costs associated with existing capital investments—e.g., the depreciation on PP&E or amortization and impairments of existing intangible assets—are often outside the executive’s control. Based on the notion that optimal contracts shield executives from costs that are beyond their control, we expect greater cost shielding for CEOs with less involvement in prior investment decisions. Specifically, we predict greater cost shielding among shorter-tenured CEOs

compared to longer-tenured CEOs—particularly for externally hired executives who would not have been involved in previous investment decisions.

3. Sample, Variable Measurement, and Descriptive Statistics

3.1. Sample construction and variable measurement

We obtain data on CEO cash bonus plans for 8,009 firm-years between 2006 and 2017 from Incentive Lab, comprising 1,442 distinct firms.¹² These data are from firms' proxy statements. Appendix A provides an illustrative example of the performance measures and outcomes in Macy's 2016 executive bonus plan, as disclosed in its proxy statement. This example illustrates how boards intend for IS performance measures to help align executive incentives with the firm's strategic objectives. For example, Macy's measures performance with sales and EBIT and writes, "[t]he EBIT measure focuses the executives on maximizing operating income [...] Sales, a priority for retailers, are a measure of growth [...] The heavier weighting for the EBIT and sales objectives [relative to cash flows] reflects our emphasis on profitable growth." We supplement the Incentive Lab data with financial data from Compustat, stock price data from CRSP, executive compensation and tenure data from Execucomp, and data on the number of firms' new and existing products from FactSet Revere.¹³ We winsorize all continuous variables at 1% and 99%.

To test our empirical predictions on the use of cost shielding in bonus plans, we define indicator variables for each firm-year observation based on the presence of each of the four most common IS performance metrics: *Earnings Metric*, *EBIT Metric*, *EBITDA Metric*, *Sales Metric*.

¹² Our inferences are unchanged if we also include equity grants in our analysis.

¹³ We hand collect information on missing CEO tenure directly from firms' annual proxy statements obtained through the SEC's EDGAR website.

For example, *Sales Metric* equals 1 if the plan contains a sales measure and 0 otherwise.¹⁴ Because most bonus plans contain multiple performance measures, it is possible (and common) for multiple indicator variables to equal 1 for a given firm-year.

We then construct a firm-year summary measure of the degree of cost shielding in the executive's bonus plan, *Cost Shield*, by aggregating these four indicator variables. Specifically, for each performance measure included in the bonus plan, we first define a categorical variable based on the degree of cost shielding associated with the measure. We set the categorical variable equal to 3 for sales metrics, 2 for EBITDA metrics, 1 for EBIT metrics, and 0 for earnings and other metrics.¹⁵ We then compute *Cost Shield* as the firm-year average of these categorical variables, such that greater values of *Cost Shield* correspond to a greater overall degree of cost shielding. For instance, a company that includes both EBITDA and Sales in its CEO's annual bonus plan would receive a *Cost Shield* value of $(2 + 3) / 2 = 2.5$ for that firm-year, and a company that only includes net earnings in its CEO's annual bonus plan would receive a *Cost Shield* value of 0 for that firm-year. This calculation implicitly assumes that all metrics in the bonus plan receive equal weight.

We assess the sensitivity of our results to our bonus plan cost shielding measurement choices in Section 4.7. We find similar results when computing our firm-year summary measure based on (i) the weights on individual performance measures provided in the firm's proxy statement, (ii) the magnitude of the costs excluded from the bonus plan (e.g., interest and tax expense for a plan that only uses EBIT), and (iii) the median or maximum cost shielding present

¹⁴ We classify Incentive Lab metrics coded as "Earnings," "EPS," "Profit Margin," "ROA," "ROE," "ROIC," and "EVA" as an *Earnings Metric*, metrics coded as "EBIT" or "Operating Income" as an *EBIT Metric*, metrics coded as "EBITDA" as an *EBITDA Metric*, and metrics coded as "Sales" as a *Sales Metric*. Sales, EBITDA, EBIT, and earnings metrics in our sample account for 71% of all bonus plan financial measures.

¹⁵ Most of these "other" financial metrics provide little or no cost shielding (e.g., balance sheet measures, market capitalization, etc.) that tend to reduce the weight on cost shielding in the bonus plan. Our results are robust to omitting all "other" metrics before taking the firm-year average of these indicators.

in the executive's performance measures. We do not use these as our primary cost shielding measures for several reasons. First, performance measure weights are not always disclosed and therefore our resulting sample would be considerably smaller and limit our generalizability. Moreover, focusing on indicators comports with other studies using Incentive Lab data (e.g., Bloomfield, 2019; Ma et al., 2019). Second, actual cost magnitudes are potentially endogenous outcomes of the cost shielding decisions and so can obscure boards' *ex ante* contract design intentions. Third, the equal-weighting that our main summary measure assumes reflects the most common weighting scheme in bonus plans (e.g., De Angelis and Grinstein, 2015).

3.2. Descriptive statistics

Table 1 presents descriptive statistics for our sample. All variables are defined in Appendix B. The mean (median) bonus plan includes 2.27 (2) IS metrics. However, the mean plan includes 1.01 "bottom-line" earnings metrics (e.g., earnings per share, return on assets, net earnings, etc.), while the remaining metrics in the plan shield the executive from some or all costs. Consistent with boards often shielding executives from some costs, the mean (median) value of *Cost Shield* is 0.73 (0.67). Cost shielding also differs substantially across industries, as Figure 1 illustrates; cost shielding is lowest in the utilities and financial industries, and highest in the healthcare and telecommunication industries. Sales metrics (i.e., full cost shielding), are the most common form of shielding executives from costs, with an average of 0.50 metrics per plan. The next most commonly used metric, EBIT, shields executives from interest and tax costs, and the average plan includes 0.44 of these metrics that insulate executives from non-operating costs.

In untabulated analyses, we find that the IS measures examined in Table 1 are the most common form of performance measure incorporated into bonus plans, accounting for 75% of the total 2.99 financial performance measures included in the average plan. IS measures are also the

most important determinant of bonus payouts, accounting for the vast majority of total bonus pay. Collectively, these results indicate that classifying measures simply as “earnings based,” as is common in prior literature, discards much of the underlying variation in boards’ incentive design choices.

Figure 2 Panels A and B plot the annual average number of individual IS measures included in executive bonus plans during our sample period, while Panel C plots the annual average of our summary *Cost Shield* measure over the same period.¹⁶ Over this time period, we find that executive bonus plans trended away from including bottom-line earnings and toward measures that offer a greater degree of cost shielding, such as sales or EBITDA, resulting in a nearly 40% increase in the average value of *Cost Shield* between 2006 and 2017. Specifically, in 2006, the mean number of EBIT and EBITDA metrics in bonus plans were about 0.33 and 0.15, respectively, while the mean number of bottom-line earnings metrics was slightly more than one. By 2015, the average bonus plan had about 0.43 EBIT and 0.28 EBITDA metrics (increases of about 30% and 90%, respectively), and about 0.86 bottom-line earnings metrics (a decrease of about 15%).¹⁷ These changes over the past decade in the relative frequency of each measure suggest that boards do not simply roll forward prior year measures with updates to targets. Instead, these trends suggest that boards consider other factors when determining which specific IS metrics to employ when evaluating executives and often replace one measure with another as circumstances change (i.e., due to changes in their contracting usefulness).

To more directly evaluate whether boards appear to replace one metric with another when adjusting bonus plans, we examine both correlations between different IS measures and transition probabilities (i.e., times-series variation). Table 2 Panel A presents correlations for changes in the

¹⁶ In Panel B of Figure 1, all metrics are indexed at (i.e., begin at) 100%.

¹⁷ These changes in EBITDA usage are consistent with evidence from Huang et al. (2017) and Bettis et al. (2018).

use of these metrics. We find negative correlations between all “earnings-based” metrics (i.e., EBITDA, EBIT, EBT, and Earnings), suggesting that boards tend to substitute among these measures. In contrast, we find a strong, positive correlation between sales metrics and earnings-based metrics, consistent with boards viewing sales as distinct from other earnings-based measures and suggesting that boards may view sales as complementary to, rather than a substitute for, earnings-based measures.¹⁸

In Table 2 Panel B, we further explore these patterns of complementarity and substitution by examining transition matrices for IS-based metrics. Specifically, we examine whether conditional on a change in one specific IS-based metric (e.g., sales, EBITDA, etc.), boards are more likely to add or remove another IS-based metric. We find that boards are more likely to remove (add) earnings-based metrics when sales metrics are removed (added), consistent with such measures complementing each other. In contrast, for each earnings-based metric, we find a higher likelihood of removing (adding) an existing earnings-based metric when a new earnings-based metric is added (removed). Overall, these descriptive findings suggest that boards tend to substitute earnings-based measures for each other but view sales measures as distinct from, and complementary to, earnings-based measures.

4. Empirical Tests and Results

Collectively, the evidence in Section 3 suggests that boards view sales-based measures (metrics which exclude *all* costs) as distinct from earnings-based measures and use them to

¹⁸ One possible explanation for this finding is that sales metrics are used for both moral hazard and strategic reasons (Bloomfield, 2019), while earnings metrics may be predominantly used to solve moral hazard problems. This explanation could also add noise to our sales metric indicator for empirical tests that provide evidence for agency hypotheses, reducing our ability to find results consistent with cost shielding explanations.

complement some earnings-based measures.¹⁹ This evidence also suggests at least two possible explanations for boards' choices of earnings-based performance measures (metrics which exclude *some or no* costs): 1) boards view these measures as largely interchangeable and haphazardly select among them; or 2) each measure provides unique contracting uses and boards weigh the pros and cons of each measure when designing incentive plans. We next evaluate whether boards appear to purposefully choose which earnings-based metrics to use to facilitate cost shielding in accordance with optimal contracting theory by estimating a series of regressions of the following form:

$$\begin{aligned}
Cost\ Shield_{i,t} = & \alpha + \beta_1 Contracting\ Value_{i,t-1} + \beta_2 Ln(MVE)_{i,t-1} + \beta_3 Idio\ Vol_{i,t-1} \\
& + \beta_4 BTM_{i,t-1} + \beta_5 Free\ Cash\ Flow_{i,t-1} + \beta_6 Ln(Delta)_{i,t-1} + \beta_7 Ln(Tenure)_{i,t} \\
& + \delta_t + \varepsilon_{i,t},
\end{aligned} \tag{1}$$

where *Contracting Value* is a measure of a factor that agency theory suggests would increase or decrease the contracting value of a particular IS performance metric. We estimate this model using five different dependent variables, each reflecting the extent of bonus plan cost shielding. In the first specification, we use our main measure, *Cost Shield*, which summarizes the overall extent of cost shielding. In subsequent specifications for these tests, we decompose the aggregate cost shielding measure into its constituent parts in the following variant of Eq. (1):

$$\begin{aligned}
Measure_{i,t} = & \alpha + \beta_1 Contracting\ Value_{i,t-1} + \beta_2 Ln(MVE)_{i,t-1} + \beta_3 Idio\ Vol_{i,t-1} \\
& + \beta_4 BTM_{i,t-1} + \beta_5 Free\ Cash\ Flow_{i,t-1} + \beta_6 Ln(Delta)_{i,t-1} + \beta_7 Ln(Tenure)_{i,t} \\
& + \Gamma Other\ Measures_{i,t} + \delta_t + \varepsilon_{i,t},
\end{aligned} \tag{2}$$

¹⁹ Compensation plans often include positive weights on both sales and earnings but very rarely include positive weights on sales and negative weights on costs, even though the two may be economically identical (for example, weights of 50% on sales and 50% on net earnings are equivalent to weights of 100% sales and negative 50% on costs). One explanation for this phenomenon is that executives have negative behavioral responses to negative weights, which can be interpreted as “penalties” (e.g., Murphy and Jensen, 2011). Alternatively, investors might respond positively when they observe compensation disclosures about incentive design choices that are consistent with their valuation model inputs (e.g., Black et al., 2018; Ferri et al., 2018), causing the board to cater to these investor demands.

and estimate the model separately for all four individual IS performance metrics as the dependent variable—i.e., *Measure* equal to *Sales Metric*, *EBITDA Metric*, *EBIT Metric*, or *Earnings Metric*—which allows us to assess which particular components of our aggregate *Cost Shield* measure drive our main results.²⁰

Consistent with prior incentive design literature (e.g., Guay et al., 2019), we also control for a standard set of firm and CEO characteristics: book-to-market, size, idiosyncratic stock volatility, free cash flow, CEO equity portfolio delta, and CEO tenure.²¹ We use the lagged values of each of these firm-level variables (other than CEO tenure), as they are measured at year-end and bonus contracts are typically determined early in the firm’s fiscal year. That is, the bonus contract for year t is determined near the beginning of year t and therefore measures as of the end of year $t-1$ represent the most recent values observable by the board at the time that the bonus plan is designed. Given that Figure 1 indicates the relative frequency of specific IS measures has changed substantially over the past 10 years, we also include year fixed effects (δ_i) to account for common changes over time in contract design unrelated to our measures of contracting value.²²

When estimating Eq. (2), where the outcome variable is an indicator for a particular IS-based metric, we also control for the presence of the other IS-based metrics. For example, when the outcome variable is *Sales Metric*, we include controls for *EBITDA Metric*, *EBIT Metric*, and

²⁰ For parsimony, we omit the least common IS performance measure, *EBT Metric*, in our regression analyses. In untabulated tests, we also estimate Eqs. (1) and (2) including *EBT Metric* as a component of *Cost Shield* or its own separate dependent variable. Our inferences regarding how cost shielding considerations influence boards’ choices of performance measures are unchanged.

²¹ We take the natural log of size, CEO equity portfolio delta, and CEO tenure in our empirical tests, unless otherwise noted, due to the skewed nature of these variables (e.g., Core and Guay, 2002).

²² We do not include cross-sectional effects, though common in papers that examine executive pay levels (e.g., Core et al., 1999). Because we are interested in contract design, across industry (or across firm) variation in cost volatility, firm or product age, CEO turnover, etc. is useful when examining our hypotheses. Consistent with this reasoning, specifications that include industry effects have similar but attenuated findings as our main results (untabulated).

*Earnings Metric.*²³ These controls are important given our findings above that boards tend to use as complements or substitute among different IS metrics. For example, a firm may choose to compensate its executives with EBITDA-based pay to shield them from the financing and depreciation costs that investments require. Such a firm may also be *less* likely to use EBIT-based pay because EBIT and EBITDA act as substitutes. More generally, the choice of one earnings-based metric may indirectly affect the use of other earnings-based metrics, like EBITDA and EBIT in this example, if boards perceive the various IS metrics to be complements or substitutes.

4.1. Noise in performance measures

In our first set of tests, we examine whether boards are more likely to shield executives from costs when costs are noisier by estimating Eqs. (1) and (2) with several measures of cost volatility for *Contracting Value*. In particular, we construct measures of volatility for several expenses that are included in some IS measures but excluded from others. For example, interest and tax expenses are both included in earnings metrics but excluded from the other IS metrics we consider, which are “higher up” on the income statement. Similarly, depreciation expense is included in earnings and EBIT metrics but excluded from sales and EBITDA metrics.

These initial tests serve two primary purposes. First, the results from these tests help validate our cost shielding measures and empirical setting. Prior empirical incentive contract design research consistently documents a negative relation between performance measure noise, measured with volatility, and performance measure weight (Lambert and Larcker, 1987; Bushman et al., 1996; Ittner et al., 1997; Core et al., 2003). This well-established finding in other settings serves as a benchmark for our measure of cost shielding and the use of specific IS performance measures. Second, it is not *a priori* obvious that the logic underlying performance metric selection

²³ Our results are qualitatively similar if we do not control for the other metrics in these specifications.

in other contexts (e.g., price versus non-price) extends to choices *among* different IS performance measures. Thus, these tests provide initial evidence about whether boards deliberately choose among IS measures in order to improve contracting efficiency.

The specific cost volatilities that we examine are *Depreciation Volatility*, *Interest Volatility*, *ETR Volatility* and *Earnings Volatility* defined as the standard deviation over the preceding 10 years of the corresponding income statement item, scaled by assets for depreciation, interest, and earnings, and pre-tax income for tax expense.²⁴ If boards design bonus plans to shield executives from noisier costs, we should observe that metrics including (excluding) these costs are less (more) likely as volatility increases.

Table 3 presents the results from estimating Eqs. (1) and (2) with our cost volatility measures for *Contracting Value*. In Panel A column (1), *Cost Shield* is positively associated with *Depreciation Volatility*, *Interest Volatility*, and *ETR Volatility*.²⁵ In Panel B column (1), *Cost Shield* is also positively related to *Earnings Volatility*. In terms of economic magnitude, the standard deviations for depreciation, interest, and earnings volatility are about 1 to 7% of assets, while the standard deviation for ETR is about 103% of pre-tax income. Thus, one standard deviation increases in depreciation, interest, ETR, and earnings volatility are associated with a 40%, 6%, 5%, and 14% increase in *Cost Shield* relative to its sample mean, respectively.

In columns (2) through (5) of Table 3, we disaggregate *Cost Shield* into its component parts (i.e., *Sales Metric*, *EBITDA Metric*, *EBIT Metric* and *Earnings Metric*) in order to more precisely describe how cost volatilities and metric choices interrelate. We find that depreciation volatility is

²⁴ We require at least three non-missing observations over this 10-year window when computing these volatility measures.

²⁵ A plausible explanation for a weaker correlation between *Cost Shield* and *ETR Volatility* is that boards typically delegate tax responsibilities to a tax director, rather than the CEO (Armstrong et al., 2012). However, we find that *EBITDA Metric* and *EBIT Metric* are positively associated with *ETR Volatility*, which provides some evidence consistent with boards using measures that exclude tax expenses when those costs are volatile, conditioning on other measures. However, *Sales Metric* and *Earnings Metric* both have an (insignificant) association.

positively associated with the use of sales and EBITDA metrics (which exclude depreciation expense) and negatively associated with EBIT and earnings metrics (which include depreciation expense). Similarly, interest and ETR volatility are both positively associated with the use of EBITDA metrics (which exclude tax and interest expenses) and ETR volatility is further associated with the use of EBIT metrics. Lastly, earnings volatility is negatively associated with all of the earnings-based metrics (EBITDA, EBIT and earnings), but positively associated with using a sales metric. Collectively, these results show that CEOs are typically evaluated based on metrics which exclude more volatile costs.

These findings are consistent with results from prior literature that volatility in particular performance measures is associated with use of *other* performance measures (e.g., Bushman et al., 1996; Ittner et al., 1997). Because our findings are closely related to these findings in prior studies, we consider the results in Table 3 to be an important validation of our cost shielding measures. However, our analysis extends beyond known results from the literature by providing a finer classification of performance metrics than has been used previously. As discussed above, prior studies tend to group financial statement measures into a single category and compare them with “non-financial” measures, e.g., share price or individual measures of performance.

Collectively, our findings in Table 3 suggest that boards select specific IS measures to shield executives from noisier expenses. Specifically, we find that more volatile costs are associated with increased (decreased) use of IS-based measures that exclude (include) these costs. This finding is consistent with boards designing performance measures according to optimal contracting theory, emphasizing higher quality signals of executives’ efforts (Banker and Datar, 1989) and reducing payout risk (and therefore required the risk premium) for risk-averse executives (Lambert, 2001). Having established an association that is consistent with prior studies

in this area (e.g., Bushman et al., 1996; Ittner et al., 1997; Core et al., 2003), we continue by shifting our focus to previously untested predictions for agency-theoretic explanations of *ex ante* cost shielding in executive pay packages.

4.2. *Timing mismatch between upfront costs and delayed benefits*

Next, we test our first prediction, whether cost shielding is more prevalent when some or all of the associated benefits of a firm's investments are realized significantly after the corresponding costs. To test our predictions, we estimate Eqs. (1) and (2) using three sets of tests. In our first set of tests, we use R&D and advertising intensity (defined as R&D expense and advertising expense scaled by total assets—*R&D Investment* and *Advertising Investment*, respectively) as our measures of *Contracting Value*. These expenditures tend to generate expected benefits over longer horizons than the timing of expense recognition (e.g., Hirschey, 1982; Hirschey and Weygandt, 1985). Table 4 presents results. We find a significant positive relation between both *R&D Investment* and *Advertising Investment* and *Cost Shield*. Moreover, this result appears to arise from a shift away from the use of any earnings metrics, which include both R&D and advertising expenses, to the use of sales metrics, which exclude these expenses.

In our second set of tests, we use two traditional measures for growth opportunities, *Sales Growth* and *Book-to-Market* (e.g., Smith and Watts, 1992; Shin and Stulz, 1998). These results are presented in Table 5. In column 1, we find that *Cost Shield* has a significant positive correlation with sales growth and a significant negative association with the book-to-market ratio. When we decompose cost shielding into its component parts in columns 2 through 5, we find that the coefficients on our measures of growth options generally move monotonically. *Sales Metric* is significantly negatively associated with book-to-market, and marginally positively associated with sales growth ($p = 0.15$). As the amount of cost shielding in the performance metric decreases, the

coefficient on book-to-market becomes larger (i.e., less negative/more positive), while the coefficient on sales growth becomes smaller (i.e., less positive/more negative). For example, in the fifth specification, *Earnings Metric* is negatively associated with sales growth, and positively associated with book-to-market. To provide a sense of the economic magnitudes of these relations, a one standard deviation increase in *Sales Growth (Book-to-Market)* is associated with a 4% increase (16% decrease) in *Cost Shield* relative to its sample mean. Examining individual metrics, a one standard deviation change in *Sales Growth (Book-to-Market)* is related to a 3% (9%) decrease in the use of earnings (sales) metrics in incentive contracts.

In our third set of tests, we use two measures of firm and product lifecycle to measure instances where the associated benefits from firms' investments are realized after the costs are incurred. In particular, we use *Firm Age*, the number of years the firm has existed in Compustat, and *New Products*, the number of new products introduced by the firm relative to the firm's total products offered during the year. We present these results in Table 6. In column 1, we estimate our main specification with our aggregate measure, *Cost Shield*; the coefficient estimate for *New Products* is 0.173, which is positive and statistically significant. Thus, firms selling only new products during the year have 24% more cost shielding—relative to the sample mean of *Cost Shield*—than firms with no new products. When we examine specific metrics, we find that *New Products* is positively correlated with the use of sales and EBITDA metrics. In other words, the use of sales and EBITDA metrics appear to drive the relation between *New Products* and *Cost Shield*, consistent with firms using such metrics to establish market share early in products' lifecycle and create benefits through channels such as brand loyalty (e.g., Dubé et al., 2010).

When we examine firm lifecycle in Table 6, we find a strong negative relation between *Firm Age* and cost shielding. In particular, a 100% increase in firm age is associated with a 33%

decrease in *Cost Shield* relative to its sample mean. We also find that the usage of individual measures that shield executives from any costs—i.e., sales, EBITDA, and EBIT—are all negatively correlated with *Firm Age*, while earnings metric use, which involves no cost shielding, is positively correlated with *Firm Age*. The coefficients for individual metrics in columns 2 through 5 on *Firm Age* essentially represent elasticities in boards' propensity to use the metric, ranging from 11% less (8% more) likely to use sales (earnings) as *Firm Age* doubles. Thus, boards of older firms are relatively more likely to include all expenses when evaluating CEO performance.

Collectively, our results in Tables 4, 5 and 6 provide consistent evidence that firms use more cost shielding when current expenditures are expected to generate future benefits. In the context of R&D and advertising, current expenditures portend future product innovations. In the context of growth firms and young firms (or new products), current investments spur future growth and future demand. Absent the proper incentive structure, myopic managers are likely to underinvest in such circumstances. Our evidence suggests that boards proactively shield managers from these upfront costs in order to incentivize long-term value maximization (e.g., Stein, 1989; Dechow and Sloan, 1991; Dubé et al., 2009; 2010).

4.3. *Executive tenure*

Our second empirical prediction is that CEOs are shielded from costs that they cannot control and, therefore, newer CEOs are more likely to be shielded from costs than longer-tenured CEOs. Before formally testing this hypothesis, we first examine trends in metric usage over the course of CEOs' tenure graphically. Specifically, we plot the average number of Sales, EBITDA, EBIT, and Earnings performance metrics separately for each year of CEO tenure in our sample. These patterns are presented in Figure 3. Panel A presents the unscaled average number of metrics, Panel B presents the average number of metrics as a percentage of the average usage for a new

CEO, and Panel C presents the average of our aggregate measure of cost shielding.²⁶ We find that, over the first 10 years of a CEO's tenure, the inclusion of Sales, EBIT and Earnings metrics in bonus plans remains fairly stable. In contrast, the use of EBITDA declines substantially over tenure, falling by roughly 50% over a 10-year period, resulting in a general trend of less cost shielding over the course of an average CEO's tenure.

In our next set of analyses, we examine the dynamics of cost shielding over the first several years of a new CEO's tenure, and, specifically, whether cost shielding tends to decrease over the course of a CEO's tenure. Similar to our turnover tests, we formally test this prediction by estimating Eqs. (1) and (2) using *CEO Tenure* as our measure of *Contracting Value*. Specifically, we create separate indicators for whether the CEO is in his or her first two years, third through fifth years, or sixth through eighth years of tenure (*CEO Tenure Years 0-2*, *CEO Tenure Years 3-5*, and *CEO Tenure Years 6-8*, respectively).²⁷ The excluded category is CEOs with nine or more years of tenure, so the interpretation is of any coefficient is the amount of cost shielding relative to these long-tenured CEOs. If newer CEOs are more likely to be shielded from costs, we should observe that shorter-tenured CEOs (e.g., those with *CEO Tenure Years 0-2* equal to 1) have higher levels of cost shielding and are more likely to have metrics that exclude costs that tend to be out of their control, such as depreciation (e.g., sales or EBITDA metrics).

Table 7 Panel A presents the results from estimating Eqs. (1) and (2) with *CEO Tenure Years 0-2*, *CEO Tenure Years 3-5*, and *CEO Tenure Years 6-8* as our measures of *Contracting Value*. We omit our linear control for the natural log of CEO tenure in this specification. In column 1, we document more cost shielding for newer CEOs using our *Cost Shield* measure as the

²⁶ In Panel B of Figure 3, all metrics are indexed at (i.e., begin at) 100%.

²⁷ In untabulated tests, we also split our CEO tenure variable at the sample mean or median (i.e., CEOs with tenure greater than seven or five years, respectively), and find qualitatively similar results for each of these tests under this alternative measurement choice.

dependent variable. The extent of cost shielding decreases monotonically as the tenure increases, with the coefficients falling from 0.132 to 0.102 to 0.062 as tenure length increases from 0-2 years to 3-5 years to 6-8 years.

When we examine individual performance measures, we find our results for *Cost Shield* are predominately driven by greater use of sales and EBITDA incentives among newer CEOs. These findings are consistent with the notion that relatively newly hired CEOs are shielded from depreciation expenses (i.e., evaluated based on EBITDA) because such expenses are likely the result of prior CEOs' actions. Contrary to our predictions, we also find greater reliance on earnings among newer hires, although the magnitude of this relation is not strong enough to offset the overall tendency towards greater cost shielding.

To provide further evidence that our findings reflect boards' considerations over the controllability of specific costs when designing bonus plans, we differentiate between internally promoted and externally hired CEOs. The intuition behind these tests is that externally hired CEOs are unlikely to have had any control over the firm's prior investments. In contrast, because internally promoted CEOs were part of the existing management team prior to their installment as CEO, they often share at least some responsibility for—i.e., had at least some control over—prior investments and hence should tend to face greater accountability for historical costs than externally hired CEOs do. Thus, the cost shielding patterns that we observe in Table 7 Panel A should arise primarily for externally hired CEOs.

We test this prediction by estimating Eq. (1) separately conditional on whether the firm's current CEO was internally promoted or externally hired (i.e., *External Hire* = 0 or *External Hire* = 1, respectively). Table 7 Panel B presents the results. We find that the negative relation between CEO tenure and cost shielding exists for both internally and externally hired CEOs in columns (1)

and (2), respectively. However, this relation is significantly stronger for externally hired CEOs—those *least* likely to have played any role in determining prior investment and financing decisions that determine the cost structure on the income statement. Within the first two years of a CEO’s tenure, the CEO’s short tenure has roughly four times the impact on cost-shielding for externally hired CEOs. (0.319 vs 0.089; untabulated p -value of the difference in coefficients < 0.05). Over years 3-5 and 6-8, externally hired CEOs continue to receive greater levels of cost-shielding, but the extent of the external versus internal disparity falls monotonically over time. These results suggest that external hires, who are likely to have had little or no responsibility for previous decisions, are more likely to be initially shielded from “pre-existing” costs, such as depreciation on an existing capital stock. However, both types of CEOs eventually come to bear responsibility for all of the firm’s costs as their tenure (and hence degree of responsibility) grows.

4.4. Shock to contracting value: CEO turnovers due to death and health reasons

Finally, to help mitigate concerns about omitted variables that may jointly affect the dimensions of contracting value that we examine and the decision to shield executives from certain costs, we conduct two complementary CEO turnover analyses. First, we examine CEO departures due to unexpected death or other health-related reasons (e.g., Fee et al., 2013). These turnovers for medical reasons are unlikely to be related to firm or manager characteristics that drive bonus plan design and therefore plausibly exogenous. Thus, similar to our previous discussion, the contracting value of cost shielding for the incoming CEO is likely to be greater because she is less likely to have control over the firm’s current cost structure and investments. We hand collect data on CEO departures due to death or other health-related reasons by manually examining press releases surrounding the announcement of each departing CEO in our sample. Using this data, we estimate

a variation of Eq. (1) using an indicator for *CEO Health/Death Turnover* as our measure of contracting value.

Second, we examine forced turnovers of younger CEOs (those under age 60). While such departures are endogenous to economic conditions, they are sudden and represent instances where the incoming CEO may require more shielding from the prior CEO's actions (e.g., Peters and Wagner, 2014; Jenter and Kanaan, 2015). Specifically, we include an indicator in Eq. (1) for whether CEO turnover occurred during the prior fiscal year, and we identify the turnover as "forced" following Peters and Wagner (2014) and Jenter and Kanaan (2015).²⁸

To enhance identification in these specifications, we augment Eq. (1) with firm fixed effects in addition to year fixed effects. With the addition of firm fixed effects, the analysis measures time series changes in cost shielding around these CEO turnover events benchmarked against other within-firm year-over-year changes in cost shielding. Table 8 presents results. We find that, when focusing on within-firm variation, CEO departures due to unexpected death or other health-related reasons are associated with an increase in cost shielding in the subsequent CEO's bonus plan. So long as the health/death events are uncorrelated with omitted determinants of cost shielding, this analysis provides complementary causal evidence on the relation between executive turnover, boards' contract design intentions, and cost shielding. We also find that forced turnover has a very similar relation to cost shielding as health-related turnover. Thus, in both cases, the new CEO receives a significantly elevated degree of cost shielding in their first year.

4.5. Moderating effect: financial experts on the board

²⁸ Classifications for whether CEO departures are forced or voluntary are hand collected from press releases surrounding the announcement of CEO departures. Turnovers are classified as forced if the press release states the CEO is fired, is forced out, resigns due to pressure, is under age 60 and not reported to depart for health reasons, or is being hired by another firm or if the CEO suddenly retires. For further details, see Peters and Wagner (2014) and Jenter and Kanaan (2015). We are grateful to Florian Peters for providing us with these data.

Having documented evidence of economically meaningful cost shielding considerations in executive bonus plans consistent with predictions from agency theory, we turn our attention to examining whether directors' financial expertise moderates the extent to which these considerations arise. Directors with financial expertise tend to have a better understanding of, and more experience with, accounting systems and rules—e.g., Deloitte (2018); Chychyla et al. (2019)—and are therefore more likely to recognize the varying degrees of cost shielding inherent in different IS measures. As a result, we expect cost shielding considerations to be particularly pronounced among firms whose boards possess relatively high financial expertise. Based on this reasoning, we repeat each of our primary analyses after partitioning our sample based on the degree of the board's financial expertise following Chychyla et al. (2019). In particular, we estimate separate regressions for subsamples in which the proportion of directors with financial expertise on the board is above or below the median over our overall sample (20%).

Table 9 presents results. Panels A through F correspond to the primary variables from our previous empirical tests in Tables 3 through 7, respectively. We find that some, but not all, of our results are more pronounced among firms with a higher proportion of financial experts on the board. In particular, the results are stronger for the high financial expertise subsample in cases where cost shielding is achieved predominantly through substitution among earnings metrics (Table 9 Panels A and F). In contrast, when cost shielding is achieved predominantly through the addition of a sales metric, we observe similar results across high-expertise and low-expertise subsamples (Table 9 Panels B, C, D, and E). These results suggest that financial expertise is helpful for differentiating between the usefulness of different earnings-based metrics. However, financial expertise does not appear to moderate cost shielding considerations when implemented via the use of sales-based performance measures.

4.6. *Additional analyses*

We conduct several additional untabulated analyses to assess the robustness of our findings to alternative research design choices. Specifically, we examine (i) several alternative definitions of our summary cost shielding measure, (ii) whether variation in contract complexity explains our findings (e.g., more complex contracts tend to introduce additional performance measures beyond bottom-line earnings and hence greater cost shielding), and (iii) whether results pertain to cost shielding only for CEO bonus plans or for top management bonuses more generally. To explain our collective results, the noise or bias introduced by our design choices would need to systematically vary with each of the dimensions of contracting value we examine, the proportion of financial experts on the board, as well as CEO turnovers for health and death reasons. While we view this as unlikely, we nevertheless conduct a number of additional analyses designed to mitigate concerns about these forces in our setting.

First, with regard to noise in our measurement, we re-calculate our firm-year summary cost shielding measures—based on our categorical indicators of IS measures—using the weights on individual performance measures provided in the firm’s proxy statement, rather than taking the equal-weighted average when computing our firm-year summary measure of bonus plan cost shielding. For example, if a board bases 75% of the executive’s bonus on sales (which we code as 3) and 25% on net income (which we code as 0), we would compute our cost shielding measure as $75\% * 3 + 25\% * 0 = 2.25$, in contrast to the simple average of 1.5. To do so, we exclude binary performance measures (e.g., the performance measure must be positive to receive a payout) and focus only on measures with (piecewise) linear payout structures.²⁹ We find similar results across each of our primary analyses from Tables 3 through 8 with this alternative summary cost shielding

²⁹ We also find very similar results if we include these binary performance measures in these computations.

measure. We also examine other points of the distribution besides the average when computing our firm-year summary cost shielding measure (i.e., the median or maximum cost shielding present in the executive's performance measures) and exclude loss firms (e.g., because loss-making firms are less likely to use net income as performance measure) and continue to find that our inferences across each of our primary analyses are unchanged. Finally, we examine the magnitude of the *ex post* costs excluded from the bonus plan. For example, if a plan uses only EBIT, we measure cost shielding as interest and tax expense as a proportion of total expenses. We find qualitatively similar results under this alternative definition. Collectively, these findings suggest that the construction of the *Cost Shield* variable or noise in our measurement techniques does not drive our results.

Second, with regard to contract complexity, we repeat our primary analyses after including fixed effects for the number of performance measures and our inferences are unchanged—if anything, our results become stronger when including this alternative fixed effect structure. In other words, holding fixed the number of performance measures present in the bonus plan, we continue to find variation in cost shielding due to the specific performance measures selected based on the contracting considerations we examine. These findings are inconsistent with the variation in cost shielding we observe being simply driven by differences in the number of performance measures. Finally, in regard to the generalizability of our findings beyond the CEO, we re-estimate each of our primary analyses using the firm's lowest-paid named executive officer to construct our cost shielding and contracting value measures. Our inferences are unchanged, indicating that our findings appear to apply to all members of the firm's top management team, rather than the CEO specifically.

5. Conclusion

We examine the economic forces that shape the performance metrics that boards choose for evaluating executives. In contrast to prior literature, which predominately classifies performance metrics into broad categories such as (stock) price versus non-price or financial versus non-financial, we explore variation *within* income statement performance metrics (e.g., earnings versus EBIT versus EBITDA versus sales). We first show that there is substantial heterogeneity in the specific income statement measures incorporated into executive bonus contracts, and these metrics receive significant weights in executives' pay packages. Therefore, the classifications in prior literature, which fail to distinguish among financial metrics, discard a great deal of important variation in executive incentives. We then develop and test hypotheses regarding the role of "cost shielding" in explaining the choice of specific income statement measures used in executive bonus plans.

We document evidence that boards use cost shielding to mitigate agency conflicts and deliberately select bonus plan performance measures based on the contracting value of shielding executives from particular expenses. We find that when evaluating executives' performance, boards are more likely to exclude highly volatile costs. Moreover, investment-related costs are more likely to be excluded when growth opportunities or timing mismatches between the costs and benefits of investment decisions are greater, as well as when costs are likely to be "uncontrollable" or due to prior executives' decisions or actions. Thus, boards appear to carefully consider the firm's contracting environment and select the appropriate IS measure, giving weight to some costs while discarding others, to improve contracting efficiency and better align executives' and shareholders' incentives.

Collectively, our results are consistent with the notion that boards view cash-based pay as an important source of executives' incentives and purposefully choose to include or exclude

specific metrics based on agency-theoretic considerations. In particular, boards appear to view *ex ante* cost shielding as an important mechanism to improve incentive alignment between executives and shareholders. Furthermore, boards that have more financial expertise are especially likely to provide additional cost shielding when costs are volatile or lack controllability, suggesting that directors' greater understanding of differences between specific IS measures helps facilitate improved shareholder-executive incentive alignment. Lastly, our results highlight the degree of intentionality with which boards select particular executive performance measures to design bonus plans and how carefully considering the heterogeneity in the explicit measures incorporated in these plans—particularly measures from the income statement—can provide new insights into the design and consequences of executives' incentive-compensation contracts.

References

- Adams, H., 1986. Factors affecting the use of performance variables in executive compensation contracts. Working paper.
- Adams, R., Hermalin, B., and Weisbach, M., 2010. The role of boards of directors in corporate governance: a conceptual framework and survey. *Journal of Economic Literature*, 48.1: 58-107.
- Antle, R. and Demski, J., 1988. The controllability principle in responsibility accounting. *The Accounting Review* 63.4: 700-718.
- Armstrong, C., Blouin, J., and Larcker, D., 2012. The incentives for tax planning. *Journal of Accounting & Economics* 53.1-2: 391-411.
- Armstrong, C., Chau, J., Ittner, C., and Xiao, J., 2019. Earnings per share goals and CEO incentives. Working paper.
- Banker, R. and Datar, S., 1989. Sensitivity, precision, and linear aggregation of signals for performance evaluation. *Journal of Accounting Research* 27.1: 21-39.
- Banker, R., Huang, R., and Natarajan, R., 2009. Incentive contracting and value relevance of earnings and cash flows. *Journal of Accounting Research* 47.3: 647-678.
- Bebchuk, L. and Fried, H., 2003. Executive compensation as an agency problem. *Journal of Economic Perspectives* 17.3:71-92.
- Bennett, B., Bettis, J., Gopalan, R., and Milbourn, T., 2017. Compensation goals and firm performance. *Journal of Financial Economics* 124.2: 307-330.
- Bettis, J., Bizjak, J., Coles, J., and Kalpathy, S., 2018. Performance-vesting provisions in executive compensation. *Journal of Accounting & Economics* 66.1: 194-221.
- Black, D., Black, E., Christensen, T., and Gee, K., 2018. The Use of Non-GAAP Performance Measures in Executive Compensation Contracting and Financial Reporting. Working paper.
- Bloomfield, M., 2019. Compensation disclosures and the weaponization of executive pay: evidence from revenue-based performance evaluation. Working paper.
- Bushman, R., Dai, Z., Zhang, W., 2016. Management team incentive: dispersion and firm performance. *The Accounting Review* 91, 21-45.
- Bushman, R., Indjejikian, R., and Smith, A., 1996. CEO compensation: the role of individual performance evaluation. *Journal of Accounting & Economics* 21.2:161-193.
- Chen, X., Cheng, Q., Lo, A., and Wang, X., 2015. CEO contractual protection and managerial short-termism. *The Accounting Review* 90.5: 1871-1906.
- Chychyla, R., Leone, A., and Minutti-Meza, M., 2019. Complexity of financial reporting standards and accounting expertise. *Journal of Accounting & Economics*, 67.1: 226-253.
- Core, J. and Guay, W., 2002. Estimating the value of employee stock option portfolios and their sensitivities to price and volatility. *Journal of Accounting Research* 40, 613-630.
- Core, J., Guay, W., and Verrecchia, R., 2003. Price versus non-price performance measures in optimal CEO compensation contracts. *The Accounting Review* 78.4: 957-981.
- Core, J., Holthausen, R., and Larcker, D., 1999. Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics* 51.3: 371-406.
- Curtis, A., Li, V., and Patrick, P., 2018. The use of adjusted earnings in performance evaluation. Working paper.
- De Angelis, D. and Grinstein, Y., 2015. Performance terms in CEO compensation contracts. *Review of Finance* 19: 619-651.

- Dechow, P., Huson, M., and Sloan, R., 1994. The effect of restructuring charges on executives' cash compensation. *The Accounting Review* 69.1: 138-156.
- Dechow, P. and Sloan, R., 1991. Executive incentives and the horizon problem: an empirical investigation. *Journal of Accounting & Economics* 14.1: 51-89.
- Deloitte, 2018. Board practices report: common threads across boardrooms. Available online at: <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/center-for-board-effectiveness/2018-board-practices-report.pdf>.
- Diamond, D. and Verrecchia, R., 1982. Optimal managerial contracts and equilibrium security prices. *Journal of Finance* 37.2: 275-287.
- Dubé, J, Hitsch, G., and Rossi, P., 2009. Do switching costs make markets less competitive? *Journal of Marketing Research* 46.4: 435-445.
- Dubé, J., Hitsch, G., and Rossi, P., 2010. State dependence and alternative explanations for consumer inertia. *RAND Journal of Economics* 41.3: 417-445.
- Dye, R., 1988. Earnings management in an overlapping generations model. *Journal of Accounting Research* 26.2: 195-235.
- Edmans, A., Gabaix, X., and Jenter, D., 2017. Executive compensation: A survey of theory and evidence. Working paper.
- Ederhof, M., 2010. Discretion in bonus plans. *The Accounting Review* 85.6: 1921-1949.
- Fee, C., Hadlock, C., and Pierce, J., 2013. Managers with and without style: evidence using exogenous variation. *Review of Financial Studies*, 26.3: 567-601.
- Feltham, G. and Xie, J., 1994. Performance measure congruity and diversity in multi-task principal/agent relations. *The Accounting Review* 69.3: 429-453.
- Ferri, F., Zheng, R., and Zou, Y., 2018. Uncertainty in managers' reporting objectives and investors' response to earnings reports: evidence from the 2006 executive compensation disclosures. *Journal of Accounting & Economics* 66.2-3: 339-365.
- Fershtman, C. and Judd, K., 1987. Equilibrium incentives in oligopoly. *American Economic Review* 77.5: 927-940.
- Freimer, M. and Horsky, D., 2008. Try it, you will like it—does consumer learning lead to competitive price promotions? *Marketing Science*, 27.5: 796-810.
- Gaver, J. and Gaver, K., 1998. The relation between nonrecurring accounting transactions and CEO cash compensation. *The Accounting Review* 73.2: 235-253.
- Gipper, B., 2019. The economic effects of expanded compensation disclosures. Working paper.
- Goldman, E., and Slezak, S., 2006. An equilibrium model of incentive contracts in the presence of information manipulation. *Journal of Financial Economics* 80.3: 603-626.
- Grinyer, J., Russell, A., and Collison, D., 1998. Evidence of managerial short-termism in the UK. *British Journal of Management* 9.1: 13-22.
- Guay, W., Kepler, J., and Tsui, D., 2019. The role of executive cash bonuses in providing individual and team incentives. *Journal of Financial Economics* 133.2: 441-471.
- Guest, N., Kothari, S.P., and Pozen, R., 2019. High non-GAAP earnings predict abnormally high CEO pay. Working paper.
- Hirschey, M., 1982. Intangible capital aspects of advertising and R&D expenditures. *The Journal of Industrial Economics* 30.4: 375-390.
- Hirschey, M., and Weygandt, J. 1985. Amortization policy for advertising and research and development expenditures. *Journal of Accounting Research* 23.1: 326-335.
- Holmström, B., 1979. Moral hazard and observability. *The Bell Journal of Economics* 10.1: 74-91.

- Huang, Y., Ningzhong L., and Ng, J., 2017. Relative use of accounting performance measures in CEO annual bonus contracts. Working paper.
- Indjejikian, R. and Matějka, M., 2009. CFO fiduciary responsibilities and annual bonus incentives. *Journal of Accounting Research*, 47.4:1061-1093.
- Ittner, C., Larcker, D., and Rajan, M., 1997. The choice of performance measures in annual bonus contracts. *The Accounting Review* 72.2: 231-255.
- Jenter, D. and Kanaan, F., 2015. CEO turnover and relative performance evaluation. *Journal of Finance*, 70.5: 2155-2184.
- Klemperer, P., 1987. Markets with consumer switching costs. *Quarterly Journal of Economics*, 102.2: 375-394.
- Lambert, R., 2001. Contracting theory and accounting. *Journal of Accounting & Economics* 32.1-3: 3-87.
- Lambert, R. and Larcker, D., 1987. An analysis of the use of accounting and market measures of performance in executive compensation contracts. *Journal of Accounting Research* 25: 85-125.
- Laverty, K., 1996. Economic 'short-termism': the debate, the unresolved issues, and the implications for management practice and research. *Academy of Management Review* 21.3: 825-860.
- Ma, P., Shin, J., and Wang, C., 2019. rTSR: when do relative performance metrics capture relative performance? Working paper.
- Morse, A., Nanda, V., and Seru, A., 2011. Are incentive contracts rigged by powerful CEOs? *Journal of Finance* 66.5: 1779-1821.
- Murphy, K., 1999. Executive compensation. *Handbook of Labor Economics* 3: 2485-2563.
- Murphy, K., 2001 Performance standards in incentive contracts. *Journal of Accounting & Economics* 30.3: 245-278.
- Murphy, K. and Jensen, M., 2011. CEO bonus plans: and how to fix them. Working paper.
- Parrino, R., 1997. CEO turnover and outside succession: A cross-sectional analysis. *Journal of Financial Economics* 46.2: 165-197.
- Peters, F. and Wagner, A., 2014. The executive turnover risk premium. *Journal of Finance*, 69.4: 1529-1563.
- Potepa, J., 2014. The treatment of special items in determining CEO cash compensation. Working paper.
- Shin, H. and Stulz, R., 1998. Are internal capital markets efficient? *Quarterly Journal of Economics* 113.2: 531-552.
- Sloan, R., 1993. Accounting earnings and top executive compensation. *Journal of Accounting & Economics* 16.1-3: 55-100.
- Smith Jr., C. and Watts, R., 1992. The investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Financial Economics* 32.3: 263-292.
- Stein, J., 1989. Efficient capital markets, inefficient firms: a model of myopic corporate behavior. *Quarterly Journal of Economics* 104.4: 655-669.
- Villas-Boas, J., 2004. Consumer learning, brand loyalty, and competition. *Marketing Science*, 23.1: 134-145.
- Wagenhofer, A., 2003. Accrual-based compensation, depreciation and investment decisions. *European Accounting Review* 12.2: 287-309.

Appendix A. Executive Bonus Plan Example

This Appendix provides an illustrative example of bonus plans from our sample.

Company: Macy's, Inc.

Year: 2016

Named Executive Officer Bonus Plan

Annual Incentive

The Named Executives participated in the Senior Executive Incentive Compensation Plan, referred to as the Incentive Plan, in fiscal 2016. The Incentive Plan aligns executive compensation with our business strategy and operating performance objectives and is designed to motivate executives to meet or exceed annual corporate financial goals that are established by the CMD Committee and approved by the full Board.

The CMD Committee approved the annual performance goals for the fiscal 2016 annual incentive in March 2016 after the Board approved our fiscal 2016 business objectives and strategies. When setting fiscal 2016 performance goals, the CMD Committee considered the current economic conditions, potential events that could impact future sales and earnings levels and our performance relative to the performance of the peer companies. As discussed below, the CMD Committee set goals that were challenging yet reasonable, and would increase shareholder value if achieved.

54

Target Annual Incentive Opportunity. The CMD Committee made no changes to the target annual incentive opportunities for the Named Executives in fiscal 2016.

Maximum Annual Incentive Opportunity. The Named Executives become eligible for a maximum annual incentive award based on a percentage of EBIT achieved for the fiscal year. The maximum potential award for Mr. Lundgren for fiscal 2016 is equal to 0.45% of EBIT and the maximum potential award for each of the other Named Executives is equal to 0.25% of EBIT. No annual incentive award, however, can exceed the Incentive Plan's per-person maximum of \$7 million.

For purposes of determining performance results, EBIT is adjusted to eliminate the effects of asset impairments, restructurings, acquisitions, divestitures, other unusual or infrequently occurring items, store closing costs, unplanned material tax law changes and/or assessments and the cumulative effect of tax or accounting changes, as determined in accordance with generally accepted accounting principles, as applicable. If EBIT is positive, a portion of each dollar of EBIT is used to determine the participant's maximum award. If EBIT is negative, no incentive awards are paid.

The CMD Committee selected EBIT as the performance metric to ensure that the maximum potential payout is determined as a percentage of controllable profit. Excluding interest and taxes ensures that profit is defined based on operating results that the Named Executives can directly influence. The CMD Committee set the percentages of EBIT for the Named Executives at a level sufficient to enable reasonable award levels under all possible scenarios.

Reduction of the Maximum Annual Incentive Award. In determining actual incentive awards made under the Incentive Plan, the CMD Committee has the discretion to, and has in the past, paid actual incentive awards which are lower than the maximum awards described above. The CMD Committee may reduce the maximum incentive awards based on a "targeted" annual incentive award opportunity established for each Named Executive under the Incentive Plan and our overall performance during the fiscal year measured against pre-established financial goals or on such alternative or additional factors, if any, as it may deem appropriate.

The targeted annual incentive award opportunities for the Named Executives are expressed as a percent of year-end base salary and actual awards may range from 0% to 260% of the "target" award, not to exceed the maximum as determined under the above-referenced EBIT formula, depending upon actual performance relative to the pre-determined goals, as shown in the chart below (and on such alternative or additional factors, if any, as the CMD Committee deems appropriate). The calculation of performance results may be adjusted to eliminate the effects of asset impairments, restructurings, acquisitions, divestitures, other unusual or infrequently occurring items, store closing costs, unplanned material tax law changes and/or assessments and the cumulative effect of tax or accounting changes, as determined in accordance with generally accepted accounting principles, as applicable. The targeted annual incentive award opportunities are interpolated for performance results falling between "threshold" and "target" and between "target" and "outstanding".

Position	Component	Annual Incentive as a % of Base Salary		
		Threshold	Target	Outstanding
Chief Executive Officer	EBIT \$	18.1%	90.7%	272.1%
	Sales \$	18.1%	56.7%	124.7%
	Cash Flow \$	9.1%	22.6%	45.2%
	Total	45.3%	170.0%	442.0%
President	EBIT \$	13.3%	66.7%	200.1%
	Sales \$	13.3%	41.7%	91.7%
	Cash Flow \$	6.6%	16.6%	33.2%
	Total	33.2%	125.0%	325.0%
Other Named Executives	EBIT \$	8.0%	40.0%	120.0%
	Sales \$	8.0%	25.0%	55.0%
	Cash Flow \$	4.0%	10.0%	20.0%
	Total	20.0%	75.0%	195.0%

Appendix A. Executive Bonus Plan Example (cont'd)

The CMD Committee selected the following levels of EBIT, Sales and Cash Flow as the financial goals for fiscal 2016 under the Incentive Plan for purposes of the targeted annual incentive opportunity for the Named Executives:

Performance Metric	Weight	Performance Range (\$ in millions)		
		Threshold	Target	Outstanding
EBIT	53.3%	85% of Target	\$2,341.9	120% of Target
Sales	33.3%	98% of Target	\$27,505.3	101% of Target
Cash Flow	13.3%	\$50 below Target	\$1,677.6	\$150 above Target

Reasons for Selecting These Metrics. The Incentive Plan financial metrics focus executives on maximizing growth, operating profit dollars and cash flow.

- The EBIT measure focuses the executives on maximizing operating income and is a good indicator of how effectively our annual business objectives and strategies, which focus on growth in profits, are being executed.
- Sales, a priority for retailers, are a measure of growth and provide opportunities for the achievement of various other financial measures, including EBIT and cash flow. The Sales target under the Incentive Plan includes sales of departments licensed to third parties and excludes certain items that are included in externally reported sales under GAAP, including licensed department income, shipping and handling fees and sales to third-party retailers.
- Cash Flow measures how much cash we generate from our operating activities net of our investing activities. This cash can be used to further invest in the business, to return to shareholders or to strengthen the balance sheet.

The heavier weighting for the EBIT and Sales objectives reflects our emphasis on profitable growth. The performance levels of EBIT, Sales and Cash Flow are determined annually, consistent with the economic environment at the time our annual business objectives and strategies are finalized and are set to help the Company achieve its longer term average EBITDA margin and average ROIC objectives under the long-term incentive program discussed below. These performance levels are intended to be aggressive but realistic, such that achieving threshold levels would represent minimum acceptable performance and achieving maximum levels would represent outstanding performance. The targeted Sales objective is based to a significant degree on an assumption regarding sales growth relative to projected General Merchandise, Apparel and Home Furnishings (GAF) growth. The sales growth assumption is based on recent history and is adjusted for the risks and opportunities that are embedded in our merchandising strategies. We then plan our EBIT/EBITDA and cash flow objectives to incorporate our cost reduction strategies and real estate monetization.

Fiscal 2016 Annual Incentive Awards. At its March 23, 2017 meeting, the CMD Committee determined the actual incentive awards to be paid to the Named Executives for fiscal 2016 performance.

Based on our financial results for fiscal 2016, the CMD Committee determined that we achieved positive EBIT (adjusted as described below) of \$1.946 billion. This resulted in a maximum potential incentive award of \$8.760 million for Mr. Lundgren (0.45% of EBIT) and \$4.866 million for each of the other Named Executives (0.25% of EBIT), in all instances subject to the Incentive Plan's per-person maximum of \$7 million.

Consistent with the design of the annual incentive award program described above, the CMD Committee exercised its discretion to reduce the maximum potential incentive awards, based on the level of achievement of the EBIT, Sales and Cash Flow metrics, as adjusted as described below in relation to amounts reported in our audited financial statements. The CMD Committee adjusted EBIT for costs associated with unplanned store closings and asset impairment charges, for costs associated with an unplanned restructuring and cost reduction program, for a timing shift of gain recognition related to the sale of a store in Brooklyn and for non-cash settlement charges associated with retirement plans. The CMD Committee adjusted Sales to account for unplanned store closings.

Annual Incentive Component	2016 Performance (\$ in millions)		Annual Incentive Payout as a % of Base Salary		
	Results	Achievement Level	Lundgren	President	Other Named Executives
EBIT \$	\$1,946.8	Below Threshold	0%	0%	0%
Sales \$	\$26,665.0	Below Threshold	0%	0%	0%
Cash Flow \$	\$1,681.4	Between Target and Outstanding	23.17%	17.02%	10.25%
Total Earned			23.17%	17.02%	10.25%
Total Target Opportunity			170.00%	125.00%	75.00%

Appendix B. Variable Definitions

This Appendix defines the variables used in our primary analyses.

CEO Bonus Plan Measures	
<i># Sales Metrics</i>	Count of the CEO's annual bonus plan sales performance metrics (source: Incentive Lab).
<i># EBITDA Metrics</i>	Count of the CEO's annual bonus plan earnings before interest, taxes, depreciation, and amortization performance metrics (source: Incentive Lab).
<i># EBIT Metrics</i>	Count of the CEO's annual bonus plan earnings before interest and taxes performance metrics (source: Incentive Lab).
<i># EBT Metrics</i>	Count of the CEO's annual bonus plan earnings before taxes performance metrics (data source: Incentive Lab).
<i># Earnings Metrics</i>	Count of the CEO's annual bonus plan after-tax earnings performance metrics (source: Incentive Lab).
<i>Total Metrics</i>	Count of the total number of income-statement based performance metrics included in the CEO's bonus plan (source: Incentive Lab).
<i>Sales Metric</i>	Indicator equal to one if the CEO's annual bonus plan includes at least one sales performance metric, and zero otherwise (source: Incentive Lab).
<i>EBITDA Metric</i>	Indicator equal to one if the CEO's annual bonus plan includes at least one earnings before interest, taxes, depreciation, and amortization performance metric, and zero otherwise (source: Incentive Lab).
<i>EBIT Metric</i>	Indicator equal to one if the CEO's annual bonus plan includes at least one earnings before interest and taxes performance metric, and zero otherwise (source: Incentive Lab).
<i>EBT Metric</i>	Indicator equal to one if the CEO's annual bonus plan includes at least one earnings before taxes performance metric, and zero otherwise (source: Incentive Lab).
<i>Earnings Metric</i>	Indicator equal to one if the CEO's annual bonus plan includes at least one after-tax earnings performance metric, and zero otherwise (source: Incentive Lab).
<i>Cost Shield</i>	Firm-year average of a categorical variable that equals 0 if <i>Earnings Metric</i> equals 1, 1 if <i>EBIT Metric</i> equals 1, 2 if <i>EBITDA Metric</i> equals 1, and 3 if <i>Sales Metric</i> equals 1 (source: Incentive Lab).
Controls	
<i>Book-to-Market</i>	Book value of equity scaled by market value of equity of the firm at fiscal year-end (source: Compustat).
<i>Market Capitalization</i>	Market capitalization of the firm at fiscal year-end (source: Compustat).

Appendix B. Variable Definitions (cont'd)

<i>Idiosyncratic Volatility</i>	Standard deviation of the residual return from a market model regression using daily stock returns during the 12 months prior to the fiscal year end (source: CRSP).
<i>Free Cash Flow</i>	Operating cash flow minus common and preferred dividends divided by average total assets (source: Compustat).
<i>Delta</i>	Computed following Core and Guay (2002) as the sensitivity of the CEO's stock and option portfolio to a 1% change in stock price (source: Execucomp).
<i>CEO Tenure</i>	Number of years the executive has been CEO of the firm (source: Execucomp).
<i>CEO Tenure Years 0-2</i>	Indicator equal to 1 if <i>CEO Tenure</i> is greater than between 0 and 2 (inclusive), and 0 otherwise (source: Execucomp).
<i>CEO Tenure Years 3-5</i>	Indicator equal to 1 if <i>CEO Tenure</i> is greater than between 3 and 5 (inclusive), and 0 otherwise (source: Execucomp).
<i>CEO Tenure Years 6-8</i>	Indicator equal to 1 if <i>CEO Tenure</i> is greater than between 6 and 8 (inclusive), and 0 otherwise (source: Execucomp).

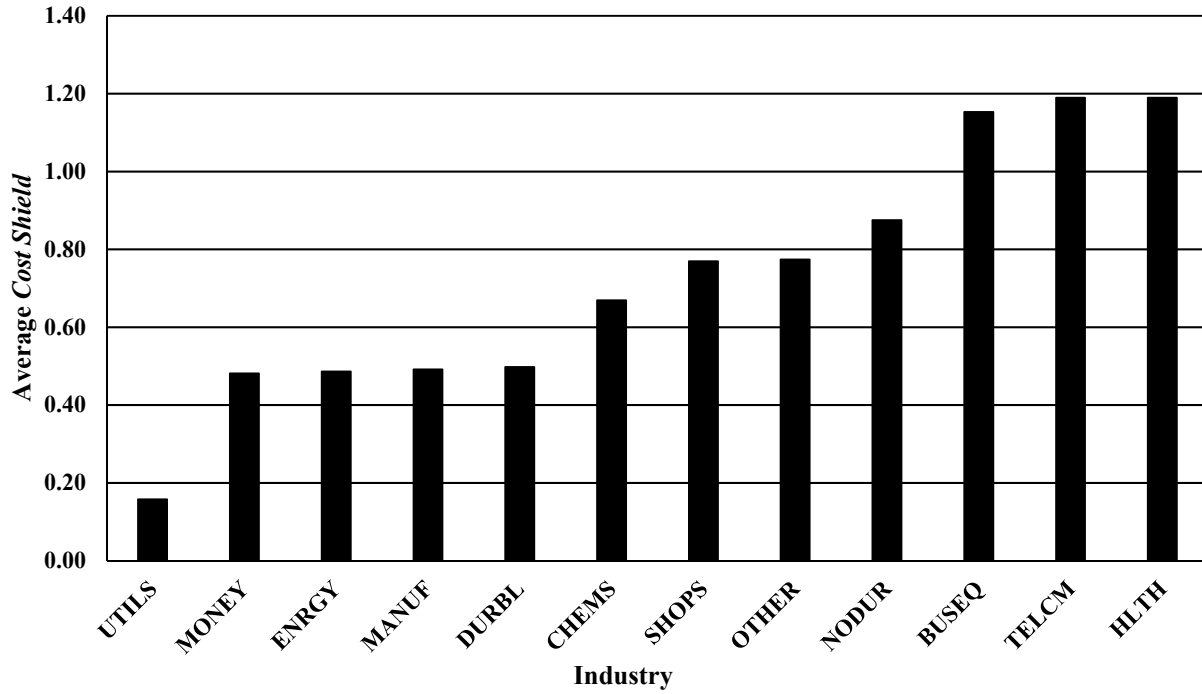
Firm and Executive Turnover Characteristics

<i>R&D Volatility</i>	Standard deviation of annual R&D expense scaled by total assets as of the end of the fiscal year during the previous ten years (source: Compustat; requires a minimum of three years).
<i>Depreciation Volatility</i>	Standard deviation of annual depreciation expense scaled by total assets as of the end of the fiscal year during the previous ten years (source: Compustat; requires a minimum of three years).
<i>Interest Volatility</i>	Standard deviation of annual interest expense scaled by total assets as of the end of the fiscal year during the previous ten years (source: Compustat; requires a minimum of three years).
<i>ETR Volatility</i>	Standard deviation of annual tax expense scaled by pretax income during the fiscal year (source: Compustat; requires a minimum of three years).
<i>Earnings Volatility</i>	Standard deviation of annual net income before extraordinary items scaled by total assets as of the end of the fiscal year during the previous ten years (source: Compustat; requires a minimum of three years).
<i>Sales Growth</i>	Annual percentage change in sales over the previous fiscal year (source: Compustat).
<i>External Hire</i>	Indicator equal to 1 if the current CEO was <i>not</i> employed by the same firm prior to becoming CEO, and 0 otherwise (source: Execucomp)
<i>CEO Turnover</i>	Indicator equal to 1 during the last fiscal year of the CEO's tenure, and 0 otherwise (source: Execucomp).

Appendix B. Variable Definitions (cont'd)

<i>R&D Investment</i>	Annual research and development expense scaled by end of fiscal year total assets (source: Compustat).
<i>Advertising Investment</i>	Annual advertising expense scaled by end of fiscal year total assets (source: Compustat).
<i>New Products</i>	Number of new products introduced scaled by current products offered by the firm during the fiscal year (source: FactSet Revere).
<i>Firm Age</i>	Number of years the firm has existed in Compustat (source: Compustat).
<i>Forced CEO Turnover</i>	Indicator equal to one during the last fiscal year of the CEO's tenure if the CEO was identified as forced out, following Peters and Wagner (2014) and Jenter and Kanaan (2015), and zero otherwise (source: Peters and Wagner (2014) and Jenter and Kanaan (2015)).
<i>Early Forced CEO Turnover</i>	Indicator equal to one if <i>Forced CEO Turnover</i> equals one and the CEO is younger than 60, and zero otherwise (source: Execucomp; Peters and Wagner (2014) and Jenter and Kanaan (2015)).
<i>CEO Health/Death Turnover</i>	Indicator equal to one during the last fiscal year of the CEO's tenure if the CEO departed due to death or for health reasons (source: Execucomp; hand collected).
<i>Fin. Expert</i>	The proportion of financial experts on the board scaled by total board members during the fiscal year (source: ISS Directors).

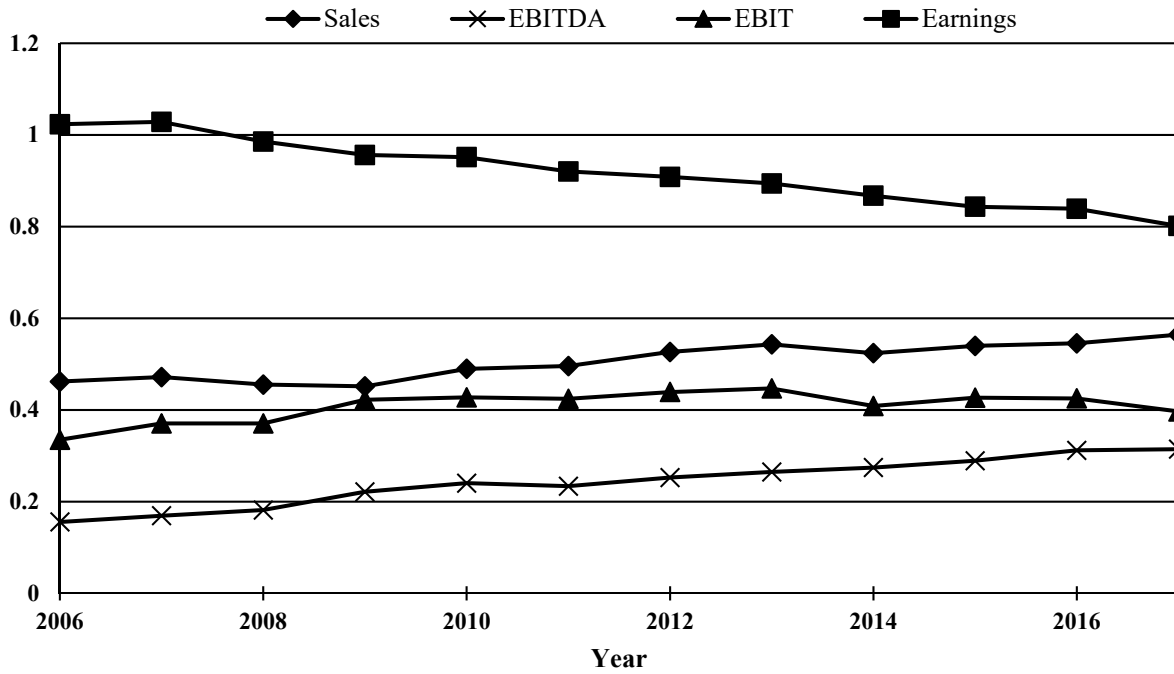
Figure 1. Industry Breakdown of Cost Shielding



Notes. This figure plots the industry distribution of our aggregate *Cost Shield* measure, which is the firm-year average of a categorical variable that equals 0 if an earnings performance measure is used, 1 if an EBIT performance measure is used, 2 if an EBITDA performance measure is used, and 3 if a sales performance measure is used. We use the Fama-French 12 industry portfolios to measure industry membership. Sample consists of 8,009 firm-years from our final sample from 2006 to 2017.

Figure 2. CEO Bonus Performance Measures over Time

Panel A. Raw Performance Measures



Panel B. Indexed Performance Measures

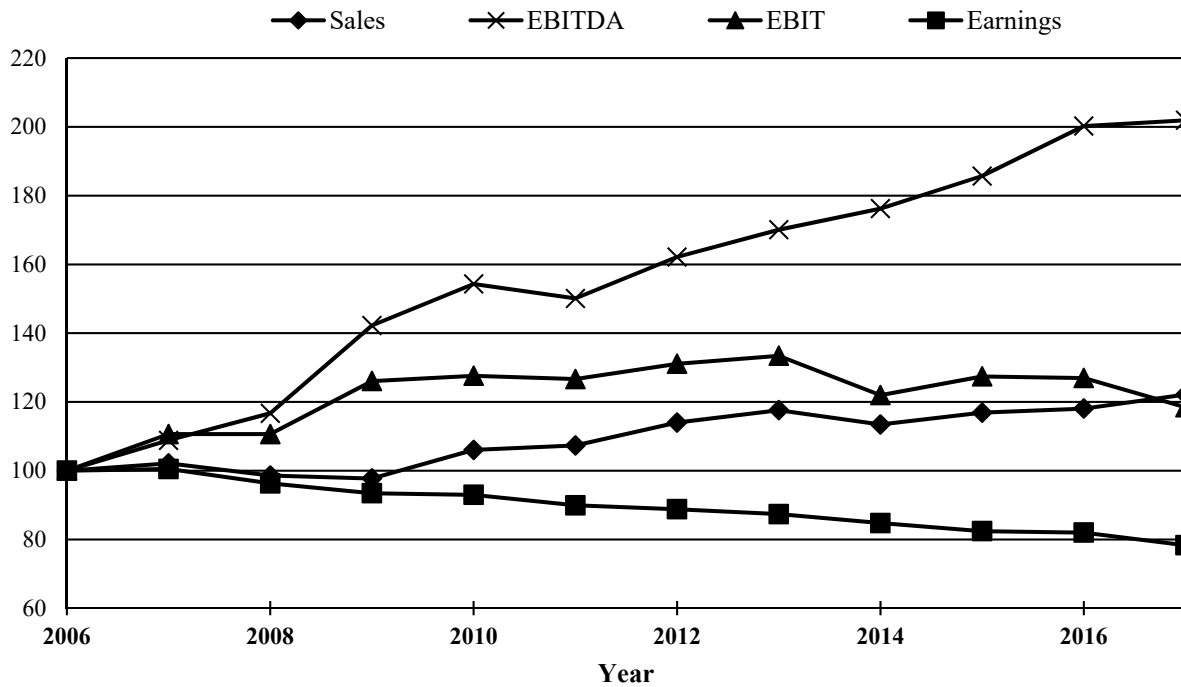
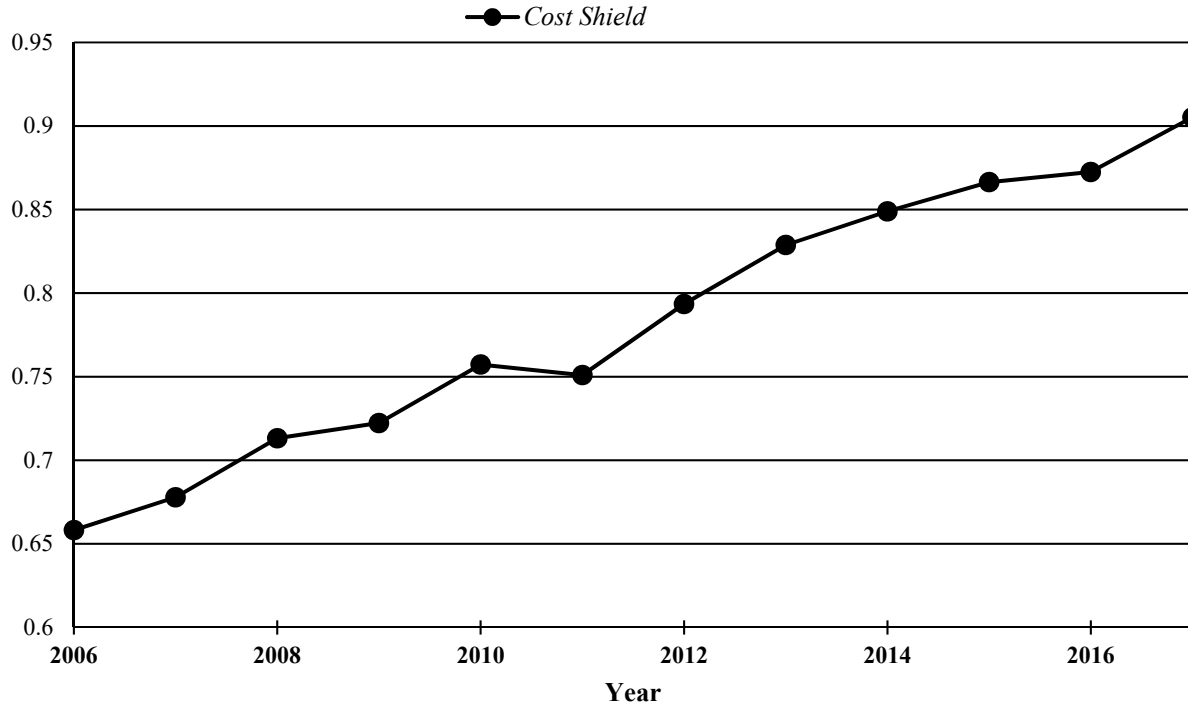


Figure 2. CEO Bonus Performance Measures over Time (cont'd)

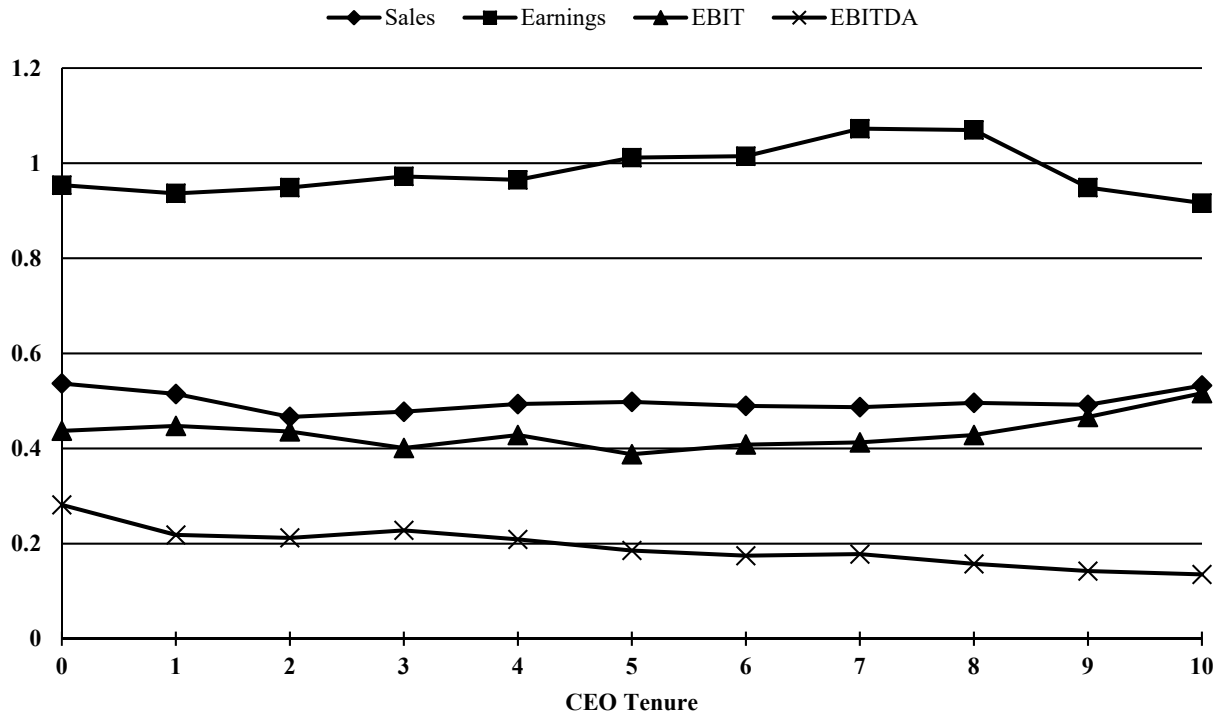
Panel C. Average Cost Shielding



Notes. This figure plots the average number of sales, EBITDA, EBIT, and net earnings performance measures used each year in CEO bonus plans. Panel A plots raw performance measures included in CEO bonus plans, and Panel B plots performance measures indexed relative to their 2006 average values. Panel C plots our aggregate *Cost Shield* measure, which is the firm-year average of a categorical variable that equals 0 if an earnings performance measure is used, 1 if an EBIT performance measure is used, 2 if an EBITDA performance measure is used, and 3 if a sales performance measure is used. Sample consists of 9,832 firm-years appearing on Incentive Lab from 2006 to 2017.

Figure 3. CEO Bonus Performance Measures over Tenure

Panel A. Raw Performance Measures



Panel B. Indexed Performance Measures

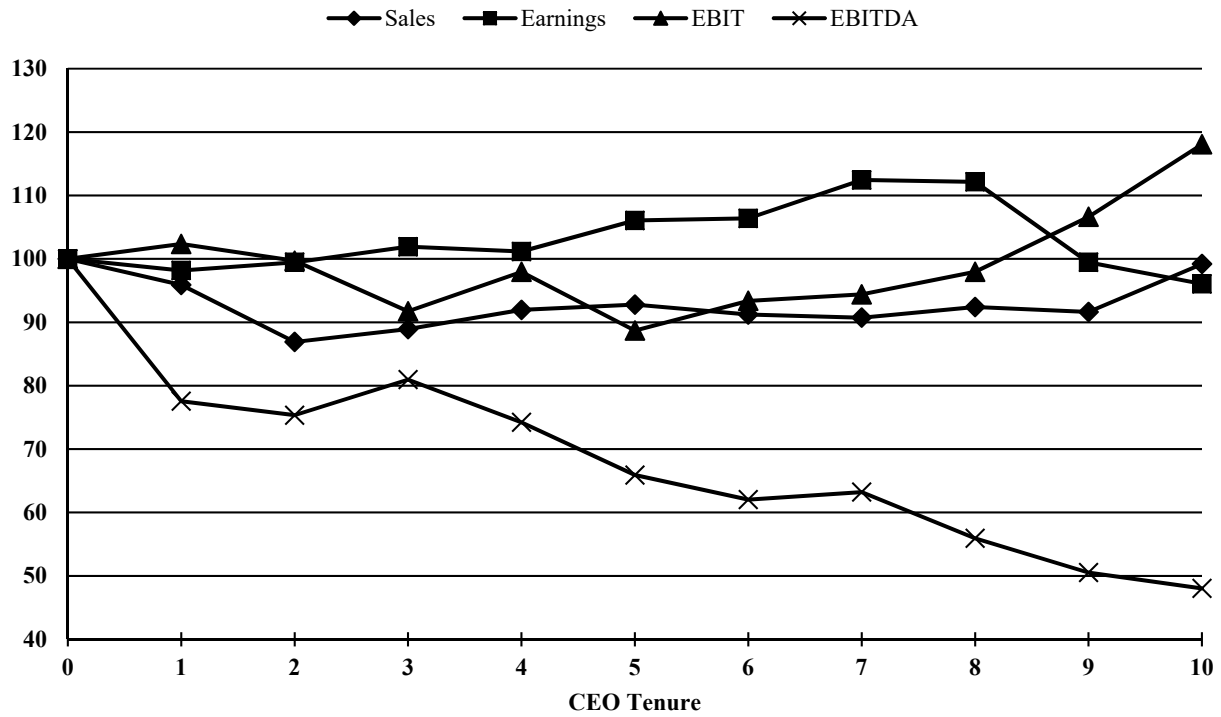
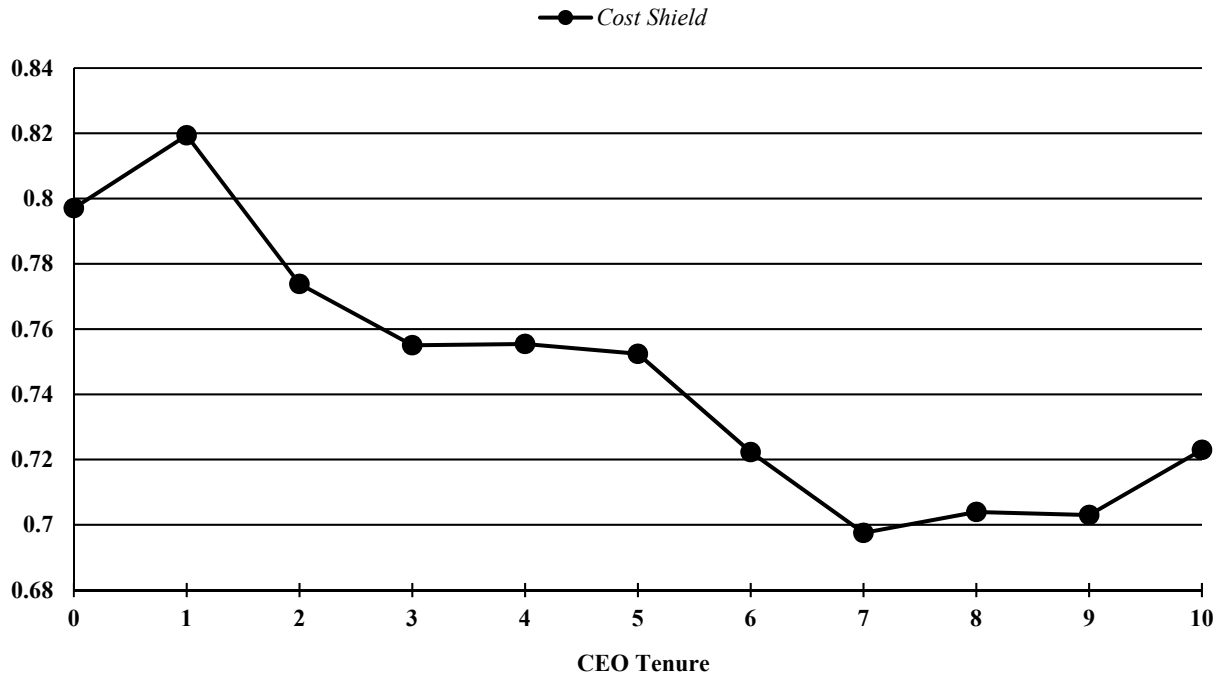


Figure 3. CEO Bonus Performance Measures over Tenure (cont'd)

Panel C. Average Cost Shielding



Notes. This figure plots the average number of sales, EBITDA, EBIT, and net earnings performance measures used in CEO bonus plans for each year of CEO tenure. Panel A plots raw performance measures included in CEO bonus plans, and Panel B plots performance measures indexed relative to their average values when CEO tenure equals zero. Panel C plots our aggregate *Cost Shield* measure, which is the firm-year average of a categorical variable that equals 0 if an earnings performance measure is used, 1 if an EBIT performance measure is used, 2 if an EBITDA performance measure is used, and 3 if a sales performance measure is used. Sample consists of 9,832 firm-years appearing on Incentive Lab from 2006 to 2017.

Table 1. Descriptive Statistics

Variable	N	Mean	Std. Dev.	25th	50th	75th
<u>CEO Bonus Plan Measures:</u>						
<i>Cost Shield</i>	8,009	0.73	0.73	0.00	0.67	1.25
<i># Sales Metrics</i>	8,009	0.50	0.80	0.00	0.00	1.00
<i># EBITDA Metrics</i>	8,009	0.18	0.50	0.00	0.00	0.00
<i># EBIT Metrics</i>	8,009	0.44	0.80	0.00	0.00	1.00
<i># EBT Metrics</i>	8,009	0.09	0.35	0.00	0.00	0.00
<i># Earnings Metrics</i>	8,009	1.01	1.18	0.00	1.00	1.00
<i>Total Income Statement Metrics</i>	8,009	2.27	1.68	1.00	2.00	3.00
<u>Controls:</u>						
<i>Book-to-Market</i>	8,009	0.47	0.37	0.24	0.40	0.64
<i>Market Capitalization</i>	8,009	13,824	25,885	2,426	5,037	13,005
<i>Idiosyncratic Volatility</i>	8,009	0.07	0.04	0.04	0.06	0.08
<i>Free Cash Flow</i>	8,009	0.09	0.07	0.04	0.08	0.13
<i>Delta</i>	8,009	878.06	1817.96	139.25	346.86	782.83
<i>CEO Tenure</i>	8,009	7.20	6.77	2.00	5.00	10.00
<u>Firm Characteristics:</u>						
<i>Depreciation Volatility</i>	8,009	0.01	0.02	0.00	0.00	0.00
<i>Interest Volatility</i>	7,600	0.01	0.01	0.00	0.00	0.01
<i>ETR Volatility</i>	8,009	0.41	1.03	0.03	0.10	0.29
<i>Earnings Volatility</i>	8,009	0.05	0.07	0.02	0.03	0.06
<i>Sales Growth</i>	8,005	0.05	0.17	-0.02	0.05	0.12
<i>R&D Investment</i>	8,009	0.02	0.04	0.00	0.00	0.02
<i>Advertising Investment</i>	8,009	0.01	0.02	0.00	0.00	0.01
<i>New Products</i>	6,546	0.23	0.23	0.00	0.18	0.39
<i>Firm Age</i>	6,546	29.69	12.56	19.00	30.00	42.00
<i>Fin. Expert</i>	6,579	0.21	0.14	0.11	0.20	0.33

Notes. This table presents the distribution of key variables used in our analysis. All variables are as defined in Appendix B. Sample period is 2006 – 2017.

Table 2. Correlation and Transition Matrix

Panel A. Correlation Matrix for Changes in CEO Performance Measures

Variable	Δ # Sales Metrics	Δ # EBITDA Metrics	Δ # EBIT Metrics	Δ # EBT Metrics	Δ # Earnings Metrics	Δ # Total Metrics
Δ # Sales Metrics	1.00
Δ # EBITDA Metrics	0.07*	1.00
Δ # EBIT Metrics	0.11*	-0.10*	1.00	.	.	.
Δ # EBT Metrics	0.05*	-0.04*	-0.10*	1.00	.	.
Δ # Earnings Metrics	0.15*	-0.04*	-0.12*	-0.03*	1.00	.
Δ Total Metrics	0.61*	0.27*	0.37*	0.15*	0.62*	1.00

Panel B. Transition Matrix

		Earnings-Based	
		Removed	Added
Sales	Removed	22.1	6.1
	Added	9.0	23.0
		Other Earnings-Based	
		Removed	Added
EBITDA	Removed	6.8	14.6
	Added	18.6	8.5
		Other Earnings-Based	
		Removed	Added
EBIT	Removed	7.1	20.5
	Added	22.5	6.5
		Other Earnings-Based	
		Removed	Added
EBT	Removed	8.9	24.5
	Added	26.5	8.0
		Other Earnings-Based	
		Removed	Added
Earnings	Removed	5.6	14.9
	Added	12.7	6.3

Notes. This table presents a correlation matrix and transition table for CEO bonus plan measures. Panel A presents pairwise correlations between changes in CEO bonus plan measures. Panel B presents a transition matrix for the changes in *earnings-based* CEO bonus plan measures that are removed or added to CEO compensation contracts simultaneously with sales, EBITDA, EBIT, EBT, and net earnings types of bonus plan performance measures, respectively, compared to all other types of bonus plan measures added or removed during the same year. All other variables are as described in Appendix B. Sample period is 2006 – 2017. In Panel A, * indicates statistical significance (two-sided) at the 5% level.

Table 3. Validation Test: Volatility and Bonus Plan Cost Shielding

<i>Panel A. Cost Volatility</i>					
Dependent Variable:	(1)	(2)	(3)	(4)	(5)
	<i>Cost Shield_t</i>	<i>Sales Metric_t</i>	<i>EBITDA Metric_t</i>	<i>EBIT Metric_t</i>	<i>Earnings Metric_t</i>
<i>Depreciation Volatility_{t-1}</i>	14.759*** (6.29)	8.854*** (6.53)	0.668 (0.62)	-3.034** (-2.50)	-4.473*** (-3.69)
<i>Interest Volatility_{t-1}</i>	6.317* (1.74)	-5.327** (-2.23)	12.149*** (6.09)	0.241 (0.12)	-4.309** (-2.06)
<i>ETR Volatility_{t-1}</i>	0.033* (1.85)	0.001 (0.10)	0.024*** (2.65)	0.017* (1.75)	0.013 (1.26)
<i>Book-to-Market_{t-1}</i>	-0.262*** (-5.68)	-0.194*** (-6.14)	0.014 (0.57)	0.002 (0.07)	0.071** (2.38)
<i>Ln(Market Capitalization_{t-1})</i>	-0.040** (-2.10)	0.006 (0.47)	-0.016** (-2.50)	-0.002 (-0.19)	0.010 (0.90)
<i>Idiosyncratic Volatility_{t-1}</i>	1.678*** (4.04)	-0.041 (-0.16)	0.809*** (4.04)	0.104 (0.45)	-1.253*** (-4.88)
<i>Free Cash Flow_{t-1}</i>	0.861*** (3.25)	0.455*** (2.93)	-0.100 (-0.85)	0.320** (2.28)	0.298* (1.88)
<i>Ln(Delta_{t-1})</i>	0.023 (1.49)	0.012 (1.26)	0.007 (1.06)	-0.001 (-0.09)	0.011 (1.18)
<i>Ln(CEO Tenure_t)</i>	-0.047*** (-2.63)	-0.018 (-1.50)	-0.019** (-2.47)	-0.011 (-1.01)	-0.019* (-1.68)
<i>Sales Metric_t</i>	.	.	0.013 (0.83)	0.090*** (4.18)	0.060*** (2.80)
<i>EBITDA Metric_t</i>	.	0.030 (0.83)	.	-0.424*** (-16.31)	-0.413*** (-12.10)
<i>EBIT Metric_t</i>	.	0.114*** (4.18)	-0.230*** (-13.30)	.	-0.401*** (-16.07)
<i>Earnings Metric_t</i>	.	0.071*** (2.79)	-0.209*** (-10.46)	-0.373*** (-15.68)	.
Fixed Effects	year	year	year	year	year
N	8,006	8,006	8,006	8,006	8,006
R ²	0.118	0.078	0.246	0.205	0.245

Table 3. Validation Test: Volatility and Bonus Plan Cost Shielding (cont'd)

<i>Panel B. Earnings Volatility</i>					
	(1)	(2)	(3)	(4)	(5)
Dependent Variable:	<i>Cost Shield_t</i>	<i>Sales Metric_t</i>	<i>EBITDA Metric_t</i>	<i>EBIT Metric_t</i>	<i>Earnings Metric_t</i>
<i>Earnings Volatility_{t-1}</i>	1.458*** (5.97)	0.745*** (4.59)	-0.028 (-0.24)	-0.301** (-2.21)	-0.723*** (-5.02)
<i>Book-to-Market_{t-1}</i>	-0.281*** (-6.08)	-0.173*** (-5.58)	-0.033 (-1.36)	-0.001 (-0.03)	0.079*** (2.64)
<i>Ln(Market Capitalization_{t-1})</i>	-0.047** (-2.44)	0.008 (0.64)	-0.027*** (-3.96)	-0.003 (-0.29)	0.010 (0.89)
<i>Idiosyncratic Volatility_{t-1}</i>	1.777*** (4.37)	-0.198 (-0.75)	1.221*** (5.72)	0.199 (0.85)	-1.084*** (-4.18)
<i>Free Cash Flow_{t-1}</i>	1.082*** (4.11)	0.622*** (3.96)	-0.099 (-0.86)	0.249* (1.79)	0.229 (1.47)
<i>Ln(Delta_{t-1})</i>	0.025 (1.59)	0.013 (1.35)	0.007 (1.05)	-0.001 (-0.12)	0.010 (1.09)
<i>Ln(CEO Tenure_t)</i>	-0.055*** (-3.06)	-0.020* (-1.66)	-0.024*** (-3.01)	-0.010 (-0.95)	-0.017 (-1.54)
<i>Sales Metric_t</i>	.	.	0.012 (0.73)	0.088*** (4.13)	0.062*** (2.90)
<i>EBITDA Metric_t</i>	.	0.026 (0.73)	.	-0.423*** (-16.76)	-0.430*** (-13.18)
<i>EBIT Metric_t</i>	.	0.113*** (4.13)	-0.241*** (-13.43)	.	-0.401*** (-16.00)
<i>Earnings Metric_t</i>	.	0.075*** (2.90)	-0.228*** (-10.94)	-0.374*** (-15.67)	.
Fixed Effects	year	year	year	year	year
N	8,006	8,006	8,006	8,006	8,006
R ²	0.103	0.069	0.208	0.203	0.247

Notes. This table presents results from regressions of CEO bonus plan performance measures on income statement cost and earnings volatilities. Panel A presents results for measures of cost volatilities. Panel B presents results for earnings volatility. Column (1) of each panel presents results using our aggregated categorical measure of cost shielding, and columns (2) through (5) present results using indicators for whether the CEO's bonus plan for the year includes (i) sales, (ii) earnings before interest, taxes, depreciation, and amortization, (iii) earnings before interest and taxes, or (iv) after-tax earnings as dependent variables, respectively, after including additional controls for indicators of other income-statement based bonus plan performance measure indicators. Each column includes untabulated year fixed effects. All variables are as defined in Appendix B. *t*-statistics appear in parentheses and are clustered by firm. *, **, *** indicate statistical significance (two-sided) at the 0.1, 0.05, and 0.01 levels, respectively. Sample period is 2006 – 2017.

Table 4. Investment Levels and Bonus Plan Cost Shielding

	(1)	(2)	(3)	(4)	(5)
Dependent Variable:	<i>Cost Shield_t</i>	<i>Sales Metric_t</i>	<i>EBITDA Metric_t</i>	<i>EBIT Metric_t</i>	<i>Earnings Metric_t</i>
<i>R&D Investment_{t-1}</i>	3.343*** (6.53)	3.035*** (9.49)	-1.333*** (-8.99)	0.177 (0.62)	-0.565** (-2.14)
<i>Advertising Investment_{t-1}</i>	3.410*** (4.79)	2.365*** (4.51)	-0.440 (-1.39)	0.647 (1.47)	-0.581 (-1.42)
<i>Book-to-Market_{t-1}</i>	-0.214*** (-4.36)	-0.104*** (-3.22)	-0.058** (-2.46)	0.013 (0.42)	0.078*** (2.58)
<i>Ln(Market Capitalization_{t-1})</i>	-0.048** (-2.56)	0.014 (1.07)	-0.030*** (-4.50)	0.000 (0.02)	0.013 (1.20)
<i>Idiosyncratic Volatility_{t-1}</i>	2.025*** (5.09)	-0.373 (-1.43)	1.390*** (6.99)	-0.033 (-0.14)	-1.382*** (-5.35)
<i>Free Cash Flow_{t-1}</i>	0.800*** (2.98)	0.356** (2.25)	0.007 (0.07)	0.183 (1.27)	0.220 (1.40)
<i>Ln(Delta_{t-1})</i>	0.018 (1.16)	0.009 (0.99)	0.006 (0.93)	-0.002 (-0.20)	0.012 (1.30)
<i>Ln(CEO Tenure_t)</i>	-0.050*** (-2.85)	-0.015 (-1.26)	-0.024*** (-3.03)	-0.008 (-0.75)	-0.017 (-1.55)
<i>Sales Metric_t</i>	.	.	0.041** (2.55)	0.078*** (3.49)	0.067*** (3.05)
<i>EBITDA Metric_t</i>	.	0.089** (2.56)	.	-0.419*** (-16.12)	-0.445*** (-13.43)
<i>EBIT Metric_t</i>	.	0.093*** (3.48)	-0.232*** (-13.35)	.	-0.397*** (-15.80)
<i>Earnings Metric_t</i>	.	0.075*** (3.03)	-0.228*** (-11.14)	-0.368*** (-15.41)	.
Fixed Effects	year	year	year	year	year
N	8,009	8,009	8,009	8,009	8,009
R ²	0.130	0.129	0.230	0.203	0.240

Notes. This table presents results from regressions of CEO bonus plan performance measures on measures of firm investment levels in research and development and advertising. Column (1) presents results using our aggregated categorical measure of cost shielding, and columns (2) through (5) present results using indicators for whether the CEO's bonus plan for the year includes (i) sales, (ii) earnings before interest, taxes, depreciation, and amortization, (iii) earnings before interest and taxes, or (iv) after-tax earnings as dependent variables, respectively, after including additional controls for indicators of other income-statement based bonus plan performance measure indicators. Each column includes untabulated year fixed effects. All variables are as defined in Appendix B. *t*-statistics appear in parentheses and are clustered by firm. *, **, *** indicate statistical significance (two-sided) at the 0.1, 0.05, and 0.01 levels, respectively. Sample period is 2006 – 2017.

Table 5. Growth Options and Bonus Plan Cost Shielding

	(1)	(2)	(3)	(4)	(5)
Dependent Variable:	<i>Cost Shield_t</i>	<i>Sales Metric_t</i>	<i>EBITDA Metric_t</i>	<i>EBIT Metric_t</i>	<i>Earnings Metric_t</i>
<i>Sales Growth_{t-1}</i>	0.164*** (2.67)	0.055 (1.43)	0.008 (0.26)	-0.118*** (-3.42)	-0.117*** (-2.97)
<i>Book-to-Market_{t-1}</i>	-0.309*** (-6.77)	-0.187*** (-6.04)	-0.032 (-1.32)	0.001 (0.03)	0.089*** (2.96)
<i>Ln(Market Capitalization_{t-1})</i>	-0.060*** (-3.14)	0.002 (0.17)	-0.027*** (-4.02)	-0.001 (-0.08)	0.015 (1.41)
<i>Idiosyncratic Volatility_{t-1}</i>	2.595*** (6.38)	0.206 (0.76)	1.196*** (5.81)	0.040 (0.17)	-1.489*** (-5.72)
<i>Free Cash Flow_{t-1}</i>	1.170*** (4.46)	0.681*** (4.35)	-0.109 (-0.95)	0.252* (1.80)	0.190 (1.21)
<i>Ln(Delta_{t-1})</i>	0.021 (1.35)	0.012 (1.21)	0.006 (1.00)	0.000 (0.03)	0.013 (1.32)
<i>Ln(CEO Tenure_t)</i>	-0.060*** (-3.38)	-0.023* (-1.87)	-0.024*** (-2.99)	-0.008 (-0.77)	-0.015 (-1.32)
<i>Sales Metric_t</i>	.	.	0.011 (0.70)	0.085*** (3.99)	0.053** (2.48)
<i>EBITDA Metric_t</i>	.	0.025 (0.70)	.	-0.424*** (-16.72)	-0.434*** (-13.18)
<i>EBIT Metric_t</i>	.	0.110*** (4.00)	-0.241*** (-13.47)	.	-0.402*** (-16.07)
<i>Earnings Metric_t</i>	.	0.064** (2.48)	-0.228*** (-10.99)	-0.372*** (-15.70)	.
Fixed Effects	year	year	year	year	year
N	8,005	8,005	8,005	8,005	8,005
R ²	0.088	0.059	0.209	0.204	0.240

Notes. This table presents results from regressions of CEO bonus plan performance measures on measures of growth options. Column (1) presents results using our aggregated categorical measure of cost shielding, and columns (2) through (5) present results using indicators for whether the CEO's bonus plan for the year includes (i) sales, (ii) earnings before interest, taxes, depreciation, and amortization, (iii) earnings before interest and taxes, or (iv) after-tax earnings as dependent variables, respectively, after including additional controls for indicators of other income-statement based bonus plan performance measure indicators. Each column includes untabulated year fixed effects. All variables are as defined in Appendix B. *t*-statistics appear in parentheses and are clustered by firm. *, **, *** indicate statistical significance (two-sided) at the 0.1, 0.05, and 0.01 levels, respectively. Sample period is 2006 – 2017.

Table 6. Product Age, Firm Age, and Bonus Plan Cost Shielding

	(1)	(2)	(3)	(4)	(5)
Dependent Variable:	<i>Cost Shield_t</i>	<i>Sales Metric_t</i>	<i>EBITDA Metric_t</i>	<i>EBIT Metric_t</i>	<i>Earnings Metric_t</i>
<i>New Products_t</i>	0.173*** (3.84)	0.132*** (4.43)	0.041** (1.97)	0.008 (0.28)	0.047 (1.55)
<i>Ln(Firm Age_t)</i>	-0.238*** (-6.29)	-0.108*** (-4.13)	-0.029* (-1.71)	-0.033 (-1.34)	0.079*** (3.31)
<i>Book-to-Market_{t-1}</i>	-0.344*** (-6.95)	-0.197*** (-5.70)	-0.051* (-1.94)	0.001 (0.04)	0.102*** (2.94)
<i>Ln(Market Capitalization_{t-1})</i>	-0.046** (-2.24)	0.013 (0.93)	-0.029*** (-4.12)	-0.001 (-0.09)	0.011 (0.91)
<i>Idiosyncratic Volatility_{t-1}</i>	1.944*** (4.13)	0.007 (0.02)	0.985*** (4.21)	-0.267 (-0.99)	-1.506*** (-5.04)
<i>Free Cash Flow_{t-1}</i>	1.059*** (3.75)	0.645*** (3.75)	-0.146 (-1.20)	0.141 (0.91)	0.159 (0.92)
<i>Ln(Delta_{t-1})</i>	0.008 (0.49)	0.004 (0.37)	0.006 (0.82)	0.003 (0.26)	0.016 (1.56)
<i>Ln(CEO Tenure_t)</i>	-0.047** (-2.45)	-0.016 (-1.19)	-0.021** (-2.47)	-0.014 (-1.24)	-0.022* (-1.89)
<i>Sales Metric_t</i>	.	.	0.014 (0.85)	0.080*** (3.28)	0.056** (2.32)
<i>EBITDA Metric_t</i>	.	0.035 (0.85)	.	-0.414*** (-13.68)	-0.408*** (-10.70)
<i>EBIT Metric_t</i>	.	0.099*** (3.29)	-0.212*** (-11.07)	.	-0.394*** (-14.42)
<i>Earnings Metric_t</i>	.	0.066** (2.32)	-0.199*** (-9.11)	-0.375*** (-14.05)	.
Fixed Effects	year	year	year	year	year
N	6,498	6,498	6,498	6,498	6,498
R ²	0.121	0.076	0.191	0.198	0.243

Notes. This table presents results from regressions of CEO bonus plan performance measures on measures of firm and product age. Column (1) presents results using our aggregated categorical measure of cost shielding, and columns (2) through (5) present results using indicators for whether the CEO's bonus plan for the year includes (i) sales, (ii) earnings before interest, taxes, depreciation, and amortization, (iii) earnings before interest and taxes, or (iv) after-tax earnings as dependent variables, respectively, after including additional controls for indicators of other income-statement based bonus plan performance measure indicators. Each column includes untabulated year fixed effects. All variables are as defined in Appendix B. *t*-statistics appear in parentheses and are clustered by firm. *, **, *** indicate statistical significance (two-sided) at the 0.1, 0.05, and 0.01 levels, respectively. Sample period is 2006 – 2017.

Table 7. CEO Tenure and Bonus Plan Cost Shielding

<i>Panel A. Tenure Indicators</i>					
Dependent Variable:	(1)	(2)	(3)	(4)	(5)
	<i>Cost Shield_t</i>	<i>Sales Metric_t</i>	<i>EBITDA Metric_t</i>	<i>EBIT Metric_t</i>	<i>Earnings Metric_t</i>
<i>CEO Tenure Years 0-2_t</i>	0.132*** (3.34)	0.054** (2.02)	0.052*** (2.93)	0.026 (1.10)	0.045* (1.80)
<i>CEO Tenure Years 3-5_t</i>	0.102*** (2.63)	0.044* (1.66)	0.045*** (2.61)	0.012 (0.55)	0.040 (1.64)
<i>CEO Tenure Years 6-8_t</i>	0.062* (1.86)	0.032 (1.36)	0.021 (1.39)	-0.015 (-0.70)	0.016 (0.72)
<i>Book-to-Market_{t-1}</i>	-0.313*** (-6.88)	-0.188*** (-6.10)	-0.032 (-1.31)	0.004 (0.14)	0.093*** (3.10)
<i>Ln(Market Capitalization_{t-1})</i>	-0.059*** (-3.09)	0.002 (0.13)	-0.027*** (-3.97)	-0.001 (-0.13)	0.014 (1.27)
<i>Idiosyncratic Volatility_{t-1}</i>	2.637*** (6.45)	0.215 (0.79)	1.204*** (5.85)	0.024 (0.10)	-1.509*** (-5.78)
<i>Free Cash Flow_{t-1}</i>	1.235*** (4.70)	0.703*** (4.48)	-0.099 (-0.86)	0.219 (1.58)	0.160 (1.02)
<i>Ln(Delta_{t-1})</i>	0.025 (1.53)	0.014 (1.36)	0.008 (1.16)	0.000 (0.04)	0.014 (1.46)
<i>Sales Metric_t</i>	.	.	0.011 (0.69)	0.084*** (3.96)	0.052** (2.43)
<i>EBITDA Metric_t</i>	.	0.025 (0.69)	.	-0.424*** (-16.70)	-0.435*** (-13.14)
<i>EBIT Metric_t</i>	.	0.109*** (3.97)	-0.241*** (-13.43)	.	-0.400*** (-15.96)
<i>Earnings Metric_t</i>	.	0.063** (2.43)	-0.228*** (-10.96)	-0.370*** (-15.60)	.
Fixed Effects	year	year	year	year	year
N	8,009	8,009	8,009	8,009	8,009
R ²	0.087	0.059	0.208	0.202	0.239

Table 7. CEO Tenure and Bonus Plan Cost Shielding (cont'd)*Panel B. Internal versus External Hires*

	(1)	(2)
Sample Restriction:	<i>External Hire_t = 0</i>	<i>External Hire_t = 1</i>
Dependent Variable:	<i>Cost Shield_t</i>	<i>Cost Shield_t</i>
<i>CEO Tenure Years 0-2_t</i>	0.089** (2.14)	0.319*** (2.79)
<i>CEO Tenure Years 3-5_t</i>	0.075* (1.83)	0.230** (2.29)
<i>CEO Tenure Years 6-8_t</i>	0.052 (1.44)	0.124 (1.40)
<i>Book-to-Market_{t-1}</i>	-0.333*** (-6.62)	-0.173* (-1.87)
<i>Ln(Market Capitalization_{t-1})</i>	-0.056*** (-2.76)	-0.062 (-1.49)
<i>Idiosyncratic Volatility_{t-1}</i>	2.410*** (5.37)	3.141*** (3.79)
<i>Free Cash Flow_{t-1}</i>	1.154*** (4.09)	1.875*** (3.39)
<i>Ln(Delta_{t-1})</i>	0.025 (1.42)	0.060* (1.68)
Fixed Effects	year	year
N	6,949	1,060
R ²	0.082	0.126

Notes. This table presents results from regressions of CEO bonus plan performance measures on measures of CEO tenure. In Panel A, column (1) presents results using our aggregated categorical measure of cost shielding, and columns (2) through (5) present results using indicators for whether the CEO's bonus plan for the year includes (i) sales, (ii) earnings before interest, taxes, depreciation, and amortization, (iii) earnings before interest and taxes, or (iv) after-tax earnings as dependent variables, respectively, after including additional controls for indicators of other income-statement based bonus plan performance measure indicators. Panel B presents results for separate regressions conditional on whether the firm's current CEO was internally promoted or externally hired in columns (1) and (2), respectively. Each column includes untabulated year fixed effects. All variables are as defined in Appendix B. *t*-statistics appear in parentheses and are clustered by firm. *, **, *** indicate statistical significance (two-sided) at the 0.1, 0.05, and 0.01 levels, respectively. Sample period is 2006 – 2017.

**Table 8. Within-Firm Shocks to Contracting Value:
CEO Turnovers due to Health/Death or Early Forced Out**

<i>Panel A. Descriptive Statistics</i>						
Variable	N	Mean	Std. Dev.	25th	50th	75th
<i>CEO Health/Death Turnover</i>	8,009	0.002	0.050	0.000	0.000	0.000
<i>Early Forced CEO Turnover</i>	8,009	0.017	0.129	0.000	0.000	0.000
Conditional on <i>CEO Turnover</i> = 1						
<i>CEO Health/Death Turnover</i>	716	0.028	0.165	0.000	0.000	0.000
<i>Early Forced CEO Turnover</i>	716	0.166	0.373	0.000	0.000	0.000

<i>Panel B. Generalized Difference-in-Differences</i>		
	(1)	(2)
Dependent Variable:	<i>Cost Shield_t</i>	<i>Cost Shield_t</i>
<i>CEO Health/Death Turnover_{t-1}</i>	0.119** (2.21)	· ·
<i>Early Forced CEO Turnover_{t-1}</i>	· ·	0.115** (2.13)
<i>Book-to-Market_{t-1}</i>	-0.102*** (-2.66)	-0.104*** (-2.72)
<i>Ln(Market Capitalization_{t-1})</i>	-0.050** (-2.11)	-0.049** (-2.05)
<i>Idiosyncratic Volatility_{t-1}</i>	0.188 (0.87)	0.192 (0.89)
<i>Free Cash Flow_{t-1}</i>	-0.064 (-0.42)	-0.055 (-0.36)
<i>Ln(Delta_{t-1})</i>	-0.009 (-0.85)	-0.009 (-0.89)
<i>Ln(CEO Tenure_t)</i>	-0.002 (-0.20)	0.000 (0.05)
Fixed Effects	firm, year	firm, year
N	8,009	8,009
R ²	0.770	0.770

Notes. This table presents results from regressions of CEO bonus plan performance measures on within-firm shocks to executive turnover, using our hand-collected sample of CEO turnovers due to death or health reasons as well as data on forced turnovers as defined in Peters and Wagner (2014) and Jenter and Kanaan (2015). Panel A presents descriptive statistics. Panel B presents results using our categorical measure of the degree of cost shielding in the CEO's bonus plan. Each column includes untabulated firm and year fixed effects. All variables are as defined in Appendix B. *t*-statistics appear in parentheses and are clustered by firm. *, **, *** indicate statistical significance (two-sided) at the 0.1, 0.05, and 0.01 levels, respectively. Sample period is 2006 – 2017.

Table 9. Moderating Role of Board Financial Expertise

<i>Panel A. Cost Volatility</i>		
Sample Restriction: Dependent Variable:	(1) Low <i>Fin. Expert_t</i> <i>Cost Shield_t</i>	(2) High <i>Fin. Expert_t</i> <i>Cost Shield_t</i>
<i>Depreciation Volatility_{t-1}</i>	12.633*** (3.68)	19.379*** (4.17)
<i>Interest Volatility_{t-1}</i>	6.109 (1.11)	12.824** (2.02)
<i>ETR Volatility_{t-1}</i>	0.026 (0.80)	0.056** (2.35)
Controls / Year Fixed Effects	yes / yes	yes / yes
N	3,162	3,415
R ²	0.116	0.115
<i>Panel B. Earnings Volatility</i>		
Sample Restriction: Dependent Variable:	(1) Low <i>Fin. Expert_t</i> <i>Cost Shield_t</i>	(2) High <i>Fin. Expert_t</i> <i>Cost Shield_t</i>
<i>Earnings Volatility_{t-1}</i>	1.920*** (4.97)	1.862*** (4.22)
Controls / Year Fixed Effects	yes / yes	yes / yes
N	3,162	3,415
R ²	0.118	0.090
<i>Panel C. Investment Levels</i>		
Sample Restriction: Dependent Variable:	(1) Low <i>Fin. Expert_t</i> <i>Cost Shield_t</i>	(2) High <i>Fin. Expert_t</i> <i>Cost Shield_t</i>
<i>R&D Investment_{t-1}</i>	3.348*** (4.64)	4.490*** (6.42)
<i>Advertising Investment_{t-1}</i>	3.498*** (3.83)	3.604*** (4.12)
Controls / Year Fixed Effects	yes / yes	yes / yes
N	3,163	3,416
R ²	0.138	0.137

Table 9. Moderating Role of Board Financial Expertise (cont'd)

<i>Panel D. Growth Options</i>		
	(1)	(2)
Sample Restriction:	Low <i>Fin. Expert_t</i>	High <i>Fin. Expert_t</i>
Dependent Variable:	<i>Cost Shield_t</i>	<i>Cost Shield_t</i>
<i>Sales Growth_{t-1}</i>	0.124 (1.29)	0.145 (1.57)
<i>Book-to-Market_{t-1}</i>	-0.399*** (-5.31)	-0.291*** (-3.79)
Controls / Year Fixed Effects	yes / yes	yes / yes
N	3,163	3,416
R ²	0.092	0.075
<i>Panel E. Product and Firm Age</i>		
	(1)	(2)
Sample Restriction:	Low <i>Fin. Expert_t</i>	High <i>Fin. Expert_t</i>
Dependent Variable:	<i>Cost Shield_t</i>	<i>Cost Shield_t</i>
<i>New Products_t</i>	0.236*** (3.40)	0.096 (1.43)
<i>Ln(Firm Age_t)</i>	-0.222*** (-4.46)	-0.268*** (-4.59)
Controls / Year Fixed Effects	yes / yes	yes / yes
N	2,687	2,798
R ²	0.125	0.117
<i>Panel F. CEO Tenure</i>		
	(1)	(2)
Sample Restriction:	Low <i>Fin. Expert_t</i>	High <i>Fin. Expert_t</i>
Dependent Variable:	<i>Cost Shield_t</i>	<i>Cost Shield_t</i>
<i>CEO Tenure Years 0-2_t</i>	0.048 (0.86)	0.153*** (2.63)
<i>CEO Tenure Years 3-5_t</i>	0.018 (0.32)	0.087 (1.53)
<i>CEO Tenure Years 6-8_t</i>	0.020 (0.41)	0.055 (1.10)
Controls / Year Fixed Effects	yes / yes	yes / yes
N	3,163	3,416
R ²	0.091	0.075

Notes. This table repeats each of our primary analyses in Tables 3 through 7 after estimating separate regressions conditional on whether the firm has above versus below our sample median proportion of financial experts on the board during the year in columns (1) and (2), respectively. Each column includes untabulated year fixed effects. All

variables are as defined in Appendix B. For parsimony, we do not tabulate coefficients on control variables. t -statistics appear in parentheses and are clustered by firm. *, **, *** indicate statistical significance (two-sided) at the 0.1, 0.05, and 0.01 levels, respectively.