

## THE INFLUENCE OF LEAD INDICATOR STRENGTH ON THE USE OF NONFINANCIAL MEASURES IN PERFORMANCE MANAGEMENT: EVIDENCE FROM CEO COMPENSATION SCHEMES

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*Nonfinancial measures (NFM)s are a common feature of strategic performance management frameworks. We examine the role of one widely used NFM: customer satisfaction, in one aspect of strategic performance management: CEO compensation schemes. Drawing on agency theory precepts, we hypothesize that the extent to which firms link CEO compensation to customer satisfaction is influenced by satisfaction's ability to act as a leading indicator of future profitability (lead indicator strength). We further hypothesize that the extent to which customer satisfaction's lead indicator strength influences the weighting of satisfaction in CEO compensation schemes has a positive influence on future shareholder value. Our empirical results offer strong support for both hypotheses and extend research on the use and efficacy of NFMs in CEO compensation schemes. Copyright © 2013 John Wiley & Sons, Ltd.*

Nonfinancial measures (NFMs), such as indicators of customer satisfaction, product quality, and innovation feature prominently in strategic performance management frameworks. Notable examples include the 'balanced scorecard' (e.g., Kaplan and Norton, 1992, 2001, 2008), 'performance dashboard' (Eckerson, 2006), 'value chain scoreboard' (Lev, 2001), 'performance prism' (Neely, Adams, and Kennerley, 2002), and contemporary CEO compensation schemes (Maltz, Shenhar, and Reilly, 2003). The principal argument for including NFMs in such settings is that, as leading indicators, NFMs enable a

higher level of performance management than can be achieved by relying exclusively on current financial measures (e.g., Goold and Quinn, 1990; Neely and Al Najjar, 2006; Niven, 2002; Truss, 2001). Consistent with this argument, numerous studies indicate that NFMs can act as leading indicators of future financial performance (e.g., Ittner and Larcker, 1998; Nagar and Rajan, 2005; Roth and Jackson, 1995).

However, significant concerns persist over the role of NFMs in strategic performance management frameworks. Three issues in particular—*motivation*, *ability*, and *effect on long-term firm value*—are central to the debate on the role of NFMs. Each of these issues comes into focus in the context of CEO compensation schemes—the central concern of this study. First, among researchers adopting an agency perspective, the commonly cited *motivation* for tying CEO compensation to measures of firm

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performance is that doing so enhances long-term firm value (Beatty and Zajac, 1994; Jensen and Meckling, 1976). Yet, few studies have tested agency-based motivations for compensation role of NFMs. This gap in the literature is striking—not only as it sits in stark contrast to the extensive studies on agency-based motivations for the role of financial measures, but also as other interpretations for the role of NFMs have received considerable attention. The design of CEO compensation schemes is, for example, subject to institutional pressures for legitimacy (Westphal and Graebner, 2010; Westphal and Zajac, 1994, 1998; Zajac and Westphal, 1995) that may motivate firms to adopt NFMs as a symbolic action (Berrone and Gomez-Mejia, 2009). Similarly, the use of NFMs may reflect a desire on the part of compensation committees to use popular management practices (such as the pursuit of customer satisfaction) as a heuristic for managerial effectiveness (Nisbett and Ross, 1980). As Staw and Epstein (2000) argue, CEOs may be rewarded for pursuing such practices regardless of their economic consequences. Also, doubts have been raised over whether the inclusion of NFMs in CEO compensation schemes is in shareholders' best interests. For example, Bebchuk and colleagues (e.g., Bebchuk and Fried, 2003, 2004; Bebchuk, Fried, and Walker, 2002) contend that CEOs exercise their power over the board to 'camouflage' pay–performance sensitivity by introducing NFMs into the compensation scheme.<sup>1</sup> The argument that NFMs are included in compensation schemes to camouflage the pay–performance relationship also features regularly in the business press (e.g., *New York Times* (Morgenson, 2004); *Business Week Online* (Grow and Javers, 2006); *Financial Times* (Johnson, 2011)).<sup>2</sup>

Second, scholars doubt that firms have the *ability* to assess their performance accurately on nonfinancial criteria (Ittner and Larcker, 2003).

In addition, NFMs are not necessarily leading indicators of future financial performance in all situations, and the capacity of such measures to act as leading indicators of financial performance varies (Banker *et al.*, 1996; Kaplan and Norton, 1992). Academics and practitioners question whether firms are capable of weighting NFMs in accordance with their forward-looking properties (e.g., Deloitte and Economist Intelligence Unit, 2007; Johnson-Cramer, Cross, and Aimin, 2003; Tayler, 2010). This is a critical issue—for the role of NFMs in executive compensation and, more generally, in strategic performance management frameworks. Tying compensation to an NFM that is not a leading indicator, may give rise to distorted incentives, resulting in an increase in performance on the measure but an erosion of long-term profitability (Baker, 2000; Bouwens and Van Lent, 2006; Kerr, 1975).

Third, even if NFMs are accurately measured and weighted in a compensation scheme, the scheme may not have a positive *effect on long-term firm value* (i.e., Jensen, 2001; Levinthal, 2011). As Levinthal (2011) notes, the 'substantial cottage industry' that has developed around the balanced scorecard and related frameworks simply assumes that CEOs can make the complex compensatory trade-offs between a wide array of measures. Expressing a similar reservation, Jensen (2001) argues that tying compensation to multiple measures of performance can distract, constrain, and confuse executives. Therefore, it is important for researchers to address the impact on long-term firm value—in particular, the efficacy, from a shareholder perspective, of using NFMs in CEO compensation schemes.

The aim of our study is to develop and test predictions emerging from agency theory regarding the use and efficacy of NFMs in CEO compensation schemes. To begin, we develop arguments on the use of NFMs in CEO compensation; next, we theorize on the efficacy of this practice. Building on the agency-based principles of informativeness and interest alignment, we argue that the forward-looking properties of NFMs have an important—albeit under-researched—influence on the compensation role of NFMs. We introduce the concept of lead indicator strength to capture the forward-looking properties of an NFM. The lead indicator strength of an NFM is a measure of the association between current realizations

<sup>1</sup> Bebchuk and colleagues argue that, as a means of obfuscating the pay–performance relationship, executives may look to have measures that are not readily verifiable by external stakeholders included in their compensation plans.

<sup>2</sup> For example, as *Business Week Online* (Grow and Javers, 2006) note, with the enactment of Section 162(m) of the Internal Revenue Code, performance-based pay became subject to lower levels of tax than base pay. Hence, by purportedly linking CEO compensation to NFMs, the 'performance-based' element is maximized with the attendant taxation benefits flowing directly to the CEO.

of the NFM and future profitability. We focus on one widely used NFM: customer satisfaction. Consistent with the principles of informativeness and interest alignment, we hypothesize that the extent to which firms link CEO compensation to customer satisfaction is influenced by satisfaction's lead indicator strength. In addition, we hypothesize that the extent to which customer satisfaction's lead indicator strength influences the weighting of satisfaction in CEO compensation schemes has a positive influence on growth in future shareholder value.<sup>3</sup>

Our work makes several substantive contributions to research on the use and efficacy of NFMs in CEO compensation schemes and within strategic performance management frameworks. We extend research on the motivation for including NFMs in CEO compensation schemes by showing that the weight placed on NFMs in determining compensation is consistent with predictions from agency theory. Our findings on the influence of customer satisfaction's lead indicator strength also demonstrate that firms have the ability to capture and weight satisfaction in a manner consistent with satisfaction's forward-looking properties. Thus, it would appear that the competency with which firms incorporate NFMs in strategic performance management frameworks is greater than previously suggested. In addition, we contribute to the debate on whether contemporary strategic performance management frameworks—which integrate financial and nonfinancial performance criteria—have a positive effect on firm performance. We find that the extent to which customer satisfaction's lead indicator strength influences the weighting of satisfaction in CEO compensation schemes has a positive influence on growth in future shareholder value. Overall, our work establishes the importance of lead indicator strength in explaining the use and efficacy of NFMs in strategic performance management frameworks.

<sup>3</sup> Because of data limitations common to this area of research—in particular, the lack of adequate compensation disclosures—our study explores the implicit role of NFMs in the context of CEO compensation schemes. In common with other compensation studies (e.g., Berrone and Gomez-Mejia, 2009; Makri *et al.*, 2006), we draw inferences about firms' compensation practices using proxies for both customer satisfaction and lead indicator strength. We elaborate on our empirical strategy and our choice of proxies later in the paper.

## THEORETICAL FRAMEWORK AND HYPOTHESES

Drawing on an agency-based rationale, we form the expectation that the extent to which firms link CEO compensation to customer satisfaction is influenced by satisfaction's lead indicator strength. We also expect that the extent to which customer satisfaction's lead indicator strength influences the weighting of customer satisfaction in CEO compensation schemes has a positive influence on growth in future shareholder value. In the following sections we develop the logic underpinning both of our expectations.

To date, research on the performance measures used to determine CEO compensation has focused largely on financial indicators such as earnings and stock price (Devers *et al.*, 2007). However, financial indicators have deficiencies as contracting devices. A major problem is that relying exclusively on accounting numbers may lead to an overemphasis on short-term outcomes at the expense of long-term value creation (Kaplan and Norton, 1992). While the inclusion of stock price in compensation schemes mitigates some of the limitations associated with the use of accounting data, price is also an imperfect signal of managerial performance (O'Connor *et al.*, 2006). In particular, stock price is—to a greater degree than accounting numbers—subject to factors beyond executive control (Feltham and Xie, 1994). In addition, due to information asymmetry between shareholders and managers, stock price may not fully offset the potential for short-termism that arises from an exclusive reliance on earnings as a performance indicator (Kacperczyk, 2009; Lai, Debo, and Nan, 2011; Stein, 1989).

Tying executive compensation to leading indicator NFMs is a widely recognized means of mitigating the limitations of evaluating performance using financial measures alone (Feltham and Xie, 1994; Hauser, Simester, and Wernerfelt, 1994; Hemmer, 1996; Matějka, Merchant, and Van der Stede, 2010). Previous strategic management research demonstrates a relationship between NFMs and CEO compensation (e.g., Berrone and Gomez-Mejia, 2009; Makri, Lane, and Gomez-Mejia, 2006). A common theme in these studies is that tying compensation to NFMs allows firms to reward nonfinancial dimensions of current performance that can lead to enhanced firm value in the future. Makri *et al.* (2006) highlight the

beneficial effect of tying compensation to NFMs of innovation quality in technology-intensive firms. They show that linking CEO compensation to measures of invention resonance and science harvesting—activities that can have long-term pay-offs for the firm—enhances the board's assessment of whether the CEO is acting in the best interests of shareholders. In a study of polluting industries, Berrone and Gomez-Mejia (2009) show that CEO compensation is tied to NFMs of 'good' environmental performance (i.e., environmental practices that have the potential to improve future firm performance).

While NFMs may act as leading indicators in some settings, the forward-looking properties of NFMs are likely to vary. We believe that the lead indicator strength of NFMs has an important influence on the role of NFMs in CEO compensation. From an agency perspective, tying CEO compensation to NFMs is beneficial if it improves the informativeness of performance assessment. Informativeness refers to a measure's ability to provide incremental information with regard to the CEOs current efforts on behalf of shareholders (Holmström, 1979). While financial measures can capture the current pay-offs from managerial effort, such measures are poorly equipped to reflect long-term benefits (Baysinger and Hoskisson, 1990; Mizik and Jacobson, 2007). To the extent that NFMs are leading indicators, they can enhance the informativeness of performance assessment by capturing longer-term pay-offs of managerial effort (Hemmer, 1996). This argument is a common feature of both compensation theory and practice. As Banker and Mashruwala (2007) note, the principal motivation cited for the role of NFMs in performance evaluation is that, as lead indicators of future financial performance, NFMs enable a more complete evaluation of performance than can be achieved by relying exclusively on current financial measures. A measure's capacity to act as a leading indicator improves its informativeness with respect to managerial effort and should be reflected in heavier compensation weighting of the measure (Hauser *et al.*, 1994; Lambert, 2001).

Compensating CEOs based on leading indicator NFMs also helps to align the CEO's interests with those of the firm's owners (Dutta and Reichelstein, 2005; Makri *et al.*, 2006). However, here again, the usefulness of NFMs is contingent on the forward-looking properties of such measures. The usefulness of an NFM in creating goal congruence

between the CEO and the firm's owners is contingent on its capacity to act as a leading indicator of financial performance (Ittner, Larcker, and Meyer, 2003a). As previously discussed, tying compensation to an NFM independent of the measure's capacity to act as a leading indicator, can create distorted incentives and erode firm performance (Baker, 2000; Bouwens and Van Lent, 2006; Hauser *et al.*, 1994; Kerr, 1975).

### **The influence of lead indicator strength on the link between CEO compensation and customer satisfaction**

Customer satisfaction is the NFM that firms most frequently refer to in their proxy statements (Chen, Matsumura, and Shin, 2012; Murphy, 1999). Studies in marketing and accounting demonstrate that customer satisfaction influences the compensation paid to CEOs (Chen, Matsumura, and Shin, 2008; O'Connell and O'Sullivan, 2011).<sup>4</sup> Similar to other NFMs, research on the compensation role of customer satisfaction builds on the argument that satisfaction can act as a leading indicator. To the extent that customer satisfaction is a leading indicator, tying compensation to satisfaction can provide (1) an informative measure of executive effort (e.g., Hauser *et al.*, 1994), and (2) incentives that help refocus managerial attention beyond short-term performance and toward longer-term outcomes (e.g., Feltham and Xie, 1994).

The influence of customer satisfaction on CEO compensation is consistent with several studies that show that current satisfaction can act as a leading indicator of future financial performance (Banker, Potter, and Srinivasan, 2000; Ittner and Larcker, 1998).<sup>5</sup> However, while customer satisfaction can act as a leading indicator,

<sup>4</sup> Chen *et al.* (2008) and O'Connell and O'Sullivan (2011) each draw on ACSI data to examine the compensation role of customer satisfaction. Chen *et al.* (2008) find that customer satisfaction is more closely related to CEO cash compensation when industry competition increases. O'Connell and O'Sullivan (2011) find that a relative measure of customer satisfaction—one that is adjusted for the firm's performance relative to peers—is a significant predictor of CEO cash compensation.

<sup>5</sup> In turn, these studies correspond with research in marketing that establishes that customer satisfaction can be an important driver of future firm outcomes. Customer satisfaction can, for example, lead to customer retention and increased transactions (Bolton and Lemon, 1999), a greater willingness to purchase additional services (Bolton, Lemon, and Verhoef, 2004; Zeithaml, Berry, and Parasuraman, 1996), as well as lower price elasticity and transaction costs (Anderson, Fornell, and Lehmann, 1994).



satisfaction's lead indicator strength varies. In particular, the payoffs from customer satisfaction vary—in both sign and magnitude (Anderson and Mittal, 2000; Ittner and Larcker, 1998). Firms have to undertake potentially costly initiatives to improve customer satisfaction (Anderson and Mittal, 2000), and increases in satisfaction are not equally rewarding to all firms (Gruca and Rego, 2005; Mittal *et al.*, 2005). Mittal *et al.* (2005), for example, show that where customer satisfaction is pursued at the expense of the cost-reduction strategies necessary to sustain long-term performance, increasing satisfaction negatively impacts future profitability. Also, increasing customer satisfaction can erode profitability in industries where customers exhibit low switching costs (Gruca and Rego, 2005).

As the informativeness of customer satisfaction is premised on satisfaction's ability to act as a leading indicator (Hauser *et al.*, 1994), we expect that the weight placed on satisfaction will be sensitive to its association with future financial performance—i.e., the measure's lead indicator strength (Paul, 1992). Similarly, customer satisfaction's usefulness in creating incentives that align CEO and shareholder interests increases with its ability to predict future financial performance (Feltham and Xie, 1994). Thus, we expect that the weight placed on customer satisfaction will again be sensitive to satisfaction's lead indicator strength (Ittner *et al.*, 2003a). If the incentive weighting of customer satisfaction is not related to its lead indicator strength, then incentivizing satisfaction may give rise to distorted incentives—whereby CEOs over- or under-invest in enhancing satisfaction (Baker, 2000; Kerr, 1975). Accordingly, we predict that the extent to which CEO compensation is linked to customer satisfaction is positively related to satisfaction's lead indicator strength.

*Hypothesis 1: The lead indicator strength of customer satisfaction positively influences the weighting of customer satisfaction in CEO compensation schemes.*

### **The effect on growth in future shareholder value**

The impact of CEO compensation arrangements on shareholder value has been one of the most contentious issues in the compensation literature. Scholars have argued that the ultimate test of the

efficacy of any CEO compensation plan is whether it enhances shareholder value (e.g., Jensen, 2001). Yet, there is limited evidence that compensation schemes that—theoretically, at least—should lead to enhanced firm performance, actually do so (Devers *et al.*, 2007; Tosi *et al.*, 2000; Wowak and Hambrick, 2010). The impact on shareholder value of the compensation use of NFMs is a particularly important issue, given the criticisms of the use of NFMs in compensation schemes in both the business press and academic literature (e.g., Bebchuk *et al.*, 2002). Given persistent reservations with regard to the effects of incorporating NFMs in CEO compensation schemes, we extend our study to consider the impact on shareholder value of tying CEO compensation to customer satisfaction based on satisfaction's lead indicator strength.

Of those studies that examine the performance effect of compensation schemes, many tend to ignore the shareholder value criterion emphasized by Jensen (2001) and focus instead on 'intermediate' outcomes such as the impact on future profitability. For example, Hanlon, Rajgopal, and Shevlin (2003) demonstrate that current CEO stock option grants are associated with subsequent improvements in profit, and Hayes and Schaefer (2000) further show that unexpected changes in current compensation are correlated with changes in subsequent accounting performance. Yet, neither study presents evidence of an impact on long-term shareholder wealth.

A small number of studies have examined the impact of compensation schemes on shareholder value. Wallace (1997) finds that compensation schemes that place emphasis on economic profit lead to improved performance with respect to the selected measure without any attendant improvement in shareholder value. Core and Larcker (2002) report that implementing targeted executive stock ownership impacts subsequent stock market performance. In the context of NFMs, Ittner, Larcker, and Randall (2003b) report that, for firms in the financial services industry, adopting a broader set of criteria for performance assessment and compensation is associated with higher stock returns in later periods. Makri *et al.* (2006) find that, as technological intensity increases, tying CEO compensation to innovativeness indicators is also associated with higher subsequent stock market performance. An interesting feature of the latter three studies is that the improvements in

shareholder value attributable to the compensation arrangements do not manifest immediately.

Our core theoretical argument is that customer satisfaction's lead indicator strength improves the informativeness of satisfaction and the usefulness of satisfaction in aligning the interests of the CEO with those of the firm's owners. In light of prior research demonstrating that CEO compensation schemes can impact future shareholder value, we expect that the extent to which customer satisfaction's lead indicator strength influences the weighting of customer satisfaction in CEO compensation schemes has a positive influence on growth in future shareholder value.

*Hypothesis 2: The extent to which customer satisfaction's lead indicator strength influences the weighting of satisfaction in CEO compensation schemes has a positive influence on growth in future shareholder value.*

## METHODS

### Model

Hypothesis 1 predicts that the lead indicator strength of customer satisfaction positively influences the weighting of satisfaction in CEO compensation schemes. To test Hypothesis 1, we model CEO compensation as a function of the interaction between customer satisfaction and satisfaction's lead indicator strength:

$$\text{CEO compensation} = \beta_0 + \beta_1 \text{Customer satisfaction} + \beta_2 \text{Lead indicator strength} + \beta_3 [\text{Customer satisfaction} \times \text{Lead indicator strength}] + \text{Controls}$$

Hypothesis 1 implies a positive and significant coefficient for *Customer satisfaction*  $\times$  *Lead indicator strength*.<sup>6</sup>

### Measures

#### *Customer satisfaction*

To measure *Customer satisfaction* we use the satisfaction scores reported in the American Customer Satisfaction Index (ACSI) published by the

National Quality Research Centre at the University of Michigan. Studies have used ACSI as a proxy for the customer satisfaction information used by internal and external stakeholders such as shareholders (Ittner and Larcker, 1998), bondholders (Anderson and Mansi, 2009), financial analysts (Luo, Homburg, and Wieseke, 2010), and compensation committees (O'Connell and O'Sullivan, 2011). As Luo and Homburg (2007) note, the ACSI database is unique in that it utilizes the same methodology for sampling, surveying, and estimation across firms and years. Our decision to use ACSI was influenced by a number of characteristics of the Index. First, as an aggregate measure of satisfaction, ACSI provides an assessment of the firm's overall customer satisfaction, as opposed to an individual's satisfaction with a specific transaction (Fornell *et al.*, 1996). Second, ACSI data is collected and published externally, independent of any of the organizations covered by the Index. Since ACSI is independently measured, consideration of its usefulness in compensation research is not susceptible to the weaknesses present in internal measures (Dutta and Reichelstein, 2005). In particular, while managers may have incentives to bias results from an internally generated measure of satisfaction, no such bias is possible with ACSI data (Dikolli and Sedatole, 2007). Third, ACSI-based research corroborates the importance of customer satisfaction as a leading indicator of future profit for some firms (e.g., Gruca and Rego, 2005;

Ittner, Larcker, and Taylor, 2009). Thus, ACSI appears to be a useful proxy for any of the alternative customer satisfaction metrics—proprietary or otherwise—that firms might use for CEO compensation.

#### *Lead indicator strength of customer satisfaction*

We measure the lead indicator strength of customer satisfaction (*Lead indicator strength*) as the association between current satisfaction and future profit (measured as one-period-ahead ROA). As lead indicator strength is a firm-level construct, we estimate the following regression separately for each firm in our sample:

<sup>6</sup>In our equations, time-period and firm-level subscripts are suppressed for simplicity.

$$\text{One-period-ahead ROA} = \alpha_0 + \alpha_1 \text{Customer satisfaction} + \alpha_2 \text{ROA} + \alpha_3 \text{One-period-lagged ROA} + \alpha_4 \text{Stock Returns} + \alpha_5 \text{One-period-lagged Stock Returns}$$

We measure *Lead indicator strength* as the coefficient on *Customer satisfaction* (i.e.,  $\alpha_1$ ).<sup>7</sup> As the best predictor of future profit is usually current and past profit (Kothari, 2001), we include current ROA and *One-period-lagged ROA* as controls. As stock returns impound a wide range of information relevant to the prediction of future profit (Beaver, Lambert, and Morse, 1980), we also include current and lagged stock returns as controls.

Our lead indicator strength measure is conservative as, by construction, we exclude the impact of any element of customer satisfaction that influences future profit but that is also reflected in the current and past series of profit or stock returns. However, this conservative approach is appropriate as it minimizes the risk of *Lead indicator strength* reflecting anything other than the underlying construct (i.e., the extent to which future financial performance is directly related to customer satisfaction in the current period). We measure *Lead indicator strength* on a firm-level basis to ensure that our results do not reflect the influence of intra-sector or intra-industry variation.

#### CEO compensation

We use two measures of CEO compensation. *CEO short-term compensation* captures salary and bonus awarded to the CEO in a given year. *CEO total compensation* includes CEO short-term compensation and long-term incentives—which are primarily comprised of restricted stock, stock options, and cash payouts from long-term performance plans. As different factors may influence *CEO short-term compensation* and *CEO total compensation*, we undertake tests of our hypotheses for both compensation measures. To mitigate the potential influence of heteroskedasticity, we use the natural log of both compensation measures in our empirical tests. We estimate the value of CEO stock option awards using the Black-Scholes valuation model although our results are robust to alternative approaches.

<sup>7</sup> In unreported analysis, we estimate lead indicator strength as the average coefficient on customer satisfaction from separate firm-level regressions using the mean of one- and two-period ahead ROA. Our findings with respect to the alternate measure are fully consistent with the results reported later.

#### Controls

Accounting measures are used widely in compensation arrangements (e.g., Murphy, 2000). Therefore, in line with many prior studies, we include an accounting performance measure as a control. We utilize return on assets averaged across the most recent three-year period (*Average ROA*) as research on the compensation use of accounting metrics suggests that compensation committees attempt to remove the impact of random year-to-year fluctuations when rewarding CEOs (Dechow and Huson, 1994). Firms may link compensation to stock market performance (Leone, Wu, and Zimmerman, 2006). We control for stock market performance by including a measure of the firm's annual stock return less the mean industry annual return averaged across the three most recent years as a control (*Average return*).<sup>8</sup> As stock price captures the impact of any other firm performance measures (such as other NFMs), the inclusion of a multi-year industry-adjusted market-based measure reduces the potential for omitted variable bias.<sup>9</sup> As discussed earlier, the use of an average measure mitigates the impact of random year-to-year fluctuations. To control for the possibility that customer satisfaction reflects other aspects of marketing performance, we include a measure of market share (*Market share*). We measure *Market share* as (the square of) total firm sales divided by total industry sales. Industry sales are measured with reference to all firms in the same four-digit Standard Industrial Classification code (e.g., Gatignon, Weitz, and Bansal, 1990). In addition, we include *Industry competition*, measured as the proportion of total industry sales attributable to the four largest firms in that industry (e.g., Karuna, 2007). We employ three variables to control for CEO influence. We

<sup>8</sup> Industry-average market-based performance is defined with reference to firms with the same two digit SIC code. *Average return* has a number of extreme observations, so following prior research (Hanlon *et al.*, 2003) we winsorize *Average return* at the 1st and 99th percentiles.

<sup>9</sup> Although it is beyond the scope our study, the relationship between customer satisfaction and other NFMs (e.g., quality, stakeholder management, and human resource practices) represents an interesting avenue for future research.

include *CEO tenure*, measured as the natural log of the number of years since the CEO's appointment (e.g., Baber, Kang, and Kumar, 1998; Matta and Beamish, 2008). We include an indicator variable (*CEO duality*), which takes a value of one if the CEO is also the Chair and zero otherwise (Tuggle *et al.*, 2010). Third, we include *Board independence* calculated as the proportion of non-executive directors on the board (e.g., Boyd, 1994; Conyon and Peck, 1998; Finkelstein and Hambrick, 1988). We include *Firm size* (measured as the natural log of sales) to control for the possibility of a relationship between compensation and firm magnitude (Finkelstein and Boyd, 1998). We also account for the potential influence of financial leverage on compensation (Duru, Mansi, and Reeb, 2005) by adding *Financial leverage* (defined as long-term debt over total assets). Finally, following Davila and Penalva (2006) we include (an inverse) measure of each firm's *Growth opportunities*, which we capture by dividing the firm's book value of equity by the market value of equity.

## Model

Hypothesis 2 states that the extent to which customer satisfaction's lead indicator strength influences the weighting of satisfaction in CEO compensation schemes has a positive influence on growth in future shareholder value. Because lead indicator strength, by construction, reflects the impact of customer satisfaction on future ROA—and future ROA is correlated with growth in future shareholder value (Kothari, 2001)—tests of Hypothesis 2 employing the same data as that used to estimate lead indicator strength are inherently biased. Consequently, to estimate lead indicator strength—and test Hypothesis 1—we use data from 1994 to 2005 (approximately two-thirds of the overall sample period of 1994–2010). We reserve data from 2006 to 2010 specifically to test Hypothesis 2 using the following model:

$$\begin{aligned} \text{Growth in future shareholder value} = & \gamma_0 + \gamma_1 \text{Compensation relevance} \\ & + \gamma_2 \text{Growth in CEO compensation} + \gamma_3 [\text{Compensation relevance} \times \text{Growth in CEO Compensation}] \\ & + \text{Controls} \end{aligned}$$

In our model, the interaction between *Compensation relevance* and *Growth in CEO compensation* reflects the impact on *Growth*

in future shareholder value of basing the compensation use of customer satisfaction on satisfaction's lead indicator strength. Hypothesis 2 implies a positive and significant coefficient on the [Compensation relevance  $\times$  Growth in CEO compensation] interaction term.

## Measures

### *Growth in future shareholder value*

Prior work (e.g., Core and Larcker, 2002; Ittner *et al.*, 2003b; Makri *et al.*, 2006) shows that CEO compensation arrangements usually take some time to impact shareholder value. For this reason, we use two-period-ahead percent stock returns as our measure of growth in shareholder value. Furthermore, we exclude any component of the *Growth in future shareholder value* measure, which is already impounded (Kothari, 2001) in current or past measures of financial performance.<sup>10</sup>

### Compensation relevance

This measure captures the sensitivity of CEO compensation to customer satisfaction when satisfaction is weighted in accordance with its lead indicator strength. Compensation relevance is calculated as: [ $\beta_{\text{Customer Satisfaction}} \times \text{Customer satisfaction}$ ] + [ $\beta_{\text{Customer satisfaction} \times \text{Lead indicator strength}} \times \text{Customer satisfaction} \times \text{Lead indicator strength}$ ].  $\beta_{\text{Customer Satisfaction}}$  and  $\beta_{\text{Customer satisfaction} \times \text{Lead indicator strength}}$  are the coefficient estimates from our tests of Hypothesis 1 (i.e., the compensation regression) reported in Table 2. *Customer satisfaction* is the satisfaction score for each firm for 2006–2010, and *Lead indication strength* is the same firm-level measure used in our tests of Hypothesis 1 (i.e., estimated for each firm over 1994–2005). Our method for measuring *Compensation relevance*—whereby we utilize a variable constructed from coefficient estimates from our regression analyses in tests of the subsequent

<sup>10</sup> We remove the influence of current, one-period lagged and two-period lagged profit and shareholder returns from *Growth in future shareholder value* using a standard orthogonalization procedure.



performance impact of CEO compensation practices—is similar to the approach used in the widely cited work of Core, Holthausen, and Larcker (1999). Related approaches have been employed to address research questions in areas such as business failure (Altman, 1983), mergers (Brush, 1996), and executive compensation in family firms (Gomez-Mejia, Larraza-Kintana, and Makri, 2003).

#### *Growth in CEO compensation*

As our measure of future firm performance is the percent growth in future shareholder value, our compensation metric for tests of Hypothesis 2 is also expressed in equivalent terms. We calculate *Growth in CEO compensation* as the year-on-year percent change in CEO compensation.

#### *Controls*

As a number of risk-related factors (e.g., Ruefli, Collins, and Lacugna, 1999) are likely to impact future shareholder returns, we include controls for *Return volatility* (e.g., Duffee, 1995), *Equity value* (e.g., Fama and French, 1992, 1995), and the *Book-to-market* ratio (e.g., Fama and French, 1992, 1995).<sup>11</sup>

### **Sample**

#### *Customer satisfaction data*

We use information from the ACSI database as our proxy for customer satisfaction. Three specific points about our use of the database are noteworthy. First, ACSI reports multiple scores for some firms: for example, scores for several individual General Motors products are tracked in the database. As we have no way of knowing how CEO attention is divided between multiple products, any arbitrary form of aggregation is likely to result in measurement error in the context of a compensation study. Hence, we adopt

a conservative stance and exclude firms with multiple ACSI scores. Second, we exclude firms with an inadequate number of data points to allow for reliable estimates of *Lead indicator strength*. Third, some firms covered in the early years of ACSI no longer exist as separate entities (due primarily to merger/takeover activity). We include firms in our sample up to the point that they cease to exist as separate entities—this selection strategy helps to mitigate any survivorship bias with respect to our findings.

#### *CEO compensation, CEO influence and firm financial data*

We obtain the CEO compensation data from ExecuComp and CEO influence data from the Risk Metrics (IRCC) database. We download the accounting data from COMPUSTAT and the stock market data from for the Centre for Research on Security Prices (CRSP). We exclude any firm-years for which the relevant CEO compensation, CEO influence, or firm-level financial data is not available. We exclude from our sample those observations where there is a change in CEO, and we also exclude observations for CEOs who have been in that role for one year or less.

#### *Analysis of annual proxy statements*

The final element in our data collection procedure involved an in-depth analysis of the proxy statements of our sample firms. Based on our analysis of proxy statements, we eliminate all firms that do not explicitly mention the use of NFMs for compensation. We recognize that some of the eliminated firms may use NFMs for compensation purposes without explicitly reporting this (Bushman and Smith, 2001). However, we feel that that a conservative research design is warranted given the questions under consideration here. Of the remaining firms, 55% specifically report that they consider customer satisfaction in their CEO compensation plans. The other 45% state that NFMs are used for determining CEO compensation but make no specific reference to customer satisfaction and typically do not mention the specific NFMs in use. We include the latter in our tests. However, later in our study, we undertake sensitivity analysis to see if there are differences in the empirical findings between both sets of firms. Finally, consistent with the rationale underpinning our focus on lead

<sup>11</sup> We calculate *Return volatility* as the annualized standard deviation of monthly returns. Our empirical findings are strongly robust to the use of a volatility measure based on the standard deviation of daily returns and, alternatively, the Capital Asset Pricing Model Beta (Ruefli *et al.*, 1999) as risk proxies. We follow Fama and French (1992, 1995) in defining *Equity Value* and *Book-to-market* as the natural log of the firm's market capitalization and the ratio of the book value of equity-to-market capitalization, respectively.

Table 1. Summary statistics and correlation matrix for tests of Hypothesis 1

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. CEO total compensation	8.5	1.7	1													
2. CEO short-term compensation	7.5	1.7	0.66	1												
3. Average ROA	5.8	4.4	0.23	0.16	1											
4. Average stock return	-0.71	18	-0.01	-0.01	0.14	1										
5. Firm size	9.5	0.99	0.32	0.26	-0.03	-0.08	1									
6. Financial leverage	0.69	.15	0.20	0.27	-0.28	-0.04	0.25	1								
7. Market share	0.08	0.13	0.14	0.13	0.33	-0.03	0.35	-0.28	1							
8. Growth opportunities	0.41	0.28	-0.12	-0.08	-0.57	-0.20	-0.16	-0.12	-0.23	1						
9. CEO duality	0.71	0.46	0.20	0.22	0.00	-0.03	0.12	0.15	-0.03	0.00	1					
10. Board independence	0.6	0.28	0.18	0.10	0.01	-0.04	0.10	0.19	-0.10	-0.03	0.61	1				
11. CEO tenure	1.9	0.79	0.03	0.06	0.13	0.11	0.01	-0.17	0.20	-0.10	0.09	-0.04	1			
12. Competition	0.59	0.3	0.05	-0.06	0.46	0.05	0.04	-0.32	0.64	-0.38	-0.10	-0.11	0.15	1		
13. Customer satisfaction	76	5.9	-0.03	-0.02	0.41	0.04	-0.14	-0.13	0.28	-0.34	-0.03	-0.07	0.06	0.56	1	
14. Lead indicator strength	0.42	1.8	-0.09	0.01	-0.13	-0.10	-0.05	-0.11	-0.11	0.02	-0.10	-0.16	0.06	-0.07	-0.1	1

N = 465. Sample period: 1994–2005.

indicator strength, we note that all of the sample firms emphasize the importance of their CEO compensation scheme in motivating the CEOs to enhance future firm performance.<sup>12 13</sup>

## RESULTS

### Summary statistics

The summary statistics for the data used in our tests of Hypothesis 1 (465 firm-year observations) and Hypothesis 2 (184 firm-year observations) are presented in panels A and B of Table 1, respectively. The average firm-level *Lead indicator strength* measure is 0.42, but the standard deviation of 1.8 indicates that there is substantial variation across firms. For 57% (43%) of our

sample firms, *Lead indicator strength* is positive (negative).

### The influence of lead indicator strength on the compensation weighting of customer satisfaction

Hypothesis 1 predicts that the lead indicator strength of customer satisfaction has a positive and significant influence on the weighting of satisfaction in CEO compensation schemes. We present the results for tests of Hypothesis 1 in Models A to D of Table 2. Each of the reported estimates is from panel-level regressions allowing for firm random effects, heteroskedasticity and firm-level clustering of the standard errors.<sup>14</sup> Year dummies are included in each of the regressions.

In Model A of Table 2, we show the results for the regression when *CEO total compensation* is the dependent variable and the entire set of controls are included as independent variables. To test Hypothesis 1, we introduce the interaction between *Customer satisfaction* and *Lead indicator strength* (*Customer satisfaction* × *Lead indicator strength*) in Model B of Table 2.

<sup>12</sup> Between 1994 and 2005, 148 firms have at least one score in the ACSI database and matching CEO compensation data in ExecuComp. In applying our sample selection criteria, we first remove eight firms with multiple satisfaction scores. Next, we remove 58 firms that do not have sufficient customer satisfaction observations to calculate the lead indicator strength construct (a minimum of eight observations is required for statistically robust estimates). Of the 82 remaining firms, 20 are excluded as the required corporate governance data was not available in the IRCC database. We exclude two other firms as they make no reference to the compensation use of NFMs in their proxy statements. The final sample comprises 60 firms with a combined market value in excess of \$2.3 trillion.

<sup>13</sup> Our review of proxy statement filings also reveals that the compensation weighting applied to an NFM is typically made at the board's discretion. This latter observation underlines the importance of examining the implicit role of NFMs in the context of CEO compensation schemes (e.g., Berrone and Gomez-Mejia, 2009; Makri *et al.*, 2006).

<sup>14</sup> To exploit the time-series cross-sectional nature of our sample we use panel estimation techniques. Fixed effects estimation is inappropriate, as *Lead indicator strength* is both specific to each firm and is time invariant (Carpenter and Fredrickson, 2001) and so acts as a firm-level fixed effect. Preliminary analysis using the Durbin-Wu-Hausman tests (Wooldridge, 2002) suggests that the random effects estimates are robust to potential unobserved heterogeneity.

Table 2. The influence of lead indicator strength on the use of customer satisfaction in CEO compensation (Hypothesis 1)

	Total compensation				Short-term compensation			
	Model A		Model B		Model C		Model D	
	$\beta$	z-stat	$\beta$	z-stat	$\beta$	z-stat	$\beta$	z-stat
Intercept	0.668	0.358	3.781 **	2.161	1.659	0.994	4.675 ***	3.623
Average ROA	0.162 * *	1.963	0.143 *	1.742	0.129 * *	1.998	0.087 * *	1.963
Average return	0.002	0.737	0.003	0.969	0.006 ***	3.135	0.006 **	2.285
Firm size	0.417 ***	4.181	0.345 ***	2.706	0.355 ***	3.773	0.270 **	2.148
Financial leverage	0.028	1.591	0.028	1.483	0.021	1.152	0.020	1.092
Market share	0.693	0.611	0.867	0.737	1.503	1.010	1.583	1.020
Growth opportunities	1.276	1.127	1.121	0.983	1.162	1.068	0.975	0.998
CEO duality	0.311 * *	2.081	0.351 * *	2.534	0.319 *	1.823	0.350	1.541
Board independence	-0.132	-0.200	-0.056	-0.111	-0.671	-0.868	-0.517	-0.896
CEO tenure	0.016	0.199	-0.034	-0.442	0.040	0.776	-0.014	-0.249
Industry competition	-0.189	-0.346	0.336	0.766	-0.993	-1.330	-0.240	-0.625
Customer satisfaction			-0.032	-1.477			-0.028	-1.374
Lead indicator strength			-4.318 ***	-2.598			-9.703 **	-2.243
Customer satisfaction $\times$ lead indicator strength			0.059 ***	2.447			0.133 **	2.102
Observations	465		465		465		465	
Chi-squared statistic	354.2 ***		524.3 ***		632.4 ***		578.9 ***	
R-squared	0.266		0.276		0.228		0.217	

Results are based on random-effects regressions with controls for heteroskedasticity, autocorrelation, and industry-level clustering. \*\*\*, \*\*, \* denote significance at the 1, 5 and 10% levels. All significance tests are two-tailed.

The results offer strong support for Hypothesis 1 as the coefficient of the interaction term is both positive and statistically significant ( $\beta_{[\text{Lead indicator strength} \times \text{Customer satisfaction}]} = 0.059$ ;  $z\text{-stat} = 2.447$ ;  $p < 0.01$ ). In Models 3 and 4 of Table 2, we repeat the analysis using *CEO short-term compensation* as the dependent variable. The results again offer strong support for Hypothesis 1 ( $\beta_{(\text{indicator strength} \times \text{Customer satisfaction})} = 0.133$ ;  $z\text{-stat} = 2.102$ ;  $p < 0.05$ ). Overall, the results suggest that for both compensation measures, the lead indicator strength of customer satisfaction has a positive and significant impact on the compensation use of satisfaction.

These results imply that the compensation weighting of customer satisfaction differs according to the sign and magnitude of satisfaction's lead indicator strength. In general, when customer satisfaction's lead indicator strength is positive, firms link compensation to satisfaction. However, when customer satisfaction's lead indicator strength is negative, firms de-emphasize the role of satisfaction in the CEO's compensation. This finding suggests that when customer satisfaction's lead indicator strength is positive, satisfaction is likely to play a key role in the CEO's 'interactive' control

system (e.g., Marginson, 2002; Simons, 1991, 1994). In contrast, when lead indicator strength is negative, although satisfaction may receive attention at lower levels in the managerial hierarchy, it is not part of the CEO's compensation function and thus is less likely to attract CEO attention.

With regard to our control variables, our results reveal that *Average ROA* is positive and significant in all regressions attesting to the importance of accounting measures of performance in CEO compensation. Consistent with the long established impact of size on compensation, *Firm size* is also positive and significant in each of the regressions. *CEO duality* is also associated with higher CEO compensation. Overall, the regressions models appear well specified as the chi-square statistics are highly significant with an explanatory power greater than 20% in each case.

### The effect on growth in future shareholder value

Hypothesis 2 states that the extent to which customer satisfaction's lead indicator strength influences the weighting of satisfaction in CEO compensation schemes has a positive influence on

growth in future shareholder value. We present the results for tests of Hypothesis 2 with respect to total CEO compensation (short-term CEO compensation) in Models A and B (Models C and D) of Table 3. As before, we use panel-level regressions estimated using firm random effects with year dummies and adjustments for both heteroskedasticity and firm-level clustering of the standard errors.

In Model A of Table 3, we show the results for when we regress *Growth in future shareholder value* on *Growth in CEO compensation* and controls. In Model B of Table 2, we introduce the *Compensation relevance* construct and interact this variable with *Growth in CEO compensation* (*Compensation relevance*  $\times$  *Growth in CEO compensation*). The interaction variable captures the impact on the growth in future shareholder value of tying CEO compensation to customer satisfaction in conjunction with satisfaction's lead indicator strength. The results reported in Model B of Table 3 (i.e., when the relevant compensation metric is CEO total compensation) offer strong support for Hypothesis 2 as the coefficient on the interaction term is positive and statistically significant ( $\beta_{\text{Compensation relevance} \times \text{Growth in CEO compensation}} = 0.007$ ;  $z\text{-stat} = 5.779$ ;  $p < 0.01$ ). In Models C and D of Table 3, we carry out equivalent tests to those already described for short-term CEO compensation. The results in Model D of Table 3 also offer support for Hypothesis 2 ( $\beta_{\text{Compensation relevance} \times \text{Growth in CEO compensation}}$

$= 0.004$ ;  $z\text{-stat} = 3.644$ ;  $p < 0.01$ ) for this element of CEO compensation. In each of Panels A to D, our controls for *Return volatility* and the *Book-to-market ratio* are strongly significant. Taken together, the findings in Table 3 are consistent with our expectation that the extent to which customer satisfaction's lead indicator strength influences the weighting of customer satisfaction in CEO compensation schemes has a positive influence on growth in future shareholder value.

### Sensitivity tests

We carry out a range of sensitivity tests. As discussed earlier, 55% of our sample firms refer specifically to customer satisfaction in their proxy statements, while the remaining 45% refer to NFMs in a more general sense. To see if there are any differences between both groups, we repeat our analysis for each set of firms. The results from this work reveal strong support for Hypotheses 1 and 2 for both sets of firms. In unreported tests, we use Driscoll-Kraay estimation (Driscoll and Kraay, 1998) as implemented by Hoechle (2007) as an alternative means of ensuring that our standard errors are robust to heteroskedasticity, autocorrelation, and cross-sectional dependence. We also carry out our analyses using regression allowing for clustering of the standard errors across firms and time periods (Petersen, 2009). Our reported results are strongly robust to both of these alternative estimation methodologies. We

Table 3. The impact of linking CEO compensation to customer satisfaction in conjunction with satisfaction's lead indicator strength (Hypothesis 2)

	CEO total compensation				CEO short-term compensation			
	Model A		Model B		Model C		Model D	
	$\beta$	z-stat	$\beta$	z-stat	$\beta$	z-stat	$\beta$	z-stat
Intercept	0.052	0.256	0.111	0.493	0.052	0.262	0.233	1.034
Book-to-market	-0.018 ***	-2.823	-0.022 ***	-3.107	-0.018 ***	-2.830	-0.018 ***	-2.685
Annual return volatility	1.570 ***	2.985	2.028 ***	4.426	1.595 ***	2.970	1.734 ***	3.416
Log of market capitalization	-0.007	-0.336	-0.015	-0.707	-0.007	-0.347	-0.026	-1.184
Compensation growth	-0.005	-0.178	-0.011	-0.441	-0.015	-0.417	-0.021	-0.564
Compensation relevance			-0.008 ***	-2.956			0.004 ***	-3.143
Compensation relevance $\times$ CEO compensation growth			0.007 ***	5.779			0.004 ***	3.644
Observations	184		184		184		184	
Chi-square statistic	76.96 ***		215.2 ***		65.09 ***		105.8 ***	
R-squared	0.287		0.337		0.288		0.323	

Results are based on random-effects regressions with controls for heteroskedasticity, autocorrelation, and industry-level clustering. \*\*\*, \*\*, \* denote significance at the 1, 5, and 10% levels. All significance tests are two-tailed.



undertake two additional sensitivity tests to ascertain whether our findings are robust to a closer matching of the time periods over which we estimate *Compensation relevance* (i.e., 1994–2005) and test Hypothesis 2 (i.e., 2006–2010). First, we estimate *Compensation relevance* using data from a shorter time span (2000–2005), which is a closer match to the data period used in our tests of the performance effect (i.e., 2006–2010). Second, we measure Compensation relevance employing data from an earlier period (i.e., 1994–1999) and measure Growth in future shareholder value over the subsequent six-year period (i.e., 2000–2005). We continue to find support for Hypothesis 2 at the 1 percent significance level using both these alternative estimation approaches.

## DISCUSSION

The aim of our study was to examine whether tying CEO compensation to a forward-looking NFM—customer satisfaction—is consistent with enhanced performance management. We introduced the concept of lead indicator strength to capture customer satisfaction's forward-looking properties. Drawing on an agency-based rationale, we hypothesized that customer satisfaction's lead indicator strength influences both the use (Hypothesis 1) and efficacy (Hypothesis 2) of tying CEO compensation to satisfaction. We tested each of these hypotheses in a longitudinal study of the compensation awarded to CEOs. We found the lead indicator strength of customer satisfaction influences the weighting of satisfaction in CEO compensation schemes. We also found that the extent to which customer satisfaction's lead indicator strength influences the weighting of satisfaction in CEO compensation schemes has a positive influence on growth in future shareholder value.

### Implications for research

Our findings have implications for research on the motivation for utilizing NFMs in CEO compensation, the ability that firms have to incorporate NFMs, and the impact on firm performance of tying compensation to NFMs.

Previous research, taking an institutional perspective, has established the important symbolic role that performance measures play in executive compensation. In particular, that the choice of

performance measures reported in proxy statements is, in part, attributable to their symbolic role (Berrone and Gomez-Mejia, 2009; Westphal and Zajac, 1994). A key contribution from this research stream is in highlighting the decoupling that occurs between the formal adoption of performance plans in executive compensation schemes and the extent to which the actual compensation paid to CEOs is tied to such plans. Our work complements this research by providing an insight into the factors that influence the extent to which CEO compensation is linked to customer satisfaction. As we show, notwithstanding the widespread adoption of customer satisfaction as a performance measure in proxy statements, the link between CEO compensation awards and customer satisfaction is contingent on satisfaction's lead indicator strength.

Various scholars—most notably Bebchuk and colleagues (Bebchuk and Fried, 2003, 2004; Bebchuk *et al.*, 2002) suggest that NFMs, such as customer satisfaction, are included in CEO compensation schemes *simply* to 'camouflage' or mask the pay–performance relationship. Our results with respect to the impact of customer satisfaction's lead indicator strength suggest that camouflaging is an incomplete explanation for what motivates firms to utilize a measure of customer satisfaction in compensation schemes. Instead, our findings suggest that agency-based explanations, related to the potential for forward-looking NFMs to enhance compensation schemes, provide a useful lens through which the prevalence of NFMs in compensation schemes can be interpreted.

Our study contributes to research on the ability of firms to capture and incorporate a measure of customer satisfaction in compensation schemes and, more broadly, within strategic performance management frameworks. We find that CEO compensation is linked to customer satisfaction in conjunction with satisfaction's lead indicator strength. Thus, our work suggests that the sophistication with which firms utilize measures of customer satisfaction, and more generally NFMs in performance management, is greater than previously suggested (e.g., Ittner and Larcker, 2003; Johnson-Cramer *et al.*, 2003; Tayler, 2010).

We also contribute to the ongoing debate on the efficacy of multidimensional performance management frameworks. In the context of executive compensation, this debate has focused on the ramifications of rewarding executives based

on performance on multiple financial and non-financial criteria (Jensen, 2001; Kaplan, 2010; Kaplan and Norton, 1996; Levinthal, 2011). The central issue in this debate is whether, when faced with multiple performance indicators, executives make the necessary trade-offs between competing measures, such that firm performance improves. While we do not purport to offer the last word on this issue, we do show that future shareholder value improves when customer satisfaction's lead indicator strength influences the weighting of satisfaction in CEO compensation schemes.

Our work also contributes methodologically. The lead indicator strength construct opens a new avenue for research on the performance management relevance of NFM. To date, scholars have looked at the relevance of an array of NFMs in strategic performance management. These include indicators of stakeholder management and corporate social responsibility (Godfrey, Merrill, and Hansen, 2009; Hillman and Keim, 2001; Ramchander, Schwebach, and Staking, 2012), human resource practices (Huselid, 1995; Sun, Aryee, and Law, 2007), innovation (DeCarolis and Deeds, 1999), and quality (Kroll, Wright, and Heiens, 1999). The lead indicator strength construct presented in this study may help to provide a more fine-grained understanding of the role of such measures in performance management settings.

### Implications for practice

The core practical implication of our study is that an understanding of lead indicator strength is central to the effective utilization of NFMs in strategic performance management. For boards charged with the responsibility of designing executive compensation schemes, our study shows that the relationship between customer satisfaction and future performance is central to the questions of whether and to what extent compensation is linked to satisfaction. Our findings should also encourage boards to consider whether adequate attention is given to assessing the lead indicator strength of customer satisfaction and other NFMs. In addition, our study highlights the need for boards to have sufficient breadth of competencies to interpret the nonfinancial dimensions of organizational performance and evaluate how these dimensions relate to future performance. The

implementation of multidimensional performance management frameworks requires a significant commitment of organizational resources. Our findings suggest that boards with a clear understanding of the firm's performance on nonfinancial indicators and the lead indicator strength of these indicators are better placed to construct effective compensation schemes and to enhance shareholder value.

Our work has implications for shareholders. There is some skepticism in the business press with regard to the role of NFMs in CEO compensation schemes and the extent to which CEO compensation is tied to nonfinancial dimensions of organizational performance. For example, some commentators have suggested that firms state that they link rewards to a range of nonfinancial metrics simply to ensure that the full amount of the cash compensation awarded to CEOs is tax deductible. Our findings suggest that shareholder concerns over the potential problems arising from the inclusion of NFMs in compensation schemes need to be balanced against the potentially beneficial role of NFMs in this important aspect of strategic performance management. Greater transparency on the lead indicator strength of NFMs used to determine CEO compensation could usefully mitigate shareholder concerns. However, the commercial sensitivity of such information is likely to continue to constrain detailed disclosure.

### Limitations and future research

Our research has limitations—each of which gives rise to interesting areas for future research. First, our demonstration of the influence that lead indicator strength has on the use of NFMs is limited to one measure: customer satisfaction, and to one setting: CEO compensation. Studies of the impact that lead indicator strength has on the weight given to NFMs in other settings are clearly welcome. Second, we rely on a proxy measure of customer satisfaction and make inferences with respect to the incentive use of and weight placed on satisfaction. In particular, given the absence of firm-specific information about the precise measures of customer satisfaction used to incentivize and reward executives, we rely on ACSI as a publicly available proxy measure. Similar to prior studies, we think that our empirical strategy provides an efficient approach to dealing with the problems inherent in research on the use of NFMs

in executive compensation. For example, scholars have utilized proxy measures to consider the compensation role of environmental performance (Berrone and Gomez-Mejia, 2009); innovation (Balkin, Markman, and Gomez-Mejia, 2000; Makri *et al.*, 2006); stakeholder management (Coombs and Gilley, 2005); CEO certification (Wade *et al.*, 2006); interpersonal similarity (Zajac and Westphal, 1995); and CEO talent (Rajgopal, Shevlin, and Zamora, 2006). Third, as we do not have access to individual CEO contracts and/or the deliberations of compensation committees, in common with most studies of this type, we infer an implicit relationship between compensation and customer satisfaction from available data. Nonetheless, we note that the potential impact of this limitation is offset by the fact that, as explained earlier, we only include those firms that state in their proxy statements that they consider NFMs when rewarding CEOs. However, we believe that firm-level, case-based research has the potential to provide additional insights into the approach firms take to the weighting of NFMs. Fourth, our measure of lead indicator strength is, of necessity, an indirect measure as it is based on public data released annually. Future research utilizing proprietary internal NFM data captured on a quarterly (or even more frequent) basis could lead to improved estimates of the lead indicator strength construct. Such work also has the capacity to extend our understanding of how firms aggregate multiple customer satisfaction scores when evaluating and rewarding CEOs. Fifth, our findings should encourage future studies that develop and test theory on the question of what factors influence customer satisfaction's lead indicator strength. It is possible that satisfaction's lead indicator strength may be stronger in industries where there is a weak link between consumption and satiation (Voss *et al.*, 2010), in highly competitive industries (Fornell *et al.*, 1996), and in industries where there is little growth in overall demand (Gruca and Rego, 2005). Also, future research may consider whether corporate governance mechanisms (Bushman and Smith, 2001; Fama, 1980; Fama and Jensen, 1983; Jensen, 1993) and the market for corporate control (Jensen, 1993) influence the ways in which boards utilize the lead indicator strength of satisfaction in executive compensation and, more broadly, in strategic performance management contexts.

## CONCLUSION

Academic debate continues with respect to the motivations for and implications of employing leading indicator NFMs in strategic performance management frameworks. In this study, we focus on one aspect of strategic performance management: CEO compensation schemes, and on one widely used NFM: customer satisfaction. We show that both the use and efficacy of tying CEO compensation to customer satisfaction are contingent on satisfaction's lead indicator strength.

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