Strategic Management Journal
Strat. Mgmt. J., **38**: 1827–1847 (2017)
Published online EarlyView 7 February 2017 in Wiley Online Library (wileyonlinelibrary.com) DOI: 10.1002/smj.2629
Received 1 July 2015; Final revision received 10 October 2016

DOES A LONG-TERM ORIENTATION CREATE VALUE? EVIDENCE FROM A REGRESSION DISCONTINUITY

CAROLINE FLAMMER[1]* and PRATIMA BANSAL[2]
[1] *Questrom School of Business, Boston University, Boston, Massachusetts, U.S.A.*
[2] *Ivey Business School, Western University, London Ontario, Canada*

Research summary*: In this paper, we theorize and empirically investigate how a long-term orientation impacts firm value. To study this relationship, we exploit exogenous changes in executives' long-term incentives. Specifically, we examine shareholder proposals on long-term executive compensation that pass or fail by a small margin of votes. The passage of such "close call" proposals is akin to a random assignment of long-term incentives and hence provides a clean causal estimate. We find that the adoption of such proposals leads to (1) an increase in firm value and operating performance—suggesting that a long-term orientation is beneficial to companies—and (2) an increase in firms' investments in long-term strategies such as innovation and stakeholder relationships. Overall, our results are consistent with a "time-based" agency conflict between shareholders and managers.*

Managerial summary*: This paper shows that corporate short-termism is hampering business success. We show clear, causal evidence that imposing long-term incentives on executives—in the form of long-term executive compensation—improves business performance. Long-term executive compensation includes restricted stocks, restricted stock options, and long-term incentive plans. Firms that adopted shareholder resolutions on long-term compensation experienced a significant increase in their stock price. This stock price increase foreshadowed an increase in operating profits that materialized after two years. We unpack the reasons for these improvements in performance, and find that firms that adopted these shareholder resolutions made more investments in R&D and stakeholder engagement, especially pertaining to employees and the natural environment.*

INTRODUCTION

Agency theory argues that managers' preferences are misaligned with those of the shareholders. As a result, managers invest in projects that are not the first-best from the shareholders' perspective, leading to a decrease in firm value. Traditional agency models focus on managers' preference for, e.g., empire building (e.g., Jensen, 1986), shirking (e.g., Bertrand and Mullainathan, 2003; Holmstrom, 1979), or too little risk taking (e.g., Gormley and Matsa, 2016; Holmstrom, 1999). In contrast, the question of whether companies face a *time-based* agency problem—i.e., whether managers' time preferences are misaligned with those of the shareholders—remains to be explored.

In this article, we aim to fill this void. Specifically, we explore whether managers have a higher discount rate—that is, a preference for the short term—relative to shareholders. Anecdotal evidence suggests that this might be the case. Indeed, a large number of companies focus on meeting short-term goals, even if doing so hinders the pursuit of

Keywords: long-term orientation; financial performance; innovation; stakeholder relations; agency theory; regression discontinuity
*Correspondence to: Caroline Flammer, Questrom School of Business, Boston University, 595 Commonwealth Avenue, Office 634A, Boston, MA 02215, U.S.A. E-mail: cflammer@bu.edu

superior long-term projects. Perhaps the most striking evidence is provided in a survey by Graham, Harvey, and Rajgopal (2005), who find that 78 percent of the surveyed executives would sacrifice projects with positive net present value (NPV) if adopting them resulted in the firm missing quarterly earnings expectations. Overall, this evidence is suggestive of a time-based agency problem.

If managers are myopic, we expect that the adoption of a longer-term orientation (e.g., through the provision of long-term incentives to the managers) increases firm value. In other words, by adopting longer time horizons, companies are able to counteract managerial myopia and hence align managers' interests with long-term value creation.

From an empirical perspective, it is difficult to examine the effect of a long-term orientation on firm performance. There are two main obstacles. First, temporal orientation is inherently unobservable. Second, temporal orientation is likely endogenous with respect to financial performance, which makes it difficult to establish causality. For example, finding a positive correlation between empirical measures of long-term orientation and performance may be driven by "deep pockets": companies that perform better need to worry less about the short run and hence can more easily afford to be long-term oriented. Similarly, the relationship between a long-term orientation and firm performance may be spurious if it is driven by omitted variables. This concern is particularly severe given that unobservable firm-level attributes—such as managerial ability, investment opportunities, etc.—are likely to drive both a firm's long-term orientation and performance. In a nutshell, while empirically challenging, exploiting a research design that provides a clean causal estimate is essential to understanding the impact of companies' temporal orientation on performance.

In this study, we attempt to overcome both obstacles. Specifically, we exploit a quasi-natural experiment provided by exogenous changes in long-term executive compensation. The objective of long-term executive compensation is to focus executives' effort on creating long-term value, thus fostering organizational long-term orientation (e.g., Cheng, 2004; Kole, 1997). To obtain exogenous changes in long-term compensation, we examine shareholder proposals advocating the use of long-term executive compensation that pass or fail by a small margin of votes at shareholder meetings. Intuitively, there should be no systematic difference between companies that marginally pass long-term compensation proposals with, say, 50.1 percent of the votes and companies that reject comparable proposals with 49.9 percent of the votes. The passage of such "close call" proposals is akin to a random assignment of long-term incentives to companies and therefore provides a quasi-experimental setting to measure the causal effect of a long-term orientation on firm performance. In the economics literature, this approach of comparing outcomes just above and below a discontinuous threshold is known as "regression discontinuity design" (RDD). In this article, the discontinuity arises because a minor difference in vote shares around the majority threshold leads to a discrete change (that is, a discontinuity) in the adoption of long-term compensation policies.[1]

Using this RDD approach, we find that the passage of long-term compensation proposals leads to a significant increase in shareholder value. In particular, on the day of the shareholder meeting, a proposal that marginally passes yields an abnormal return of 1.14 percent compared to a proposal that is marginally rejected. This evidence is consistent with the view that a long-term orientation is value-enhancing.

We further examine the effect of passing long-term incentive proposals on operating performance. Specifically, we consider three measures of operating performance (return on assets, net profit margin, and sales growth). Regardless of the measure, we consistently find that operating performance increases in the long run. Interestingly, operating performance decreases slightly in the short run (i.e., in the year following the vote), indicating that an increased long-term orientation may take some time to materialize into higher profits. Arguably, this evidence suggests that managers channel more resources toward long-term projects that are costly in the short run, but pay off in the long run.

To further explore this mechanism, we examine directly whether companies adopting long-term compensation proposals are more likely to increase their investments in long-term strategies such as innovation and stakeholder relationships. We find

[1] For a survey of RDD applications, see Lee and Lemieux (2010). The RDD methodology is often seen as the sharpest tool of causal inference since it approximates very closely the ideal setting of randomized control experiments (see Lee and Lemieux, 2010: 282).

that they do. First, we observe an increase in R&D expenditures following the vote. We further document an increase in (1) the number of patents, (2) the number of citations per patents, and (3) the share of "riskier" patents, that is, patents that are in the tails of the distribution ("hits and flops"), and patents that are explorative rather than exploitative. This evidence indicates that long-term incentives are conducive to innovation and especially the pursuit of risky innovation projects. Second, we find that the KLD-index of social performance increases after the vote, suggesting that companies build up their social capital. The increase is especially strong for the employee and environment components of the KLD-index.

Our results are subject to the "internal versus external validity" tradeoff that often arises when using the RDD methodology. Indeed, while the RDD provides a clean causal estimate of the impact of long-term compensation proposals on firm outcomes, our results are conditional on being targeted by a long-term compensation proposal. When we benchmark these companies against other companies, we find that they are representative of the broader universe of companies with activist shareholders (essentially all large public firms in the U.S.), but not necessarily of the entire universe of U.S. public firms. Accordingly, one has to be careful in extrapolating our results to companies without activist shareholders.

THEORY AND HYPOTHESES

Intertemporal decision making in organizations

In business decisions, time horizons are of foremost importance. Companies need to balance short-term goals—such as short-term stock market performance and survival—with the development of capabilities that allow them to achieve a sustainable competitive advantage and long-term growth (e.g., Laverty, 1996, 2004).

The role of "time"—and how it shapes organizations and strategic decisions—has spurred a large literature in organization theory and strategy (surveys include Ancona *et al.,* 2001a; Ancona, Okhuysen, and Perlow, 2001b; Bluedorn and Denhardt, 1988; Gavetti and Levinthal, 2000; Mosakowski and Earley, 2000; Ofori-Dankwa and Julian, 2001). Much of this literature explores how organizations conceptualize, experience, and manage time. For example, organizations can differ in their temporal depth (short- versus long-term)—some organizations tend to plan far into the future, whereas others plan for much shorter time frames.

When short-term horizons compromise long-term returns, firms are labeled "short-termist" (e.g., Laverty, 1996). There is considerable empirical support for such short-termist behavior. For example, in the aforementioned survey of Graham *et al.* (2005), 78 percent of the surveyed executives stated that they would sacrifice projects with positive NPV if adopting them resulted in the firm missing quarterly earnings expectations. Similarly, DeGeorge, Patel, and Zeckhauser (1999) document that companies tend to boost short-term earnings when they are close to missing analysts' expectations.

The tendency towards short-termism can be attributed to (1) myopic behavior at the individual level and (2) organizational conditions. A large literature in psychology and economics examines intertemporal decision-making at the *individual* level (e.g., Ainslie 1975; Frederick, Loewenstein, and O'Donoghue, 2002; Loewenstein and Prelec, 1992; O'Donoghue and Rabin, 1999; Thaler and Shefrin, 1981). A common theme in this literature is that individuals are "hyperbolic discounters," preferring short-term rewards over long-term rewards, even if the latter are substantially higher. In the management context, the preference for short-term results is reinforced by short-term market pressure as well as managers' incentives to "look good in the short run." In particular, career concerns (e.g., Gibbons and Murphy, 1992), short-term compensation (e.g., Stein, 1988), and market pressure to meet or exceed analysts' earnings forecasts (e.g., DeGeorge *et al.,* 1999) lead managers to favor projects that pay off in the short run at the expense of long-term projects (e.g., Stein, 1988).

Less research on temporal orientation has been undertaken at the *organizational* level. Yet, some evidence suggests that organizational conditions can also result in a preference for short-term returns. For example, Souder and Shaver (2010) find that organizations facing cash constraints are less likely to invest in long-term projects. This finding is intuitive, as long-term investments often bind substantial resources and cash-constrained firms will want to free up cash earlier than later. Similarly, Wang and Bansal (2012) argue that new ventures are less likely to invest in long-term initiatives (such as

DOI: 10.1002/smj

corporate social responsibility) because they are looking for short-term results.

Long-term incentives and firm value

Companies can foster a long-term orientation by providing long-term incentives to their management team (e.g., by linking their compensation to long-term performance). In the following, we argue that long-term incentives are value-enhancing.

The provision of long-term incentives helps alleviate managers' propensity to focus on short-term earnings. Indeed, as discussed in the previous section, a large literature argues that managers are myopic and make short-term investments in order to meet or beat short-term performance targets (e.g., Holmstrom, 1999; Porter, 1992; Stein, 1988, 1989), even if these projects are less valuable than long-term projects. Such short-termist behavior translates in lower firm value, as managers turn down valuable investment opportunities.

To illustrate, let us consider a positive NPV project that has short-term costs but high expected long-run benefits (e.g., an ambitious R&D project in a new-to-the-firm technological field). Short-termist managers—say, managers whose only concern is to report positive earnings in the short run (e.g., due to career concerns)—will reject this project. They fully discount the long-run benefits, and instead only consider the short-term costs in their decision-making. In contrast, shareholders ascribe a positive NPV to this project and hence would be better off with this project. By turning down this project, short-termist managers fail to maximize firm value, and hence hurt shareholders.

The underlying assumption is that the shareholders' discount rates are lower than managers'. Or simply put, managers have a stronger preference for the present compared to shareholders—in line with the survey evidence of Graham *et al.* (2005). This misalignment of discount rates is a form of agency problem, i.e., managers' time preferences are misaligned with those of the shareholders and, as a result, managers do not act in shareholders' best interests.

Shareholders can address this temporal misalignment by providing long-term incentives to their managers. In particular, by indexing managers' compensation to long-term payoffs, shareholders can realign managers' time preferences with theirs. This, in turn, would reduce managers' tendency to turn down valuable long-term projects, and hence increase firm value. This leads to the following hypothesis:

Hypothesis 1a: An exogenous increase in executives' long-term incentives leads to an increase in firm value.

The above arguments imply that firm value increases due to an increase in long-term profits—as managers are incentivized to invest in (superior) projects with long-term payoffs.[2] Hence, we expect operating performance to increase in the long run:

Hypothesis 1b: An exogenous increase in executives' long-term incentives leads to an increase in long-term operating performance.

Note that the increase in operating performance need not materialize in the short run. Indeed, as the above example highlights, value-enhancing projects can entail a temporal separation between (short-term) cost and (long-term) benefits.[3]

Naturally, the alternative hypothesis is that an increase in long-term incentives leads to a decrease (or no change) in firm value. Several arguments would point to this alternative hypothesis. First, it could be that shareholders discount the future *more* than managers. In this case, the adoption of long-term incentives would be value-decreasing, as managers are incentivized to invest in projects that shareholders perceive as being less valuable. Second, short-term strategies may be inherently superior to long-term strategies. In this case, long-term incentives would encourage the pursuit of inferior strategies and hence hurt firm value. Third, the pursuit of long-term projects may increase operational risk by binding resources in the long run. For example, fixing an R&D budget for the next five years may prove suboptimal if future shocks call for changes in the optimal annual expenditures that cannot be attained without costly

[2] Formally, firm value V is the sum of the discounted expected future cash flows, i.e., $V = \sum_t \left(\frac{1}{1+r}\right)^t \times \mathrm{E}\left(C_t\right)$, where r is shareholders' discount rate and C_t is the firm's cash flow at time t. Mechanically, an increase in long-term cash flows increases V (provided it outweighs a potential decrease in short-term cash flows, and all else being equal).

[3] In the empirical analysis, we explicitly distinguish between the short- and long-term impacts on operating performance.

departures from the committed budget.[4] Fourth, long-term incentives may shift managers' attention from some stakeholders (e.g., consumers) to others (e.g., environment), which could potentially decrease firm value. For example, increased investments in green technologies may induce higher production costs that translate in higher prices, a decline in consumer demand, and ultimately a decrease in profits. If any of these negative forces prevail, we should observe a negative impact of long-term incentives on firm value.

Long-term corporate strategies

In the previous section, we argued that taking a longer-term orientation—induced by the use of long-term incentives—is value-enhancing and improves long-term operating performance. In this section, we discuss potential mechanisms through which companies may benefit from a long-term orientation.

Innovation

Innovative activities are characterized by long gestation periods and a high rate of failure (e.g., Aghion and Tirole, 1994; Griliches, 1990; Hall, Jaffe, and Trajtenberg, 2005; Holmstrom, 1989). Given these inherent features of innovation, prior research argues that a long-term orientation is important for innovation (e.g., Azoulay, Graff Zivin, and Manso, 2011; Cheng, 2004). Several empirical findings support this argument. In particular, Aghion, Van Reenen, and Zingales (2013) find that companies with a higher fraction of institutional shareholders—i.e., shareholders with a longer time horizon—are more innovative. Lerner and Wulf (2007) find that companies with centralized R&D labs whose R&D heads are offered greater long-term compensation tend to produce more patents and more heavily cited patents. Azoulay *et al.* (2011) find that scientists produce more innovative research when they receive grants with long-term horizons.

In line with these arguments, we expect that executives' long-term incentives are conducive to the pursuit of innovation. Indeed, if short-termism prevails, executives may refrain from investing in innovation, preferring to focus on projects that pay off sooner and have more predictable outcomes. This leads to the following hypothesis:

> *Hypothesis 2a: An exogenous increase in executives' long-term incentives leads to increased investments in innovation.*

Long-term incentives may also affect the *type* of innovation. In particular, adopting a longer time horizon may be conducive to more explorative research (i.e., research in new-to-the-firm technological fields), which is characterized by longer gestation periods, higher uncertainty, and more diffuse outcomes than exploitative research (e.g., March, 1991). Moreover, longer time horizons may promote tolerance for failure, which is often argued to foster the pursuit of risky innovation projects. For example, Azoulay *et al.* (2011) suggest that greater job security leads to more innovations that are either "hits" or "flops" (i.e., more hits but also more failures). In this vein, long-term incentives may provide an insurance-like effect, encouraging managers to pursue R&D projects that are riskier and explorative (rather than exploitative).[5]

Stakeholder relationships

Furthermore, long-term horizons are important to establish and strengthen relationships with the company's stakeholders (e.g., employees, customers, community, etc.). Repeated interactions help develop relationships, empathy, and trust. The payoffs from these deeper stakeholder relationships take time to materialize as firms acquire intangible resources such as legitimacy and reputation (e.g., Hart, 1995; Jones, 1995; Porter and Kramer, 2006, 2011; Russo and Fouts, 1997; Wang and Bansal, 2012), which contribute to organizational survival and competitive advantage in the long run (e.g., Barney and Hansen, 1994; Hillman and Keim, 2001; Ortiz-de-Mandojana and Bansal, 2016; Teece, 1998). Accordingly, to the extent that stakeholder relationships contribute to long-term value creation (e.g., Edmans 2011, 2012; Flammer,

[4] For instance, assume that a firm optimizes x over two periods, with profits $x_1 - \frac{1}{2} x_1^2 + \alpha\,(x_2 - \frac{1}{2} x_2^2)$, where α is a shock in the second period. A long-term orientation may commit x_1 and x_2 based on the expected α, while a short-term orientation may optimize x_2 based on the realization of α, which yields superior profits over the two periods.

[5] In auxiliary analyses, we use patent data to characterize the type of innovation that companies pursue following a shift in long-term incentives.

2013, 2015), the provision of long-term incentives may foster firms' engagement in stakeholder relationships.

Hypothesis 2b: An exogenous increase in executives' long-term incentives leads to increased engagement in stakeholder relations.

This prediction need not apply to all stakeholder groups. Indeed, the positive relationship may be stronger for some, weaker (or perhaps even negative) for others, as (1) a shift in time horizon may be more relevant for some stakeholder initiatives than others, (2) the relationship between stakeholder relations and firm value may differ across stakeholder groups, and (3) stakeholder interests may collide. We discuss each in more detail below.

First, an increase in managers' time horizon may be more relevant for some stakeholder initiatives. For example, firms often provide financial and in-kind assistance to communities such as donating to charities or offering disaster relief (e.g., Kaniasty and Norris, 2004; Tilcsik and Marquis, 2013). The decision to engage in such assistance is unlikely to be sensitive to the provision of long-term incentives.[6] In contrast, a longer time horizon may induce managers to devote more attention to their employees and invest in the development of their human capital and well-being. For example, training, career development, work-life balance, health benefits, etc., are all investments whose benefits accrue over time and hence are likely sensitive to the adoption of a long-term orientation. Finally, an increase in time horizon may influence managers' awareness of climate change risks and hence lead to greater consideration of the natural environment in decision-making.[7]

Second, the relationship between stakeholder relations and firm value may vary across stakeholder groups. While a large body of literature suggests a positive association between overall stakeholder engagement and financial performance (for detailed reviews of this literature, see, e.g., Margolis, Elfenbein, and Walsh, 2007; Orlitzky, Schmidt, and Rynes, 2003), for some stakeholder groups it remains unclear whether stakeholder engagement leads to long-term benefits. For other stakeholder groups, such as employees and the natural environment, several studies do report performance benefits. Specifically, by catering to the interests and needs of employees, firms can improve their labor productivity (Flammer, 2015; Flammer and Luo, 2017), innovative productivity (Flammer and Kacperczyk, 2016), and long-term value creation (e.g., Edmans 2011, 2012). Relatedly, several studies show that a shift toward more eco-friendly corporate behavior is value-enhancing (e.g., Flammer, 2013; Hamilton, 1995; Klassen and McLaughlin, 1996). By improving their environmental footprint, companies can benefit from a better reputation and cleaner work environment, improving the satisfaction of employees and consumers (e.g., Bansal and Roth, 2000; Hart, 1995; Russo and Fouts, 1997).

Lastly, stakeholders' interests can collide. For example, while the overall net benefits of improving employee relations are positive and benefit shareholders (see, e.g., Edmans 2011, 2012), it may be at the expense of other stakeholder groups, such as consumers (e.g., through higher prices).

In sum, while we hypothesize a positive relationship between long-term incentives and firms' overall engagement in stakeholder relationships, there might be considerable heterogeneity across the different stakeholder groups. In the empirical analysis, we explore this heterogeneity by separately studying the various stakeholder groups.

DATA AND METHODOLOGY

Data and variable definitions

To study the effect of long-term incentives on company outcomes (e.g., firm value, operating performance, R&D, stakeholder relationships), we examine shareholder proposals on long-term executive compensation that pass or fail by a small margin of votes. Long-term compensation rewards executives

[6] Similarly, an increase in time horizon is unlikely to change managers' decision to provide free products and services to economically disadvantaged consumers, nor change their attention to paying customers. Indeed, given customers' salience to firms (Mitchell, Agle, and Wood, 1997), managers are likely to meet customers' claims regardless of their time orientation.

[7] Recent studies (e.g., Risky Business, 2014) highlight that rising sea levels and increased storm surge are expected to damage coastal property and infrastructure, higher temperatures to decrease labor productivity and public health, extreme temperatures to increase energy demand, etc. Hence, climate change represents an increasing economic risk for companies and bears potentially severe losses for investors. Investors are increasingly aware of this risk and perceive a shift towards more eco-friendly corporate behavior to be value-enhancing (Ernst & Young, 2015; Flammer, 2013). In this vein, Novo Nordisk's CEO Lars Rebien Sørensen argues that "in the long term, social and environmental issues become financial issues" (*Harvard Business Review*, 2015).

DOI: 10.1002/smj

(i.e., CEO, CFO, COO, as well as other senior executives) for their long-term performance, incentivizing them to adopt long-term horizons (e.g., Cheng, 2004; Kole, 1997). In this section, we describe the shareholder proposals as well as the other variables used in the empirical analysis.

Shareholder proposals on long-term executive compensation

The data on shareholder proposals are obtained from RiskMetrics and SharkRepellent. RiskMetrics includes shareholder proposals that came to a vote from 1997 to 2011 at S&P 1500 companies as well as approximately 400–500 additional widely held companies. Shark Repellent's proxy voting database covers shareholder proposals of about 4,000 large public companies from 2005 to 2012. Both databases include firm identifiers, a description of the proposal, the date of the annual meeting, the proposal's sponsor, the voting requirement, and the outcome of the vote.

We merge both databases to obtain a comprehensive dataset of shareholder proposals that came to a vote between 1997 and 2012. To identify shareholder proposals on long-term executive compensation, we proceed as follows. First, we restrict the sample to proposals related to executive compensation (subcategory "executive compensation related" in SharkRepellent; all resolution types pertaining to executive pay in RiskMetrics). We then read the proposal and support statement of each proposal to identify whether the proposal advocates the use of long-term executive compensation. There are three main tools of long-term executive compensation (see Burns and Kedia, 2006): (1) restricted stocks (i.e., the award of stocks that cannot be sold in the short run), (2) restricted stock options (i.e., the award of stock options that cannot be exercised in the short run), and (3) LTIP (long-term incentive plans). LTIPs are comprehensive reward systems designed to incentivize executives over a long-term period. Most LTIPs consist of conditional company shares, which are distributed in two parts. The first part represents an immediate distribution of half of the shares, while the second half will only be awarded to the executive in a predefined number of years if the executive has met specific long-term goals.

Our search returns a final sample of 808 shareholder proposals related to long-term executive compensation. For example, on February 16, 2005, the shareholders of Lucent Technologies (a telecommunications equipment company based in Murray Hill, NJ) voted on a proposal to adopt a compensation policy with a greater reliance on long-term equity-based compensation. In the support statement of the proposal, Lucent's shareholders stated: "As long-term shareholders, we support compensation policies for senior executives that provide challenging performance objectives that motivate executives to achieve long-term shareholder value" (SEC Form DEF 14A, filed by Lucent Technologies, Inc. on January 3, 2005). This proposal was marginally approved with a vote share of 50.1 percent. Hence, this proposal is an example of what we refer to as "close call" (see below).

The majority of shareholder proposals on long-term executive compensation are rejected at annual meetings. Figure 1 provides the histogram of the vote outcome of the 808 proposals. As is shown, about 55 percent of the proposals receive less than 30 percent of favorable votes. This pattern is similar to the vote outcome of other shareholder proposals, such as say-on-pay proposals (Cuñat, Giné, and Guadalupe, 2015) and proposals on corporate social responsibility (Flammer, 2015). This suggests that the majority of shareholder proposals may be symbolic in nature, that is, shareholders submit them not necessarily because they expect them to pass, but rather to bring specific issues to the attention of management and the public.

To obtain a *causal* estimate of the impact of long-term compensation proposals on firm value, our identification strategy relies on proposals with a "close call" outcome. A total of 65 proposals received a vote share within the [-5%, +5%] interval around the majority threshold, and 152 within the [-10%, +10%] interval. While the number of close call proposals may seem small relative to the total number of proposals, it is sufficiently large in absolute terms to lend power to our identification (see the methodology section).

Dependent variables

Abnormal returns. Our main dependent variable is the abnormal return on the day of the shareholder meeting ($t = 0$). Abnormal returns provide an estimate of the impact of passing a long-term compensation proposal on shareholder value, and hence capture all potential channels through which a long-term orientation benefits shareholders.

DOI: 10.1002/smj

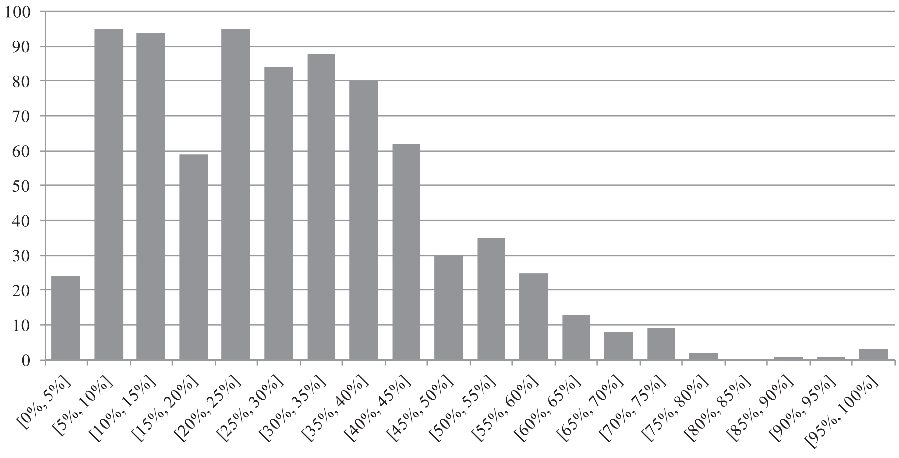


Figure 1. Distribution of votes for shareholder proposals on long-term executive compensation.
Notes. This figure presents the histogram of the vote shares in favor of long-term executive compensation proposals. The horizontal axis indicates the vote share in 5% intervals. The vertical axis indicates the frequency of proposals.

Following Cuñat, Giné, and Guadalupe (2012) and Flammer (2015), we compute abnormal returns using the four-factor model of Carhart (1997).[8]

Operating performance. We consider three measures of operating performance: return on assets (ROA), net profit margin (NPM), and sales growth. All three measures are obtained from Standard & Poor's Compustat. *ROA* is the ratio of operating income before depreciation to the book value of assets. *NPM* is the ratio of operating income before depreciation to sales. *Sales growth* is the growth in sales from one fiscal year to the next. To mitigate the impact of outliers, all three measures are winsorized at the 5th and 95th percentiles of their empirical distribution.

Innovation. To measure investments in innovation, we use *R&D expenditures,* computed as the ratio of R&D expenses to total assets (from Compustat). We winsorize this ratio at the 5th and 95th percentiles of its empirical distribution. In auxiliary analysis, we further use patent-based metrics to measure innovation outcomes.

Stakeholder relationships. To measure stakeholder relationships, we use the *KLD-index*. This index is obtained from the Kinder, Lydenberg, and Domini (KLD) database. KLD is a social choice investment advisory firm that relies on independent rating experts to assess how well companies address the needs of their stakeholders based on multiple data sources including annual questionnaires sent to companies' investor relations offices, firms' financial statements, annual and quarterly reports, general press releases, government surveys, and academic publications. The composite KLD-index is constructed by adding up the number of KLD strengths along the following dimensions: employees, customers, the natural environment, and society at large (community and minorities). In auxiliary analysis, we further decompose the KLD-index into four subindices corresponding to each of these dimensions.

Firm characteristics

Financing constraints. To measure financing constraints, we use the *KZ-index* of Kaplan and Zingales (1997). This index is a linear combination of several Compustat items that capture the difficulty of raising resources to finance new projects. The computation of the KZ-index is described in Lamont, Polk, and Saa-Requejo (2001: 551–552).

[8] The four factors are the market return RMRF (the return on the market portfolio minus the risk-free rate), the size factor SMB ("small minus big"), the book-to-market factor HML ("high minus low") and the momentum factor UMD ("up minus down"). In robustness checks, we show that our results are robust if we compute abnormal returns using the market model (i.e., if we only use the market factor RMRF). We obtain the daily stock return data from the Center for Research in Security Prices (CRSP). The four factors are obtained from Kenneth French's website. We estimate the coefficients of the four-factor model by OLS using an estimation period of 200 trading days that starts 20 trading days prior to the shareholder meeting. To be included in the sample, a stock needs to have at least 15 days with non-missing returns during the 200-day estimation period.

Executive compensation. Compensation data are obtained from Standard & Poor's Execucomp. *Total CEO compensation* is the total amount of compensation received by the CEO. *Long-term CEO compensation* is the amount of compensation that is received in the form of restricted shares, restricted stock options, and LTIP (long-term incentive plan) payouts (for a similar definition see, e.g., Aggarwal, 2008).

Long-term index. Slawinski and Bansal (2012) argue that an organization's time orientation is reflected by its discourse. In this spirit, we construct an index of long-term orientation based on the organization's discourse. We label this index *LT-index*. To construct this index, we conduct a textual analysis of the firms' 10-K filings, which we obtain from the Securities and Exchange Commission's (SEC) EDGAR database. Specifically, we count the number of keywords referring to the short term ("short run," "short-run," "short term," "short-term") and long term ("long run," "long-run," "long term," "long-term"), respectively. We then compute the LT-index as the ratio of the number of long-term keywords to the sum of long- and short-term keywords. Arguably, companies that use long-term keywords more frequently in their discourse are more likely to have a longer-term orientation.

Accounting variables. Accounting variables are obtained from Compustat. *Market value* is the number of shares outstanding multiplied by the stock price. *Total assets* is the book value of total assets. *Capital expenditures* is the ratio of capital expenditures to total assets. *Tobin's Q* is the ratio of the market value of total assets (computed as the book value of total assets plus the market value of equity minus the sum of the book value of equity plus deferred taxes and investment tax credit) to the book value of total assets. *Leverage* is the ratio of debt in current liabilities and long-term debt to total assets. To mitigate the impact of outliers, all ratios are winsorized at the 5th and 95th percentiles of their empirical distribution.

Corporate governance. To measure corporate governance, we use the *G-index* of Gompers, Ishii, and Metrick (2003). This index adds one index point for each of 24 (anti-) governance provisions. We obtain the G-index from RiskMetrics. It is available for the years 1990, 1993, 1995, 1998, 2000, 2002, 2004, and 2006. To fill in the missing years, we use the latest available value of the index.

Institutional ownership. Lastly, we measure institutional ownership as the percentage of shares owned by institutional investors in the quarter that ends prior to the date of the shareholder meeting. The data on institutional ownership are obtained from Thomson-Reuters institutional holdings (13F) database.

Summary statistics

Table 1 provides summary statistics for all variables described in this section. The sample consists of the 808 long-term compensation proposals. Abnormal returns are computed on the day preceding the shareholder meeting. All other variables are computed in the fiscal year that ends prior to the meeting (except for the KLD- and G-index which are computed in the calendar year preceding the meeting, and institutional ownership which is measured at the end of the quarter preceding the meeting).

Methodology

To estimate the effect of long-term compensation proposals on firm value (and other firm-level outcomes), we use a regression discontinuity design (RDD). Our methodology follows very closely the methodology of Cuñat *et al.* (2012) who study the effect of governance proposals on firm value.

The objective is to estimate the effect of passing a long-term compensation proposal on an outcome variable for firm i at time t, denoted by y_{it} (e.g., the stock market reaction on the day of the shareholder meeting). The proposal receives a vote share v_{it}. Whether or not the proposal is approved is denoted by the indicator variable $\text{Pass}_{it} = 1(v_{it} \geq v^*)$, where v^* is the majority threshold.[9] To estimate the effect of adopting a long-term compensation proposal, one could estimate the following regression:

$$y_{it} = \alpha + \beta \times \text{Pass}_{it} + \varepsilon_{it},$$

where β measures the effect of passing a long-term compensation proposal on y_{it}, and ε_{it} is the error

[9] The threshold v^* is 50% for most companies. In the few cases where companies have a stricter majority requirement (e.g., a "supermajority" requirement of two-thirds of the votes), we adjust v^* accordingly.

DOI: 10.1002/smj

Table 1. Summary statistics

	N	Mean	Median	Std. dev.	25th Percentile	75th Percentile
Abnormal return on meeting day	808	0.001	0.000	0.022	−0.008	0.010
Market value ($ billion)	808	37.876	14.226	61.910	4.546	40.446
Total assets ($ billion)	808	109.156	22.021	309.388	7.698	48.343
Total CEO compensation ($ million)	779	13.217	9.398	15.695	4.486	16.364
Long-term CEO compensation ($ million)	779	4.327	0.000	8.494	0.000	5.746
LT-index	808	0.749	0.749	0.138	0.669	0.846
Capital expenditures	789	0.046	0.036	0.042	0.017	0.064
R&D expenditures	398	0.039	0.023	0.049	0.002	0.061
ROA	789	0.113	0.112	0.087	0.066	0.165
NPM	789	0.190	0.173	0.187	0.096	0.301
Sales growth	805	0.070	0.056	0.201	−0.014	0.127
Tobin's Q	679	1.666	1.357	0.909	1.070	1.871
Leverage	806	0.288	0.265	0.164	0.172	0.398
KZ-index	641	0.164	0.399	0.705	0.161	0.505
KLD-index	745	4.479	3.000	3.821	1.000	7.000
G-index	764	8.988	9.000	2.358	7.000	11.000
Institutional ownership (%)	778	68.505	71.502	21.310	59.543	83.252

term. However, a concern with this regression is that the passing of a long-term compensation proposal may be correlated with unobservable firm characteristics that may also influence y_{it} (e.g., corporate culture, shareholder power, expected performance, etc.). In this case, the identifying assumption is violated ($E[\text{Pass}_{it} \times \varepsilon_{it}] \neq 0$) and the estimate of β will be inconsistent.

To obtain a consistent estimate of β, we would ideally need a randomized assignment of "passing a long-term compensation proposal" to companies. The regression discontinuity design (RDD) is helpful in approximating this ideal setting, since it relies on proposals that pass or fail by a narrow margin of votes. Arguably, whether a proposal passes with 50.1 percent of the votes, or fails with 49.9 percent is as good as random. Hence, such close call proposals provide a source of random variation in the adoption of long-term compensation proposals, which can be used to obtain a consistent estimate of β.

The RDD can be implemented by estimating the difference in average y_{it} between proposals that pass or fail by a small margin of votes. While this difference does provide an unbiased estimate of β, it comes at the cost of discarding all non-close proposals. A more efficient estimate of β can be obtained by using all proposals and approximating the continuous relationship between y_{it} and v_{it} with a polynomial in v_{it}, allowing for a discontinuous jump at the majority threshold v^*. Following Cuñat *et al.* (2012), we allow for a different polynomial for observations on the left-hand side of the threshold $P_l(v_{it}, \gamma_l)$ and on the right-hand side of the threshold $P_r(v_{it}, \gamma_r)$. The RDD specification can be written as follows:

$$y_{it} = \beta \times \text{Pass}_{it} + P_l\left(v_{it}, \gamma_l\right) + P_r\left(v_{it}, \gamma_r\right) + \varepsilon_{it}. \quad (1)$$

The estimate of β captures the discontinuity at the majority threshold, and hence provides a consistent estimate of the causal effect of passing a long-term compensation proposal on y_{it}. We cluster standard errors at the firm level. Throughout the article, we use polynomials of order three on both sides of the majority threshold. The results are similar if second- or fourth-order polynomials are used instead.

Note that β measures the effect of *approving* a long-term compensation proposal as opposed to the effect of *implementing* such proposal, due the non-binding nature of shareholder proposals (i.e., the board is not formally required to implement a proposal that has been approved). Nevertheless, this non-binding feature is not a concern for our analysis since it only goes against us finding any results. Moreover, while we do not observe whether a proposal is implemented, in auxiliary analysis we show that both long-term CEO compensation as well as the LT-index increase significantly following the vote. This indicates that adopting long-term compensation proposals does lead to substantial increases in long-term compensation and organizational long-term orientation.

Randomization tests

The identifying assumption of the RDD is that, around the majority threshold, the outcome of the vote is as good as random. In this section, we provide standard tests of this assumption. In particular, we examine (1) whether the distribution of the votes is continuous around the majority threshold, and (2) whether significant differences exist between companies that marginally pass and reject long-term compensation proposals.

Continuity in the distribution of shareholder votes

First, we visually inspect whether there is a discontinuous jump in the distribution of shareholder votes around the majority threshold. Such discontinuity would be indicative of a non-random assignment of "pass" versus "fail" on either side of the threshold. A visual inspection of the histogram in Figure 1 suggests that the distribution is indeed smooth and continuous around the threshold. More formally, in Figure A1 in Appendix S1, we conduct the McCrary (2008) test of continuity in the density function around the threshold. As is shown, there is no evidence for a discontinuous jump. The null of continuity of the density function at the threshold cannot be rejected at all conventional significance levels (p-value = 0.997).[10]

Pre-existing differences between companies around the discontinuity

Second, we examine whether companies that are marginally below and above the majority threshold are similar on the basis of *ex ante* characteristics. If the outcome of close call compensation proposals is truly random, we should not observe any pre-existing difference between companies on either side of the threshold.

In Table 2, we examine whether there are any pre-existing differences. We consider all characteristics listed in Table 1 in the year preceding the shareholder meeting (for the abnormal returns, we consider the day preceding the meeting). In column (1), we report the difference-in-means across all proposals. In columns (2) and (3), we compute the difference-in-means across the close call proposals (±10% and ±5%, respectively). Finally, in column (4), we report the difference at the threshold using the RDD specification in Equation (1).

As is shown in column (1), companies that pass a long-term compensation proposal differ significantly from companies that reject it. More importantly, we see in columns (2)–(4) that these differences disappear at the majority threshold. In Figure A2 in Appendix S1, we further plot each covariate against the victory margin and find no evidence for a discontinuity at the threshold. Finally, in Table A1 in Appendix S1, we repeat this analysis, but instead of looking at the covariates at $t-1$, we examine the change in these covariates from $t-2$ to $t-1$ (i.e., the pre-trend). Again, we find no significant difference at the threshold. Overall, the analysis presented in this section lends strong support to our identifying assumption.

RESULTS

The effect of long-term compensation proposals on firm value

Graphical analysis

To estimate the effect of passing long-term compensation proposals on firm value, we examine the stock market reaction on the day of the shareholder meeting. Figure 2 plots abnormal returns against the victory margin. Each dot in the figure represents the average abnormal return in two-percent bins of vote share. The solid line represents the predicted values of abnormal returns from third-order polynomials in vote share estimated separately on either side of the majority threshold.

As is shown, abnormal returns seem to be a continuous and smooth function of the vote share everywhere except at the majority threshold where there is a discontinuous jump. This suggests that long-term compensation proposals that are marginally approved lead to an increase in firm value compared to proposals that are marginally rejected. Interestingly, as we move away from the threshold, abnormal returns appear to converge

[10] The continuous distribution of shareholder votes around the majority threshold is in line with what has been documented for other types of shareholder-sponsored proposals (Cuñat *et al.*, 2012, 2015; Flammer, 2015). This is in sharp contrast to *management*-sponsored proposals, which typically exhibit a discontinuity at the majority threshold since managers tend to strategically withdraw proposals that are expected to fail (Listokin, 2008).

DOI: 10.1002/smj

Table 2. Pre-existing differences as a function of the vote outcome

	Before meeting (t – 1)			
	Diff-in-means (all proposals) (1)	Diff-in-means [−10%, +10%] (2)	Diff-in-means [−5%, +5%] (3)	RDD estimate (full model) (4)
Abnormal return	0.000	0.000	0.001	0.003
	(0.002)	(0.004)	(0.008)	(0.005)
Log(market value)	−0.533	−0.263	−0.070	−0.207
	(0.183)	(0.304)	(0.539)	(0.356)
Log(total assets)	−0.491	−0.219	0.106	0.087
	(0.192)	(0.318)	(0.532)	(0.374)
Log(total CEO compensation)	0.220	0.067	0.088	0.254
	(0.192)	(0.187)	(0.299)	(0.374)
Log(long-term CEO compensation)	0.282	0.520	0.339	0.459
	(0.850)	(1.252)	(1.993)	(1.623)
LT-index	−0.016	0.010	0.023	0.047
	(0.016)	(0.024)	(0.034)	(0.031)
Capital expenditures	−0.004	0.001	0.008	0.004
	(0.005)	(0.007)	(0.012)	(0.008)
R&D expenditures	0.005	−0.001	−0.002	−0.001
	(0.007)	(0.012)	(0.017)	(0.014)
ROA	−0.007	−0.002	−0.001	−0.001
	(0.010)	(0.013)	(0.019)	(0.018)
NPM	−0.002	−0.002	0.005	0.002
	(0.021)	(0.025)	(0.037)	(0.040)
Sales growth	0.007	−0.001	−0.002	−0.004
	(0.022)	(0.030)	(0.051)	(0.043)
Tobin's Q	−0.199	−0.106	−0.122	−0.176
	(0.107)	(0.135)	(0.140)	(0.213)
Leverage	−0.008	0.002	0.005	0.007
	(0.018)	(0.026)	(0.039)	(0.034)
KZ-index	0.022	0.117	0.157	0.211
	(0.087)	(0.121)	(0.209)	(0.174)
KLD-index	−0.949	−0.393	0.126	0.122
	(0.428)	(0.701)	(0.982)	(0.843)
G-index	0.675	0.342	0.446	0.661
	(0.262)	(0.403)	(0.627)	(0.507)
Institutional ownership	6.769	1.331	3.977	3.109
	(2.344)	(3.285)	(5.451)	(3.895)

Column (1) reports the difference-in-means among all firms in the sample; column (2) reports the difference-in-means among all firms with a proposal whose vote share lies within 10% of the majority threshold; column (3) reports the difference-in-means among all firms with a proposal whose vote share lies within 5% of the majority threshold; column (4) reports the difference at the majority threshold by estimating the RDD specification in Equation (1) including polynomials of order three on both sides of the threshold. Standard errors (reported in parentheses) are clustered at the firm level.

to zero. This pattern suggests that the market anticipates the outcome of non-close votes, and hence any value implication is already incorporated in stock prices.

Regression analysis

The graphical analysis provided in Figure 2 suggests that the adoption of close call proposals on long-term executive compensation leads to an increase in firm value. To formally test this hypothesis, we report in Table 3 estimates of the difference in abnormal returns between proposals that pass and proposals that fail for increasingly small intervals around the threshold.

Column (1) estimates this difference in the full sample of 808 proposals and shows that it is small and not statistically significant. This is due to the "non-close" proposals, i.e. proposals with a vote share that is more than 10 percent above or below the majority threshold. As can be seen in column (2), restricting the sample to non-close proposals

DOI: 10.1002/smj

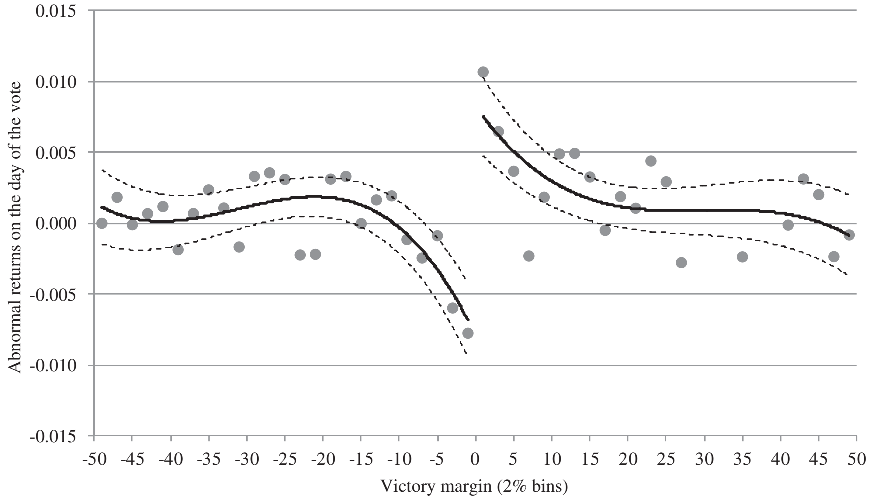


Figure 2. Abnormal returns on the day of the vote.
Notes. The vertical axis indicates abnormal returns on the day of the vote. The horizontal axis indicates the victory margin (i.e., the vote share minus the majority threshold). Each dot represents the average abnormal return in 2% bins of vote share. The solid line plots predicted values of abnormal returns from third-order polynomials in vote share estimated separately on either side of the majority threshold. The dashed lines represent one-standard deviation bounds.

Table 3. Abnormal returns around the majority threshold

	All votes (1)	Non close (2)	[−10%, +10%] (3)	[−5%, +5%] (4)	[−2.5%, +2.5%] (5)	Full model (6)
Pass	0.0039	0.0033	0.0068	0.0142	0.0228	0.0114
	(0.0025)	(0.0029)	(0.0041)	(0.0066)	(0.0134)	(0.0039)
Polynomial in vote share	No	No	No	No	No	Yes
R-squared	0.004	0.000	0.019	0.064	0.055	0.013
Observations	808	656	152	65	19	808

"Non close" proposals are proposals with a vote share that is more than 10% above or below the majority threshold. Standard errors (reported in parentheses) are clustered at the firm level.

yields a difference in abnormal returns that is close to zero. This finding is in line with the pattern in Figure 2 suggesting that the market predicts the outcome of non-close proposals, and hence their effect is already impounded in stock prices prior to the vote.

In column (3), we restrict the sample to the 152 long-term compensation proposals with vote shares within 10 percent of the majority threshold. The difference in abnormal returns is 0.68 percent (p-value = 0.097). This difference is larger in columns (4) and (5), where the sample is further restricted to proposals with vote shares within 5 percent and 2.5 percent, respectively, of the majority threshold. Specifically, the difference in abnormal returns is 1.42 percent ($p = 0.031$) and 2.28 percent ($p = 0.089$), respectively. Overall, the evidence in columns (3)–(5) suggests that long-term compensation proposals that are marginally approved lead to a significant increase in shareholder value compared to proposals that are marginally rejected.

Finally, in column (6), we estimate the specification given by Equation (1), using two polynomials of order three in the vote share on both sides of the majority threshold. In contrast to the non-parametric estimates in columns (3)–(5), this approach uses all 808 proposals. Hence, it provides a more efficient estimate of the effect of long-term compensation proposals at the discontinuity. As is shown, the coefficient on the pass dummy is 1.14 percent and it is highly significant ($p = 0.004$). Overall, the results provided in Table 3 are consistent with Hypothesis 1 stating that an exogenous

Table 4. The impact of long-term incentives on operating performance and corporate strategy

	Operating performance			Long-term strategies	
	ROA (1)	NPM (2)	Sales growth (3)	Innovation (R&D expenditures) (4)	Stakeholders (KLD-index) (5)
Year of vote, t	−0.0029	−0.0015	−0.0154	0.0036	0.292
	(0.0044)	(0.0091)	(0.0192)	(0.0020)	(0.168)
One year later, $t+1$	0.0042	0.0077	0.0149	0.0049	0.585
	(0.0046)	(0.0093)	(0.0198)	(0.0020)	(0.171)
Years $t+2$ to $t+4$	0.0094	0.0191	0.0385	0.0043	0.631
	(0.0047)	(0.0097)	(0.0204)	(0.0022)	(0.174)
Polynomial in vote share	Yes	Yes	Yes	Yes	Yes
R-squared	0.803	0.806	0.289	0.941	0.870
Observations	3,666	3,666	3,743	1,902	3,462

The regressions are estimated using the dynamic RDD specification of Cuñat *et al.* (2012) with firm-meeting fixed effects. Standard errors (reported in parentheses) are clustered at the firm level.

increase in long-term incentives leads to a positive stock market reaction. In Appendix A and Tables A2–A3 of Appendix S1, we show that this finding is robust to a large battery of robustness checks.

Operating performance

In this section, we evaluate the impact of long-term compensation proposals on operating performance (e.g., ROA). To do so, we use a dynamic extension of the RDD specification in Equation (1) that estimates the effect of passing a close call long-term compensation proposal on a given outcome variable in the year of the vote (t), the following year ($t+1$), and the subsequent three years (the average of the outcome variable from $t+2$ to $t+4$).[11]

We consider three measures of operating performance: ROA, NPM, and sales growth. The results are provided in columns (1)–(3) of Table 4. As is shown, all three measures increase significantly after $t+2$. ROA increases by 0.9 percentage points ($p=0.046$), NPM by 1.9 percentage points ($p=0.049$), and sales growth by 3.9 percentage points ($p=0.059$), suggesting that long-term incentives improve operating performance in the long run.[12] These findings are supportive of Hypothesis 1b. Interestingly, all three measures of operating performance actually *decrease* in the short run (albeit the decrease is not significant). This indicates that, following an increase in long-term incentives, firms engage in long-term investments that are costly in the short run, but pay off significantly in the long run.[13]

Long-term strategies

In columns (4) and (5) of Table 4, we examine whether the passage of long-term compensation proposals leads to higher engagement in long-term strategies. Specifically, we examine two

[11] Instead of re-estimating Equation (1) separately for t, $t+1$, and $t+2$ to $t+4$, we estimate all coefficients jointly using the dynamic RDD specification of Cuñat *et al.* (2012). The dynamics is accounted for by using a panel dataset in which, for each firm-meeting (i, t), observations at time $t+\tau$ are pooled for multiple τ, including $\tau<0$. As in Cuñat *et al.* (2012), we pool observations from $t-2$ to $t+4$. Accordingly, the years $t-1$ and $t-2$ are used as base period (i.e., the coefficients measure the *change* in the dependent variable compared to the base period, similar to a difference-in-differences specification in which the pass dummy is the treatment variable). The coefficient on the dummy for whether the proposal has passed β_τ is then τ-specific and is constrained to zero for $\tau<0$. Since observations before and after the event are pooled together, an advantage of this specification is that we can include firm-meeting fixed effects. See Cuñat *et al.* (2012: 1956–1958) for details.

[12] In Figure A3 in Appendix S1, we plot all dependent variables shown in Table 4 against the victory margin. A visual inspection of these graphs confirms the presence of a sharp discontinuity at the threshold.

[13] Some of the effects of the long-term compensation proposals may be driven by managerial turnover. Indeed, managers may resign after the change in compensation policy and new managers may be hired. To examine whether this is the case, in column (1) of Table A5 in Appendix S1, we use as dependent variable a dummy variable equal to one if the CEO leaves the company. We obtain the data on CEO turnover from Execucomp. As can be seen, there is little evidence for managerial turnover following the vote. This suggests that the new compensation policy is targeted at existing executives as opposed to being a means of attracting different executives.

types of investments that are commonly considered long-term: innovation (R&D expenditures) and stakeholder relationships (KLD-index). As can be seen, both increase significantly following the vote. These findings are supportive of Hypotheses 2a and 2b, suggesting that companies channel more resources toward long-term strategies.[14]

Auxiliary results

Patenting

The results presented in the previous section indicate that companies that adopt long-term compensation proposals increase their R&D investments. In columns (1)–(8) of Table 5, we further examine patent-based metrics to measure innovation outcomes. Specifically, we obtain the patent data from the National Bureau of Economic Research (NBER) patent database, which contains annual information on patent assignee names, the number of patents, the number of citations, and the year of patent application. Since the NBER patent database ends in 2006, the sample used for this analysis is restricted accordingly. We further exclude non-patenting firms from the sample.

In column (1), the dependent variable is *log(patents)*, which is the logarithm of the number of patent applications filed in a year that are eventually granted.[15] As is shown, the number of patents increases significantly in the long run (i.e., years $t+2$ to $t+4$), suggesting that companies not only increase their R&D budgets, but also generate more innovative output. In column (2), we use citation-weighted patent counts in lieu of patent counts (e.g., Aghion *et al.*, 2013). The citation weights account for the fact that patents can vary

Table 5. Patenting and stakeholder groups

	Patenting								Stakeholder groups			
	Log (patents) (1)	Log (patents) (citation-weighted) (2)	Log (citations/ patents) (3)	Share of hits and flops (4)	Share of hits (5)	Share of flops (6)	Share of explorative patents (7)	Share of exploitative patents (8)	KLD-index employees (9)	KLD-index environment (10)	KLD-index consumers (11)	KLD-index society (12)
Year of vote, t	0.011	0.005	−0.004	0.008	0.004	0.005	−0.002	0.001	0.155	0.099	0.004	0.034
	(0.011)	(0.009)	(0.007)	(0.008)	(0.005)	(0.004)	(0.020)	(0.018)	(0.123)	(0.074)	(0.027)	(0.051)
One year later, $t+1$	0.018	0.015	0.010	0.009	0.006	0.003	0.016	−0.005	0.385	0.158	0.010	0.032
	(0.013)	(0.011)	(0.008)	(0.008)	(0.005)	(0.005)	(0.021)	(0.021)	(0.126)	(0.076)	(0.027)	(0.052)
Years $t+2$ to $t+4$	0.032	0.045	0.024	0.021	0.012	0.009	0.047	−0.023	0.393	0.168	0.016	0.054
	(0.016)	(0.013)	(0.010)	(0.010)	(0.006)	(0.005)	(0.023)	(0.025)	(0.128)	(0.077)	(0.028)	(0.052)
Polynomial in vote share	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.789	0.739	0.640	0.571	0.457	0.427	0.568	0.567	0.815	0.699	0.724	0.843
Observations	804	804	804	804	804	804	804	804	3,462	3,462	3,462	3,462

The regressions are estimated using the dynamic RDD specification of Cuñat *et al.* (2012) with firm-meeting fixed effects. Standard errors (reported in parentheses) are clustered at the firm level.

[14] Note that the documented increase in R&D and the KLD-index does not necessarily imply that they are the source of value creation. Indeed, our empirical framework only allows us to assess the causal effect of long-term incentives on performance, R&D, and the KLD-index, but does not speak to the causal relationship among those outcome variables.

[15] The number of patents is subject to a truncation problem, because patents appear in the NBER database only after they are granted, and the lag between patent applications and patent grants is about two years on average. Accordingly, as we approach the last few years of the database, the number of patent applications that are eventually granted decreases because many patent applications filed during these years were still under review and had not been granted by 2006. To correct for this truncation problem, we follow common practice (e.g., Hall *et al.*, 2001, 2005) and divide the patent count by the total number of patent applications in the same year.

in their importance. As can be seen, the point estimate is similar. In column (3), we examine patent quality by using as dependent variable *log(citations/patents)*, which is the logarithm of the number of citations in subsequent years divided by the number of patents for any given firm and year.[16] As is shown, the results mirror those we obtain for the number of patents in columns (1) and (2).

In columns (4)–(8), we further explore whether a long-term orientation is conducive to the pursuit of "riskier" innovation, i.e., (1) patents that are in the tails of the distribution ("hits and flops"), and (2) patents that are explorative rather than exploitative. To construct the measure of hits and flops, we follow Azoulay *et al.* (2011) and code a patent as being a hit (flop) if the number of citations it receives is above (below) the highest (lowest) citation decile across all patents in the same technology class. To obtain a firm-level measure, we divide the number of hits and flops by the number of patents for any given firm and year (*share of hits and flops*), and also consider both components separately (*share of hits* and *share of flops*, respectively). To distinguish between explorative and exploitative patents, we follow Benner and Tushman (2002). Specifically, we code a patent citation as being "new-to-the-firm" if the citation is to a patent that is neither one of the firm's own patents (i.e., a self-citation), nor a patent previously cited by the firm in another patent. We then classify a patent as being exploratory (exploitative) if at least 80 percent (at most 20%) of the patent's citations are new-to-the-firm.[17] To obtain a firm-level measure of explorative patents, we divide the number of explorative patents by the number of patents for any given firm and year (*share of explorative patents*). The firm-level measure of exploitative patents is constructed analogously (*share of exploitative patents*). As is shown in columns (4)–(8), we find that both the share of hits and flops and the share of explorative patents increase significantly following the adoption of long-term compensation proposals, whereas we find no significant change in the share of exploitative patents. Overall, the results in columns (1)–(8) suggest that adopting a longer-term horizon is conducive to innovation, and especially the pursuit of risky and explorative R&D projects.[18]

Stakeholder groups

In columns (9)–(12) we split the KLD-index into subindices pertaining to the four stakeholder groups (employees, environment, customers, and society at large). As is shown, all four subindices increase following the adoption of long-term compensation proposals. However, the effect is clearly the strongest (both economically and statistically) for employee- and environment-related CSR programs. This result echoes well with the recent findings of Edmans (2011, 2012), Edmans, Li, and Zhang (2015b), and Flammer (2013, 2015), showing that employee-and environment-related CSR programs are value-enhancing.

Implementation

As discussed in the methodology section, shareholder proposals are not binding. Hence, even if a proposal receives a favorable vote, it is possible that the board will not implement it. While we do not observe whether a proposal has been implemented, we can look directly at whether executive compensation increases after the vote. We do so in Table A6 in Appendix S1, and find that indeed long-term compensation increases substantially after the vote. This analysis is described in Appendix B of Appendix S1.

[16] This citation metric is also subject to a truncation problem. By construction, a 2004 patent will receive fewer citations than a 1998 patent (all else being equal) because we only observe citations received up to 2006. To account for this truncation problem, we multiply the number of citations by the adjustment factor of Hall *et al.* (2001), provided in the NBER database. Moreover, we add one to the number of citations to avoid losing observations with zero citation when computing the logarithm (e.g., Atanassov, 2013; Flammer and Kacperczyk, 2016).

[17] In Table A4 in Appendix S1 we show that our results are robust if we use the alternative cutoffs proposed by Benner and Tushman (2002).

[18] A related question is whether firm risk increases following the adoption of long-term compensation proposals. In column (2) of Table A5 in Appendix S1, we examine this question directly by using as dependent variable the firm's equity volatility, which we compute as the standard deviation of the daily returns in each year. The daily returns are obtained from CRSP. As can be seen, we find only weak evidence for an increase in firm risk—equity volatility increases by about 0.7 percent in the long run, but not significantly (t-statistic = 1.33). There are two potential reasons. First, while the evidence in Table 5 suggests that companies pursue riskier long-term projects (e.g., tail innovations), the risk profile of the firm's other projects need not shift dramatically. Second, certain long-term strategies have been shown to be *risk-reducing*. In particular, the insurance-based view of CSR (e.g., Flammer, 2013; Godfrey, 2005) argues that CSR can serve as an insurance mechanism in adverse situations and hence reduce the firm's overall risk profile.

External validity

Close-call versus non-close proposals

A limitation of our research design is that the effect is identified by the subset of proposals whose vote outcome is close to the majority threshold. Although this limitation is inherent to any RDD, it is especially important in our setting given the relatively small number of close call proposals. Indeed, only 65 proposals received a vote share within the ±5 percent interval around the majority threshold, and 152 within the ±10 percent interval. Accordingly, a potential caveat is that companies around the discontinuity may not be representative of the companies far from the discontinuity, which would limit the external validity of our findings.

We examine this potential issue in columns (1)–(6) of Table A7 in Appendix S1. Specifically, we consider the full set of characteristics provided in Table 1. For each characteristic, we report the mean (as well as the *p*-value of the difference-in-means test) for companies close to the threshold and companies far from the threshold. As can be seen, the two groups of firms are very similar. In particular, the difference in means is almost always insignificant. In the few instances in which the difference appears significant, the significance level is relatively weak. Hence, companies at the threshold are likely representative of other companies in our sample.

Companies with activist shareholders

A related issue is whether the companies in our sample—that is, firms that vote on long-term compensation proposals—are representative of the broader universe of firms with activist shareholders. To assess whether this is the case, we benchmark our sample against all other firms in the RiskMetrics and SharkRepellent voting databases (essentially all large public firms in the U.S.). We provide this comparison in columns (7)–(9) of Table A7 in Appendix S1. As is shown, we find that both types of firms—firms that vote on long-term compensation proposals ("LT proposal") versus firms that do not ("no LT proposal")—are very similar ex ante. Accordingly, our results are likely to be generalizable to the broader universe of firms with activist shareholders.[19]

Companies without activist shareholders

Finally, another related issue is whether the companies in our sample are representative of the broader universe of public firms—i.e., also those without activist shareholders. Naturally, the "LT proposal" versus "no LT proposal" distinction is not well defined for the latter. This benchmarking is nevertheless informative, as it allows us to assess whether our results would generalize to such firms if they had activist shareholders and were targeted with a long-term compensation proposal.

To examine this question, we benchmark our sample against other public firms in Compustat.[20] The comparison is provided in columns (10)–(12) of Table A7 in Appendix S1. As can be seen, the most significant difference—both in economic and statistical terms—is that firms in our sample are substantially larger (>7 times larger based on total assets). This is consistent with prior research on shareholder activism. Indeed, a well-established institutional feature of shareholder activism is that activists target primarily large companies (e.g., Cai and Walkling, 2011; Cuñat *et al.*, 2012, 2015; Renneboog and Szilagyi, 2011; Smith, 1996). Some of the other differences in columns (10)–(12) are consistent with this size differential—small public firms are typically "growth firms," that is, firms that grow faster (higher sales growth) and have better growth opportunities (higher Tobin's Q). In addition, firms in our sample rely more on debt financing (higher leverage), are more CSR-friendly (higher KLD-index), and, to a lesser extent, are less profitable (lower ROA and NPM, although these differences are only marginally significant).

[19] We note that these similarities are not surprising given the nature of shareholder activism in the U.S. First, many shareholder proposals are symbolic in nature, i.e. they are submitted to draw general issues of corporate governance to the attention of the management and the public (e.g., Loss and Seligman, 2004). Second, and relatedly, shareholder activism often comes in "waves," i.e. a given activist shareholder adopts an agenda (e.g., the reduction of CO_2 emissions, the provision of long-term incentives, etc.) and then submits a similar proposal to all/multiple firms in which the activist has non-trivial holdings (e.g., Gillan and Starks, 2007; Yermack, 2010). In the latter case, activists target a wide range of firms across industries and geographies, and their motive is orthogonal to pre-proposal characteristics of individual firms. Also, note that while the comparison provided in columns (7)–(9) of Table A7 in Appendix S1 indicates that the two types of firm ("LT proposal" versus "no LT proposal") are very similar based on observables, it could still be that they differ based on unobservables. In Appendix C of Appendix S1, we use Heckman's two-step approach to further rule out this issue.

[20] We include all Compustat companies within the sampling frame of RiskMetrics and SharkRepellent (S&P 1500 from 1997 to 2011 and Russell 3000 from 2005 to 2012, respectively).

Overall, these differences indicate that the firms in our sample are unlikely to be representative of the broader universe of firms without activist shareholders. While these differences do not bias our estimate of the treatment on the treated, they potentially restrict the external validity of our findings, as they leave open the question of whether our results would generalize to companies without activist shareholders.

DISCUSSION AND CONCLUSION

Do companies benefit from a long-term orientation? This study suggests they do. Specifically, our main theoretical prediction is that an increased long-term orientation is value-enhancing — by adopting long-term incentives, companies are able to counteract managerial myopia and hence align managers' interests with long-term value creation.

To examine this question empirically, we study shareholder proposals on long-term executive compensation that pass or fail by a small margin of votes at shareholder meetings. Using an RDD specification, we find that the passage of long-term compensation proposals leads to a positive stock market reaction. More precisely, on the day of the vote, a proposal that marginally passes yields an abnormal return of 1.14 percent compared to a proposal that is marginally rejected. This evidence indicates that a long-term orientation is value-enhancing.

We also observe an increase in operating performance in the long run. Interestingly, operating performance decreases in the short run. This pattern suggests that managers invest in long-term projects that are costly in the short run, but pay off in the long run. We further document that companies are more likely to invest in long-term strategies — they increase their investments in innovation and stakeholder relationships. This suggests that a long-term orientation benefits companies by fostering innovation and allowing them to acquire intangible assets — such as legitimacy, reputation, and trust — through stakeholder relationships.

We caution that our findings are subject to the "internal versus external validity" tradeoff that often arises when using the RDD methodology. By approximating the ideal setting of randomized experiments, the RDD provides a clean causal estimate of the impact of long-term compensation proposals on firm outcomes (internal validity). However, our results are conditional on being targeted by a long-term compensation proposal and hence may not generalize to other firms (external validity). When we benchmark the sample firms against other firms, we find that firms that vote on long-term compensation proposals are representative of the broader universe of firms with activist shareholders (essentially all large public firms in the U.S.), but not necessarily of the entire universe of U.S. firms. Accordingly, one has to be careful with extrapolation — our results need not generalize to companies without activist shareholders. Extending the external validity of this study by identifying natural experiments that apply to a broader universe of firms is an exciting challenge for future research.

This study contributes to the literature in several ways. First, to the best of our knowledge, our study is the first to examine the causal effect of a firm's long-term orientation on financial performance and business strategies. Time horizons are of foremost importance in business decisions, and hence understanding how a long-term orientation impacts firm outcomes is at the very core of corporate strategy. In this vein, our finding that a longer-term orientation is beneficial to companies has potentially important managerial implications.

Second, by bridging different fields of research, we contribute to the multi-disciplinary dialogue in organizational studies that examines the role of "time" and how it affects organizations and their decision-making. This echoes the recent call to study how time horizons shape organizations and their strategic decisions (e.g., Ancona *et al.,* 2001b; Slawinski and Bansal, 2015; Souder and Bromiley, 2012).

Third, our article contributes to the large literature on executive compensation (for a recent survey, see Edmans and Gabaix, 2016). In this vein, our article is related to recent work that studies how the vesting period of stock options affects the strategic release of news (Edmans *et al.*, 2015a) and equity sales (Edmans, Fang, and Lewellen, 2015c). Our article adds to this literature by studying how the long-term component of executive compensation relates to firm value, firm performance, and long-term strategies.

Lastly, we contribute to the vast literature on corporate governance by highlighting a *time-based* agency problem — i.e., managers' and shareholders' time preferences are misaligned and, as a result, managers do not act in shareholders' best interests. As such, our study raises the question of the temporal dimensions of corporate governance and the optimal design thereof. While our findings indicate that long-term incentives are beneficial to companies, they do not imply that short-term incentives are value-decreasing. On the contrary, a well-established result in the corporate governance literature is that takeover pressure—and hence short-term monitoring—is value-enhancing (e.g., Cuñat *et al.*, 2012; Gompers *et al.*, 2003). Clearly, short-term incentives are important as well. Absent such incentives, managers would exert too little effort in the short run. Rather, companies ought to consider both short-term *and* long-term incentives, and find the right balance between them. Making ground on this topic and, more generally, the optimal design of the temporal dimension of corporate governance is an exciting avenue for future research.

ACKNOWLEDGEMENTS

We are grateful to Alfonso Gambardella (the Editor), Gautam Ahuja, Ashish Arora, Alex Edmans, Olga Hawn, Jiao Luo, Mary-Hunter McDonnell, Lamar Pierce, Jean-Philippe Vergne, Mark Zbaracki, two anonymous reviewers, as well as seminar participants at the 2014 Duke Strategy Conference, 2014 Swiss Economists Abroad Conference, 2015 LBS Sumantra Ghoshal Conference, 2015 Academy of Management Annual Meeting, 2015 Santiago de Chile SMS Special Conference, 2015 UC Berkeley Sustainable Business and Investment Forum, 2016 LBS Organizations with Purpose Conference, 2016 Millstein Governance Forum, Aarhus University, Boston University, Chinese University of Hong Kong, INSEAD, Ivey Business School, London Business School, MIT, New York University, Ohio State University, Singapore Management University, University of Maryland, University of Massachusetts Boston, University of Michigan, University of Southern California, Washington University in St. Louis, and Wharton for helpful comments and suggestions.

REFERENCES

Aggarwal RK. 2008. Executive compensation and incentives. In *Handbook of Corporate Finance: Empirical Corporate Finance* (Vol. 2), Eckbo BE (ed). Elsevier, North-Holland: Amsterdam, Netherlands; 497–538.

Aghion P, Tirole J. 1994. The management of innovation. *Quarterly Journal of Economics* **109**(4): 1185–1209.

Aghion P, Van Reenen J, Zingales L. 2013. Innovation and institutional ownership. *American Economic Review* **103**(1): 277–304.

Ainslie G. 1975. Specious reward: a behavioral theory of impulsiveness and impulse control. *Psychological Bulletin* **82**(4): 463–496.

Ancona DG, Goodman PS, Lawrence BS, Tushman ML. 2001a. Time: a new research lens. *Academy of Management Review* **26**(4): 645–663.

Ancona DG, Okhuysen GA, Perlow LA. 2001b. Taking time to integrate temporal research. *Academy of Management Review* **26**(4): 512–529.

Atanassov J. 2013. Do hostile takeovers stifle innovation? Evidence from antitakeover legislation and corporate patenting. *Journal of Finance* **68**(3): 1097–1131.

Azoulay P, Graff Zivin JS, Manso G. 2011. Incentives and creativity: evidence from the academic life sciences. *RAND Journal of Economics* **42**(3): 527–554.

Bansal P, Roth K. 2000. Why companies go green: a model of ecological responsiveness. *Academy of Management Journal* **43**(4): 717–736.

Barney JB, Hansen MH. 1994. Trustworthiness as a source of competitive advantage. *Strategic Management Journal* **15** (Special Issue): 175–190.

Benner MJ, Tushman ML. 2002. Process management and technological innovation: a longitudinal study of the photography and paint industries. *Administrative Science Quarterly* **47**(4): 676–706.

Bertrand M, Mullainathan S. 2003. Enjoying the quiet life? Corporate governance and managerial preferences. *Journal of Political Economy* **111**(5): 1043–1075.

Bluedorn AC, Denhardt RB. 1988. Time and organization. *Journal of Management* **14**(2): 299–320.

Burns N, Kedia S. 2006. The impact of performance-based compensation on misreporting. *Journal of Financial Economics* **79**(1): 35–67.

Cai J, Walkling RA. 2011. Shareholders' say on pay: does it create value? *Journal of Financial and Quantitative Analysis* **46**(2): 299–339.

Carhart MM. 1997. On persistence in mutual fund performance. *Journal of Finance* **52**(1): 57–82.

Cheng S. 2004. R&D expenditures and CEO compensation. *Accounting Review* **79**(2): 305–328.

Cuñat V, Giné M, Guadalupe M. 2012. The vote is cast: the effect of corporate governance on shareholder value. *Journal of Finance* **67**(5): 1943–1977.

Cuñat V, Giné M, Guadalupe M. 2015. Say pays! Shareholder voice and firm performance. *Review of Finance* **20**(5): 1799–1834.

DeGeorge F, Patel J, Zeckhauser R. 1999. Earnings management to exceed thresholds. *Journal of Business* **72**(1): 1–33.

Edmans A. 2011. Does the stock market fully value intangibles? Employee satisfaction and equity prices. *Journal of Financial Economics* **101**(3): 621–640.

Edmans A. 2012. The link between job satisfaction and firm value, with implications for corporate social responsibility. *Academy of Management Perspectives* **26**(4): 1–19.

Edmans A, Gabaix X. 2016. Executive compensation: a modern primer. *Journal of Economic Literature* **54**(4): 1232–1287.

Edmans A, Goncalves-Pinto L, Wang Y, Xu M. 2015a. Strategic news releases in equity vesting months. NBER Working paper 20476, National Bureau of Economic Research, Cambridge, MA.

Edmans A, Li L, Zhang C. 2015b. Employee satisfaction, labor market flexibility, and stock returns around the world. Working paper, London Business School, London, UK.

Edmans A, Fang VW, Lewellen KA. 2015c. Equity vesting and managerial myopia. ECGI Finance Working paper 379, European Corporate Governance Institute, Brussels, Belgium.

Ernst & Young. 2015. *Tomorrow's Investment Rules 2.0*. Ernst & Young: London, UK.

Flammer C. 2013. Corporate social responsibility and shareholder reaction: the environmental awareness of investors. *Academy of Management Journal* **56**(3): 758–781.

Flammer C. 2015. Does corporate social responsibility lead to superior financial performance? A regression discontinuity approach. *Management Science* **61**(11): 2549–2568.

Flammer C, Kacperczyk A. 2016. The impact of stakeholder orientation on innovation: evidence from a natural experiment. *Management Science* **62**(7): 1982–2001.

Flammer C, Luo J. 2017. Corporate social responsibility as an employee governance tool: evidence from a quasi-experiment. *Strategic Management Journal* **38**(2): 163–183.

Frederick S, Loewenstein G, O'Donoghue T. 2002. Time discounting and time preference: a critical review. *Journal of Economic Literature* **40**(2): 351–401.

Gavetti G, Levinthal D. 2000. Looking forward and looking backward: cognitive and experiential search. *Administrative Science Quarterly* **45**(1): 113–137.

Gibbons R, Murphy KJ. 1992. Optimal incentive contracts in the presence of career concerns: theory and evidence. *Journal of Political Economy* **100**(3): 468–505.

Gillan SL, Starks LT. 2007. The evolution of shareholder activism in the United States. *Journal of Applied Corporate Finance* **19**(1): 55–73.

Godfrey PC. 2005. The relationship between corporate philanthropy and shareholder value: a risk management perspective. *Academy of Management Review* **30**(4): 777–798.

Gompers PA, Ishii JL, Metrick A. 2003. Corporate governance and equity prices. *Quarterly Journal of Economics* **118**(1): 107–155.

Gormley TA, Matsa DA. 2016. Playing it safe? Managerial preferences, risk, and agency conflicts. *Journal of Financial Economics* (Forthcoming).

Graham JR, Harvey CR, Rajgopal S. 2005. The economic implications of corporate financial reporting. *Journal of Accounting and Economics* **40**(1–3): 3–73.

Griliches Z. 1990. Patent statistics as economic indicators: a survey. *Journal of Economic Literature* **28**(4): 1661–1707.

Hall BH, Jaffe AB, Trajtenberg M. 2001. The NBER patent citations data file: lessons, insights and methodological tools. NBER Working paper 8498, National Bureau of Economic Research, Cambridge, MA.

Hall BH, Jaffe AB, Trajtenberg M. 2005. Market value and patent citations. *RAND Journal Economics* **36**(1): 16–38.

Hamilton J. 1995. Pollution as news: media and stock market reactions to the TRI data. *Journal of Environmental Economics and Management* **28**(1): 98–113.

Hart SL. 1995. A natural-resource-based view of the firm. *Academy of Management Review* **20**(4): 986–1014.

Harvard Business Review. 2015. The best-performing CEOs in the world. *Harvard Business Review* **93**(11): 49–59.

Hillman AJ, Keim GD. 2001. Shareholder value, stakeholder management, and social issues: what's the bottom line? *Strategic Management Journal* **22**(2): 125–139.

Holmstrom B. 1979. Moral hazard and observability. *Bell Journal of Economics* **10**(1): 74–91.

Holmstrom B. 1989. Agency costs and innovation. *Journal of Economic Behavior and Organization* **12**(3): 305–327.

Holmstrom B. 1999. Managerial incentive problems: a dynamic perspective. *Review of Economic Studies* **66**(1): 169–182.

Jensen MC. 1986. Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review* **76**(2): 323–329.

Jones TM. 1995. Instrumental stakeholder theory: a synthesis of ethics and economics. *Academy of Management Review* **20**(2): 404–437.

Kaniasty K, Norris FH. 2004. Social support in the aftermath of disasters, catastrophes, and acts of terrorism: altruistic, overwhelmed, uncertain, antagonistic, and patriotic communities. In *Bioterrorism: Psychological and Public Health Interventions*, Ursano RJ, Norwood AE, Fullerton CS (eds). Cambridge University Press: Cambridge, U.K.; 200–229.

Kaplan SN, Zingales L. 1997. Do financing constraints explain why investment is correlated with cash flow? *Quarterly Journal of Economics* **112**(1): 169–215.

Klassen RD, McLaughlin CP. 1996. The impact of environmental management on firm performance. *Management Science* **42**(8): 1199–1214.

Kole S. 1997. The complexity of compensation contracts. *Journal of Financial Economics* **43**(1): 79–104.

Lamont O, Polk C, Saa-Requejo J. 2001. Financial constraints and stock returns. *Review of Financial Studies* **14**(2): 529–554.

Laverty KJ. 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.

Laverty KJ. 2004. Managerial myopia or systemic short-termism? The importance of managerial systems in valuing the long term. *Management Decision* **42**(8): 949–962.

Lee DS, Lemieux T. 2010. Regression discontinuity designs in economics. *Journal of Economic Literature* **48**(2): 281–355.

DOI: 10.1002/smj

Lerner J, Wulf J. 2007. Innovation and incentives: evidence from corporate R&D. *Review of Economics and Statistics* **89**(4): 634–644.

Listokin Y. 2008. Management always wins the close ones. *American Law and Economics Review* **10**(2): 159–184.

Loewenstein G, Prelec D. 1992. Anomalies in intertemporal choice: evidence and an interpretation. *Quarterly Journal of Economics* **107**(2): 573–597.

Loss L, Seligman J. 2004. *Fundamentals of Securities Regulation*. Aspen Publishers: New York.

March JG. 1991. Exploration and exploitation in organizational learning. *Organization Science* **2**(1): 71–87.

Margolis JD, Elfenbein HA, Walsh JP. 2007. Does it pay to be good? A meta-analysis and redirection of research on the relationship between corporate social and financial performance. Working paper, Harvard Business School, Boston, MA.

McCrary J. 2008. Manipulation of the running variable in the regression discontinuity design: a density test. *Journal of Econometrics* **142**(2): 698–714.

Mitchell RK, Agle BR, Wood DJ. 1997. Toward a theory of stakeholder identification and salience: defining the principle of who and what really counts. *Academy of Management Review* **22**(4): 853–886.

Mosakowski E, Earley PC. 2000. A selective review of time assumptions in strategy research. *Academy of Management Review* **25**(4): 796–812.

O'Donoghue T, Rabin M. 1999. Doing it now or later. *American Economic Review* **89**(1): 103–124.

Ofori-Dankwa J, Julian SD. 2001. Complexifying organizational theory: illustrations using time research. *Academy of Management Review* **26**(3): 415–430.

Orlitzky M, Schmidt FL, Rynes SL. 2003. Corporate social and financial performance: a meta-analysis. *Organization Studies* **24**(3): 403–441.

Ortiz-de-Mandojana N, Bansal P. 2016. The long-term benefits of organizational resilience through sustainable business practices. *Strategic Management Journal* **37**(8): 1615–1631.

Porter ME. 1992. Capital disadvantage: America's failing capital investment system. *Harvard Business Review* **70**(5): 65–82.

Porter ME, Kramer MR. 2006. Strategy & society: the link between competitive advantage and corporate social responsibility. *Harvard Business Review* **84**(12): 78–92.

Porter ME, Kramer MR. 2011. The big idea: creating shared value. *Harvard Business Review* **89**(1/2): 62–77.

Renneboog L, Szilagyi PG. 2011. The role of shareholder proposals in corporate governance. *Journal of Corporate Finance* **17**(1): 167–188.

Risky Business. 2014. *Risky Business: the Economic Risks of Climate Change in the United States*. The Paulson Institute: Chicago, IL.

Russo MV, Fouts PA. 1997. A resource-based perspective on corporate environmental performance and profitability. *Academy of Management Journal* **40**(3): 534–559.

Slawinski N, Bansal P. 2012. A matter of time: the temporal perspectives of organizational responses to climate change. *Organization Studies* **33**(11): 1537–1563.

Slawinski N, Bansal P. 2015. Short on time: intertemporal tensions in business sustainability. *Organization Science* **26**(2): 531–549.

Smith MP. 1996. Shareholder activism by institutional investors: evidence from CalPERS. *Journal of Finance* **51**(1): 227–252.

Souder D, Bromiley P. 2012. Explaining temporal orientation: evidence from the durability of firms' capital investments. *Strategic Management Journal* **33**(5): 550–569.

Souder D, Shaver JM. 2010. Constraints and incentives for making long horizon corporate investments. *Strategic Management Journal* **31**(12): 1316–1336.

Stein JC. 1988. Takeover threats and managerial myopia. *Journal of Political Economy* **96**(1): 61–80.

Stein JC. 1989. Efficient capital markets, inefficient firms: a model of myopic corporate behavior. *Quarterly Journal of Economics* **104**(4): 655–669.

Teece DJ. 1998. Capturing value from knowledge assets: the new economy, markets for know-how, and intangible assets. *California Management Review* **40**(3): 55–79.

Thaler RH, Shefrin HM. 1981. An economic theory of self-control. *Journal of Political Economy* **89**(2): 392–406.

Tilcsik A, Marquis C. 2013. Punctuated generosity: how mega-events and natural disasters affect corporate philanthropy in U.S. communities. *Administrative Science Quarterly* **58**(1): 111–148.

Wang T, Bansal P. 2012. Social responsibility in new ventures: profiting from a long-term orientation. *Strategic Management Journal* **33**(10): 1135–1153.

Yermack D. 2010. Shareholder voting and corporate governance. *Annual Review of Financial Economics* **2**(1): 103–125.

SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Appendix S1. Online Appendix.

ONLINE APPENDIX FOR

DOES A LONG-TERM ORIENTATION CREATE VALUE?

EVIDENCE FROM A REGRESSION DISCONTINUITY

CAROLINE FLAMMER
Questrom School of Business
Boston University
595 Commonwealth Avenue, Office 634A
Boston, MA 02215, U.S.A.
cflammer@bu.edu

PRATIMA BANSAL
Ivey Business School
University of Western Ontario
1255 Western Road, Office 3362
London, ON N6G 0N1, Canada
tbansal@ivey.uwo.ca

Appendix A: Robustness

In Table A2, we present several robustness checks. These robustness checks are variants of the specification in column (6) of Table 3, which we refer to as our baseline specification.

Controls and year dummies. If the RDD is valid—i.e., if the outcome of close call votes is truly random—the coefficient on the pass dummy should not be affected by the inclusion of control variables. Intuitively, all predetermined characteristics should be orthogonal to the assignment of "pass" versus "fail" at the discontinuity. In column (1), we verify that the coefficient of the pass dummy is indeed very similar if we include as controls all variables listed in Table 1 (measured prior to the vote) as well as year dummies.[1]

Market model. In column (2), we compute abnormal returns using the market model instead of the four-factor model. As can be seen, the effect on the day of the vote is 1.01% (significant at the 5% level) and is again very similar to our baseline estimate.

Outliers. In column (3), we address the potential concern that our results may be driven by a few large abnormal returns around the majority threshold. To mitigate this concern, we re-estimate our baseline specification by replacing abnormal returns with a dummy variable that equals one if the abnormal return is positive and zero otherwise. This dummy ignores the magnitude of the abnormal return, and hence it is not sensitive to outliers. As is shown in column (3), long-term compensation proposals that marginally pass have an 18% higher probability to have positive abnormal returns on the day of the vote compared to proposals that marginally fail.

Other shareholder proposals. In column (4) we address the potential concern that shareholders may not only vote on long-term compensation proposals, but also on other objects (e.g., "say on pay" or CSR proposals) during the same meeting. In case shareholders tend to vote

[1] We set the missing values of R&D expenditures to zero, and include as additional control a dummy variable ("R&D dummy") that indicates whether R&D is zero (for a similar approach see, e.g., Hall *et al.*, 2005).

in a similar way on all proposals, it could be that our results capture some of the effect of other proposals. To rule out this concern, we re-estimate our baseline specification after excluding all shareholder meetings in which other proposals received a vote share within 10% of the majority threshold (i.e., those proposals that would likely affect abnormal returns). As we show in column (4), our results are robust to this exclusion.

Placebo tests. In columns (5)-(6), we conduct placebo tests by re-estimating our baseline specification using placebo thresholds—i.e., thresholds at which we do not expect to observe a discontinuity in abnormal returns. To be conservative, we consider placebo thresholds at the 45% and 55% cutoffs (in lieu of the 50% cutoff). As is shown, we find no significant discontinuity in abnormal returns, which lends additional support to the validity of our RDD specification.

Dynamic RDD. In column (7), we use the dynamic RDD specification of Cuñat *et al.* (2012) to examine the abnormal returns beyond the day of the vote. Specifically, we consider abnormal returns on the day of the vote (t), the day after the vote ($t + 1$), and the average abnormal returns from $t + 2$ until $t + 7$.[2] As is shown, the bulk of the effect is found on the day of the vote. Interestingly, abnormal returns keep increasing (albeit insignificantly) beyond the day of the vote, suggesting that the stock market does not fully realize the full benefits of a long-term orientation on the day of the vote.[3]

Total incentives versus long-term incentives. Another potential concern is that our results may capture an increase in executives' *overall* incentives in lieu of executives' long-term incentives—e.g., if boards increase total executive pay in addition to long-term pay. This

[2] The sample also includes abnormal returns on days $t – 1$ and $t – 2$, which are used as base periods in the dynamic RDD. See Cuñat *et al.* (2012) for details. Note that we do not report the difference in abnormal returns at $t – 1$, since we already reported it in Table 2 and found that it was insignificant (see the first row of Table 2).

[3] We also examined abnormal returns from $t + 2$ until $t + 250$, i.e. within a year following the vote. The coefficient is 0.0108 (standard error: 0.0092). This effect is economically large, suggesting that investors keep learning about the benefits of a long-term orientation over time. However, this effect is not statistically significant—as is typically the case with abnormal returns, it is difficult to observe significant patterns over long horizons (Brown and Warner, 1985).

concern is mitigated for two reasons. First, all shareholder proposals considered in this study explicitly refer to long-term compensation (restricted stocks, restricted stock options, and LTIP). Second, to more formally rule out this concern, we estimate a "fuzzy" RDD specification in Table A3. More precisely, in the first stage, we re-run our RDD specification, but now use as dependent variable "Δ long-term/total CEO compensation," i.e., the changes in the ratio of long-term to total CEO compensation in the year following the vote (compared to the year preceding the vote). In the second stage, we then regress abnormal returns on the predicted values from the first stage—i.e., the instrumented changes in the ratio of long-term pay.

As expected, in the first stage, we find that close call proposals lead to a significant increase in the ratio of long-term pay (column (1)). Importantly, in the second stage (column (2)), we find that an exogenous shift in the ratio of long-term pay leads to higher abnormal returns.[4] This indicates that indeed our results stem from the long-term component of executive compensation. Finally, in untabulated regressions, we have verified that our results are robust if, instead of using the ratio of long-term pay to total pay, we consider the ratio of long-term pay to total performance-sensitive pay (i.e., total compensation minus the base salary).

Appendix B: Implementation

Shareholder proposals are not binding, that is, even if a proposal receives a positive vote, it is possible that the board will not implement it. While we do not observe whether a proposal has been implemented, we can look directly at whether executive compensation increases after the vote. This analysis is presented in Table A6. Specifically, in column (1), we use the logarithm of one plus the total amount of long-term CEO compensation as the dependent variable. As is

---

[4] The standard deviation of Δ long-term/total CEO compensation is 0.224. Hence the coefficient of 0.083 in column (2) implies that a one-standard deviation in Δ long-term/total CEO compensation leads to an abnormal return of $0.083 \times 0.224 = 1.9\%$.

shown, long-term compensation increases by about 20.3% in the year of the vote, and up to 37.1% four years after the vote. In column (2), we further consider the ratio of long-term to total CEO compensation. As can be seen, this ratio increases by 3.8 to 10.1 percentage points in the years following the vote.

Lastly, in column (3) we examine whether the adoption of long-term compensation proposals leads to an increase in the LT-index—our measure of long-term orientation based on the organization's discourse. As can be seen, we find that indeed the LT-index increases substantially in the years following the vote.

Appendix C: Selection based on unobservables

In the discussion of the external validity, we noted that—among companies that have activist shareholders—companies that vote on long-term compensation proposals are very similar to those that do not based on observables. That being said, it could still be that they differ based on unobservables. To address this point, we apply Heckman's two-step approach using an instrumental variable (IV) for the submission of long-term compensation proposals. To construct an instrument, we exploit the aforementioned feature of shareholder activism—the fact that activists often target multiple companies in "waves" of similar proposals. The instrument that we use is an indicator variable that is equal to one if the company is targeted by an activist who submits a long-term compensation proposal to *all* companies in which the activist has holdings. The idea is that if an activist shareholder targets all portfolio companies, the "targeting" itself is unlikely to be related to ex ante characteristics of individual targets. Hence, this instrument is likely to fulfill the exclusion restriction.

In the first stage of Heckman's procedure, we use a probit model that regresses the selection dummy on the instrument ("activist submitting LT proposal to all portfolio companies") along with the covariates listed in Table A7. The results are provided in Table A8.[5] As is shown, the coefficient of the instrument is positive and highly significant. It also qualifies as a "strong" instrument in statistical terms. The *F*-statistic of the instrument is 51.1, which is well above the $F = 10$ threshold of Staiger and Stock (1997) and the critical values of Stock and Yogo (2005) for strong instruments. In Table A9, we then repeat our baseline analysis controlling for the inverse Mills ratio (the second stage in Heckman's procedure). As can be seen, our results remain unchanged. The Mills ratio is insignificant in all specifications. Overall, this analysis confirms that selection based on unobservables is unlikely to affect our results.

In Table A10, we conduct several robustness checks in which we consider alternative definitions of the instrument. Specifically, in Panel (A), we use as instrument the number of LT proposals submitted by the same activist at other companies; in Panel (B), we use the number of LT proposals submitted by the same activist at companies in *other industries*; in Panel (C), we use the number of LT proposals submitted by the same activist at companies in *other states*; in Panel (D), we use our baseline instrument but in the broader sample of public firms (i.e., the sample used in columns (10)-(12) of Table A7). By construction, the instrument is zero for companies that have no activist shareholders. As is shown, in all these specifications, our baseline results are very similar to before.

[5] R&D expenditures is missing for many companies (see Table 1). This is a well-known issue with Compustat data. To avoid losing observations, we follow common practice in the literature and set the missing values equal to zero. We then include as additional control a dummy variable ("R&D dummy") that indicates whether R&D is zero (see, e.g., Hall *et al.*, 2005).

REFERENCES

Brown S, Warner J. 1985. Using daily stock returns: the case of event studies. *Journal of Financial Economics* **14**(1): 3–31.

Cuñat V, Giné M, Guadalupe M. 2012. The vote is cast: the effect of corporate governance on shareholder value. *Journal of Finance* **67**(5): 1943–1977.

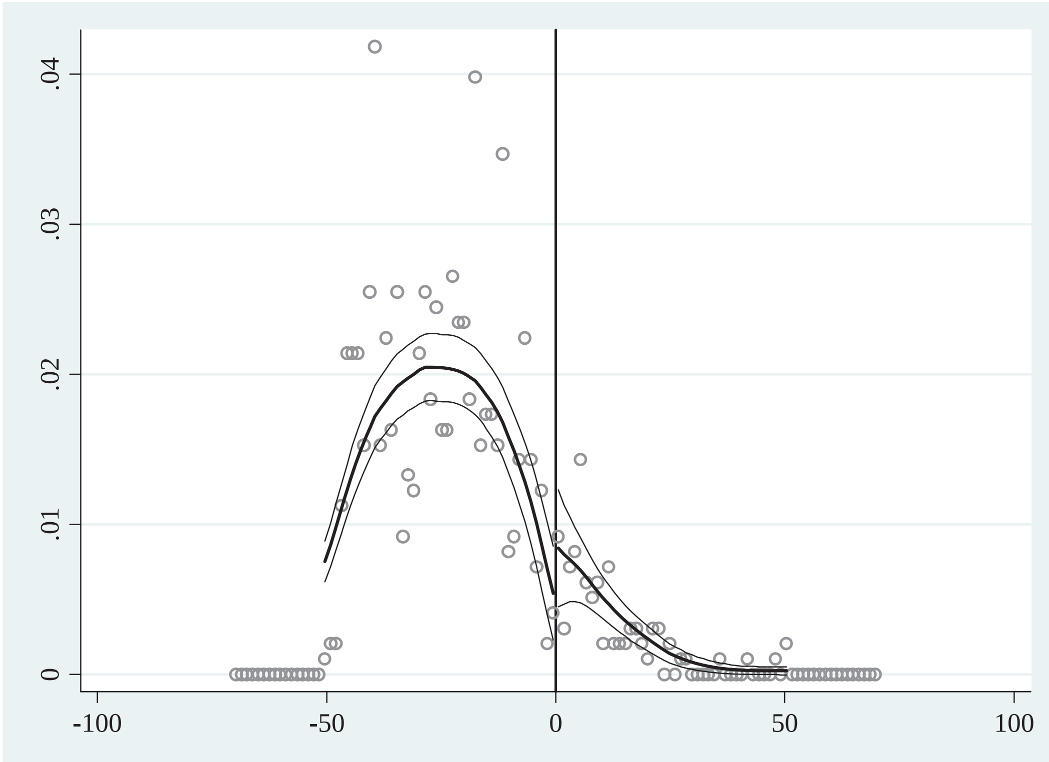
Hall BH, Jaffe AB, Trajtenberg M. 2005. Market value and patent citations. *RAND Journal Economics* **36**(1): 16–38.

McCrary J. 2008. Manipulation of the running variable in the regression discontinuity design: a density test. *Journal of Econometrics* **142**(2): 698–714.

Staiger DO, Stock JH. 1997. Instrumental variables regression with weak instruments. *Econometrica* **65**(3): 557–586.

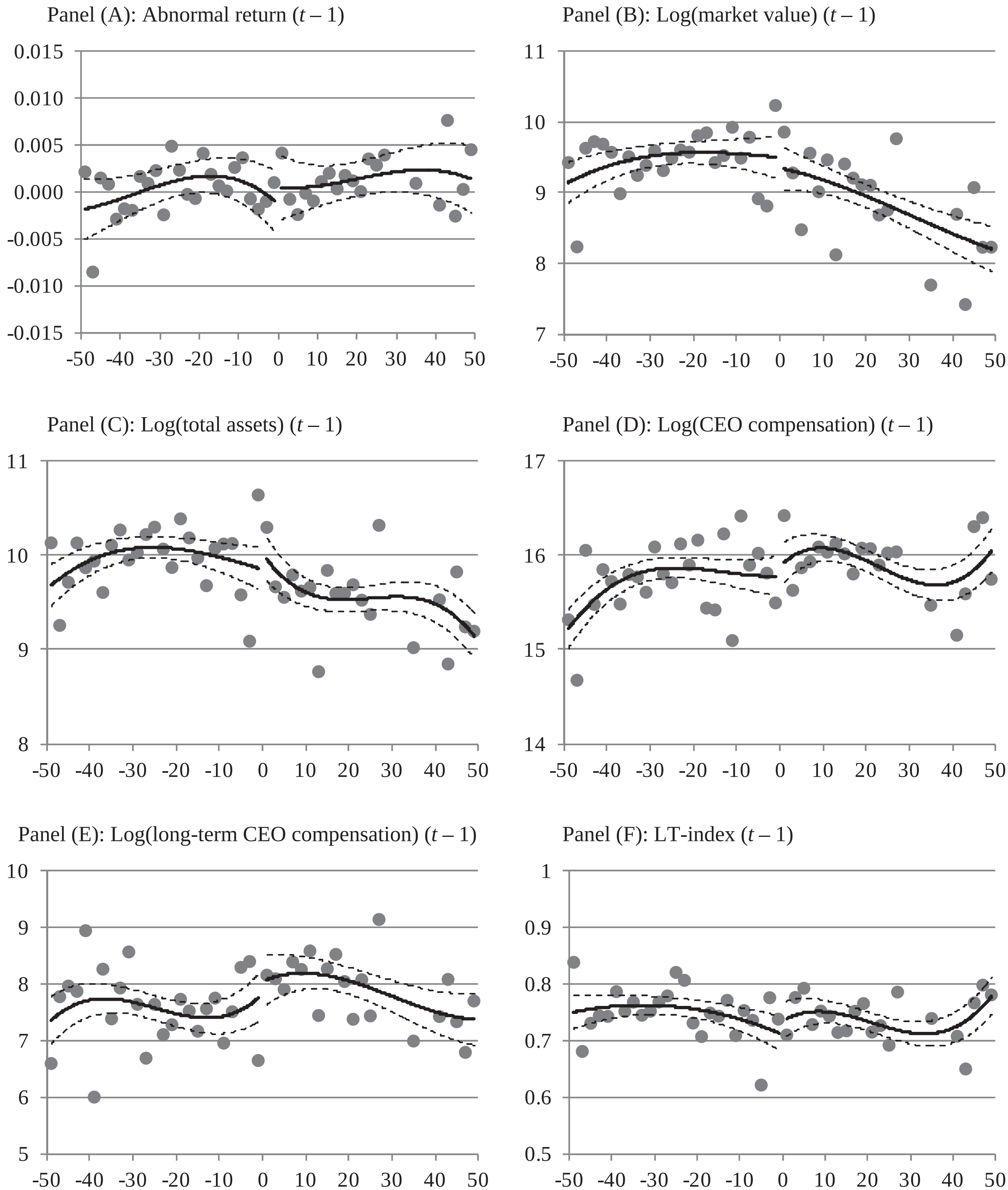
Stock JH, Yogo M. 2005. Testing for weak instruments in linear IV regression. In *Identification and Inference for Econometric Models: Essays in Honor of Thomas Rothenberg*, Andrews DWK, Stock JH (eds). Cambridge University Press: Cambridge, UK; 80–108.

Figure A1. McCrary test

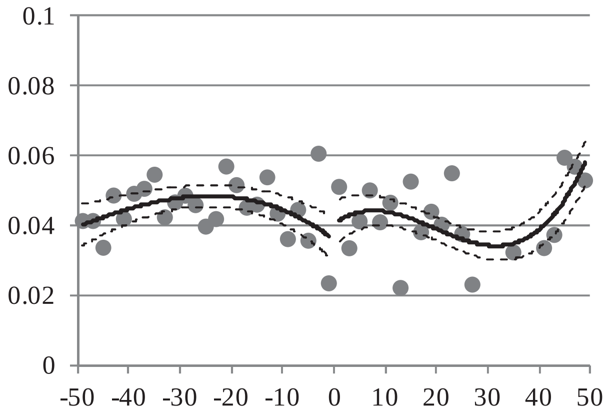


Notes. This figure presents a visualization of the McCrary (2008) test for the continuity of the vote share distribution around the majority threshold. The horizontal axis indicates the victory margin (i.e., the vote share minus the majority threshold). The vertical axis indicates the logarithm of the estimated density.

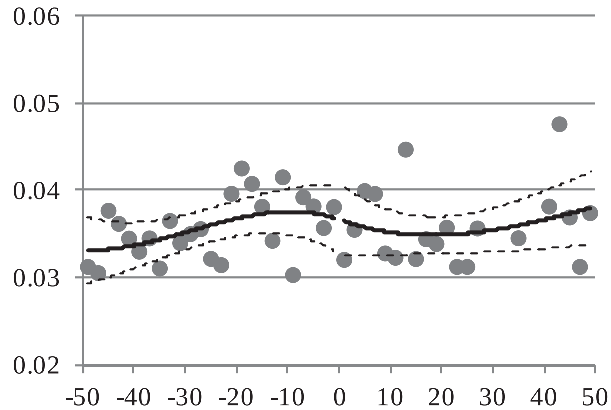
Figure A2. Graphical analysis—covariates



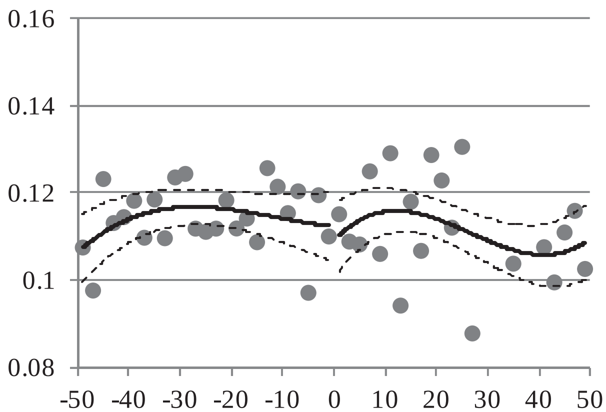
Panel (G): Capital expenditures ($t-1$)



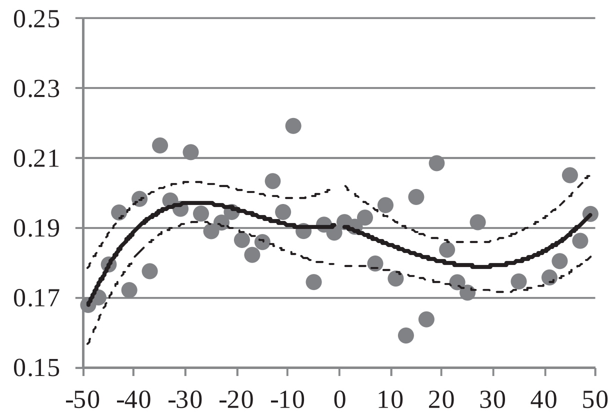
Panel (H): R&D expenditures ($t-1$)



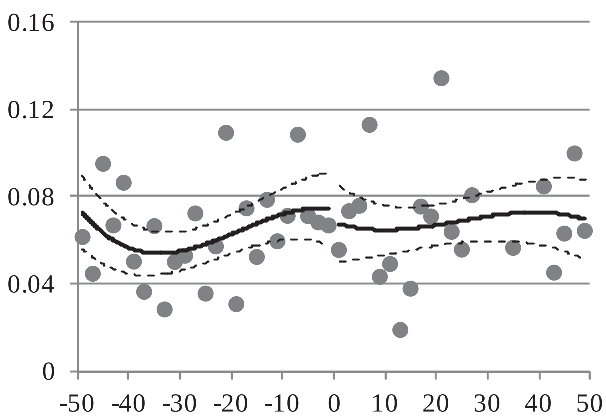
Panel (I): ROA ($t-1$)



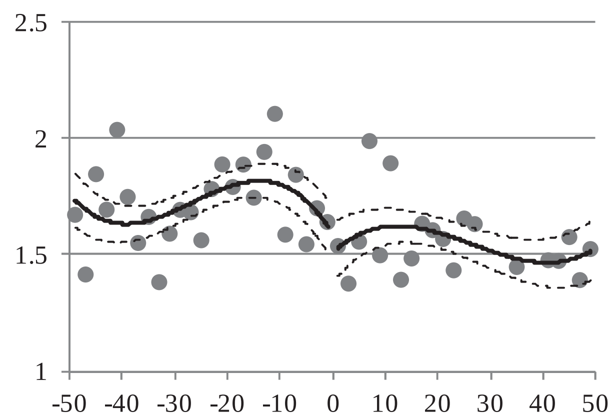
Panel (J): NPM ($t-1$)



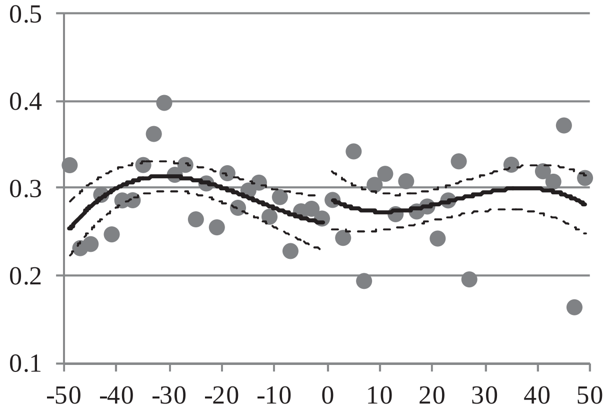
Panel (K): Sales growth ($t-1$)



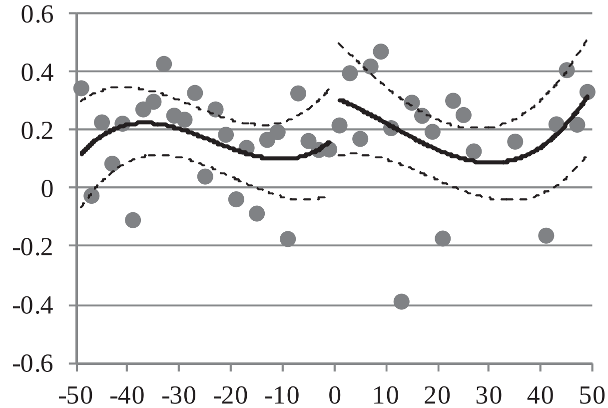
Panel (L): Tobin's Q ($t-1$)



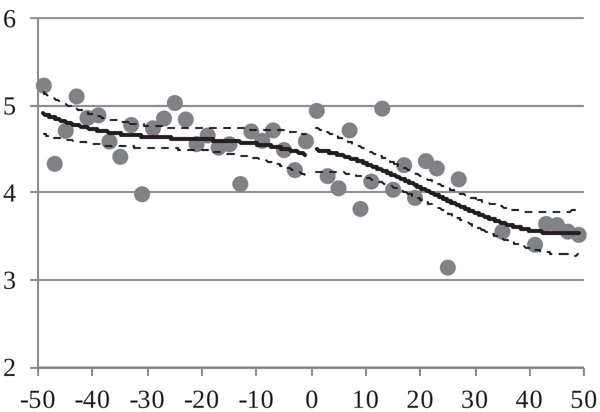
Panel (M): Leverage ($t-1$)



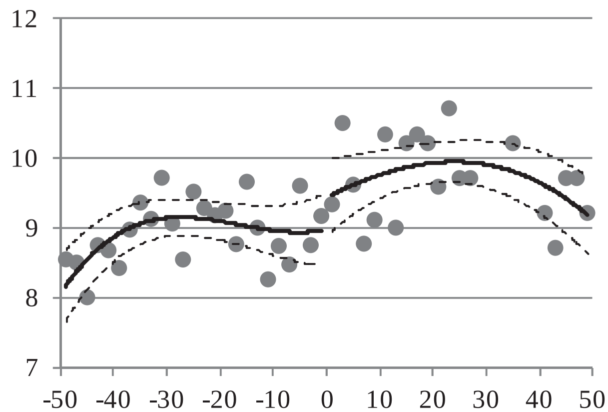
Panel (N): KZ-index ($t-1$)



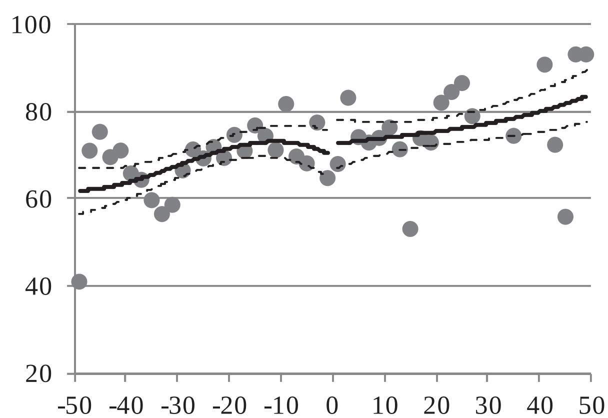
Panel (O): KLD-index ($t-1$)



Panel (P): G-index ($t-1$)

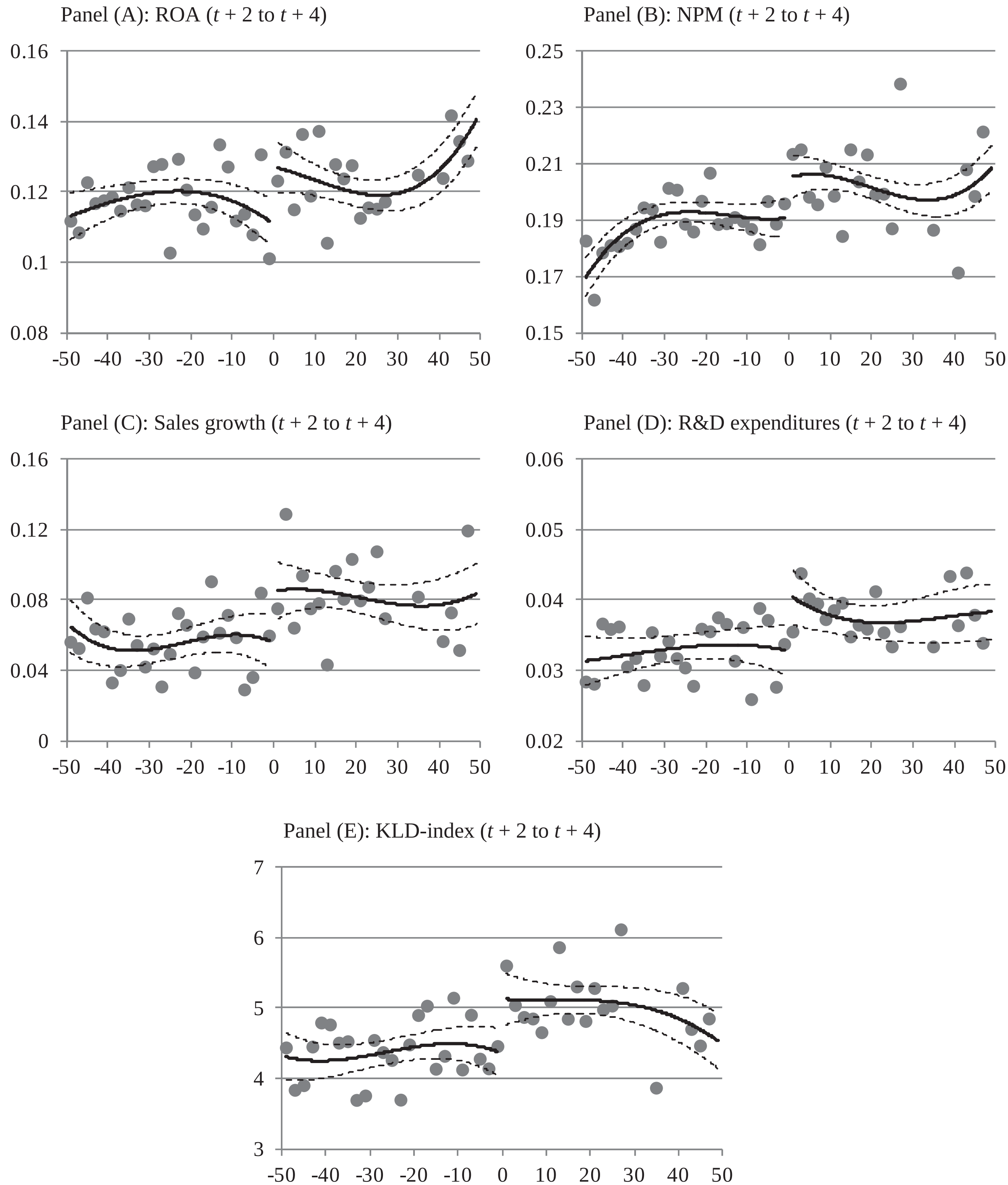


Panel (Q): Institutional ownership ($t-1$)



Notes. Each figure plots a specific variable against the victory margin (i.e., the vote share minus the majority threshold). Each dot in the figure represents the average of the variable in 2% bins of vote share. The solid line represents the predicted values from third-order polynomials in vote share estimated separately on either side of the majority threshold. The dashed lines represent one-standard deviation bounds.

Figure A3. Graphical analysis—dependent variables



Notes. Each figure plots a specific variable against the victory margin (i.e., the vote share minus the majority threshold). Each dot in the figure represents the average of the variable in 2% bins of vote share. The solid line represents the predicted values from third-order polynomials in vote share estimated separately on either side of the majority threshold. The dashed lines represent one-standard deviation bounds.

Table A1. Pre-trends as a function of the vote outcome

	Change from (t – 2) to (t – 1)			
	Diff-in-means (all proposals)	Diff-in-means [–10%, +10%]	Diff-in-means [–5%, +5%]	RDD estimate (full model)
	(1)	(2)	(3)	(4)
Abnormal return	-0.001	-0.002	0.001	0.003
	(0.003)	(0.006)	(0.011)	(0.007)
Log(market value)	-0.043	0.009	0.026	0.044
	(0.055)	(0.076)	(0.129)	(0.107)
Log(total assets)	-0.026	0.025	0.064	0.012
	(0.024)	(0.029)	(0.055)	(0.046)
Log(total CEO compensation)	0.128	0.274	0.236	0.529
	(0.181)	(0.167)	(0.275)	(0.352)
Log(long-term CEO compensation)	0.195	0.144	0.339	0.249
	(0.761)	(1.263)	(2.012)	(1.474)
LT-index	-0.000	-0.002	0.006	0.010
	(0.011)	(0.016)	(0.022)	(0.022)
Capital expenditures	-0.001	-0.001	-0.001	-0.001
	(0.002)	(0.003)	(0.005)	(0.004)
R&D expenditures	-0.003	-0.001	-0.001	-0.001
	(0.002)	(0.002)	(0.004)	(0.005)
ROA	-0.000	-0.002	-0.003	-0.006
	(0.006)	(0.010)	(0.019)	(0.011)
NPM	-0.005	-0.002	-0.001	-0.001
	(0.016)	(0.023)	(0.052)	(0.032)
Sales growth	0.022	0.009	0.030	0.028
	(0.030)	(0.043)	(0.077)	(0.058)
Tobin's Q	-0.002	0.066	0.076	0.088
	(0.051)	(0.088)	(0.148)	(0.102)
Leverage	-0.004	-0.001	-0.001	-0.001
	(0.006)	(0.009)	(0.017)	(0.012)
KZ-index	-0.057	-0.059	-0.028	-0.053
	(0.039)	(0.048)	(0.105)	(0.079)
KLD-index	0.010	-0.085	-0.095	-0.172
	(0.180)	(0.275)	(0.355)	(0.357)
G-index	-0.025	-0.010	-0.020	-0.019
	(0.056)	(0.099)	(0.138)	(0.109)
Institutional ownership	0.592	-1.920	-3.037	-2.039
	(1.721)	(2.004)	(2.339)	(3.346)

Notes. Column (1) reports the difference-in-means among all firms in the sample; column (2) reports the difference-in-means among all firms with a proposal whose vote share lies within 10% of the majority threshold; column (3) reports the difference-in-means among all firms with a proposal whose vote share lies within 5% of the majority threshold; column (4) reports the difference at the majority threshold by estimating the RDD specification in equation (1) including polynomials of order three on both sides of the threshold. Standard errors (reported in parentheses) are clustered at the firm level.

Table A2. Robustness

	Including controls and year dummies	Market model	Positive returns	No confounding shareholder proposal [–10%, +10%]	Placebo test (45%-cutoff)	Placebo test (55%-cutoff)	Dynamic RDD
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pass	0.0103	0.0101	0.1841	0.0159	-0.0016	-0.0034	
	(0.0052)	(0.0041)	(0.0883)	(0.0061)	(0.0036)	(0.0059)	
Day of vote, t							0.0121
							(0.0054)
One day later, $t+1$							0.0027
							(0.0076)
Days $t+2$ to $t+7$							0.0061
							(0.0006)
Polynomial in vote share	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.064	0.008	0.003	0.015	0.008	0.002	0.041
Observations	492	808	808	587	808	808	4,040

Notes. The regression in column (7) is estimated using the dynamic RDD specification of Cuñat *et al*. (2012) with firm-meeting fixed effects. Standard errors (reported in parentheses) are clustered at the firm level.

Table A3. Fuzzy RDD

	Δ Long-term/total CEO compensation	Abnormal return
	1st stage	2nd stage
	(1)	(2)
Pass	0.055	
	(0.016)	
Δ Long-term/total CEO compensation [instrumented]		0.083
		(0.029)
Polynomial in vote share	Yes	Yes
R-squared	0.016	0.013
Observations	758	758

Notes. Standard errors (reported in parentheses) are clustered at the firm level.

Table A4. Alternative cutoffs for explorative versus exploitative patents

	Share of explorative patents					Share of exploitative patents				
	100% new to the firm	> 90% new to the firm	> 80% new to the firm	> 70% new to the firm	> 60% new to the firm	0% new to the firm	< 10% new to the firm	< 20% new to the firm	< 30% new to the firm	< 40% new to the firm
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Year of vote, *t*	-0.001	-0.003	-0.002	0.002	-0.001	-0.001	-0.002	0.001	0.000	0.001
	(0.023)	(0.022)	(0.020)	(0.020)	(0.019)	(0.027)	(0.025)	(0.018)	(0.020)	(0.019)
One year later, *t* + 1	0.021	0.015	0.016	0.014	0.008	-0.008	-0.008	-0.005	-0.006	-0.005
	(0.027)	(0.023)	(0.021)	(0.023)	(0.019)	(0.029)	(0.026)	(0.021)	(0.022)	(0.020)
Years *t* + 2 to *t* + 4	0.045	0.052	0.047	0.042	0.034	-0.028	-0.029	-0.023	-0.023	-0.022
	(0.027)	(0.024)	(0.023)	(0.023)	(0.020)	(0.029)	(0.029)	(0.025)	(0.023)	(0.020)
Polynomial in vote share	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.541	0.560	0.568	0.572	0.571	0.559	0.563	0.567	0.565	0.568
Observations	804	804	804	804	804	804	804	804	804	804

Notes. The regressions are estimated using the dynamic RDD specification of Cuñat *et al*. (2012) with firm-meeting fixed effects. Standard errors (reported in parentheses) are clustered at the firm level.

Table A5. Firm risk and managerial turnover

	CEO turnover	Log(equity volatility)
	(1)	(2)
Year of vote, t	0.016	0.0020
	(0.034)	(0.0046)
One year later, $t+1$	0.019	0.0034
	(0.035)	(0.0048)
Years $t+2$ to $t+4$	0.020	0.0065
	(0.035)	(0.0049)
Polynomial in vote share	Yes	Yes
R-squared	0.491	0.598
Observations	3,637	3,794

Notes. The regressions are estimated using the dynamic RDD specification of Cuñat *et al.* (2012) with firm-meeting fixed effects. Standard errors (reported in parentheses) are clustered at the firm level.

Table A6. Long-term compensation and long-term index

	Log(1 + long-term CEO compensation)	Long-term / total CEO compensation	LT-index
	(1)	(2)	(3)
Year of vote, *t*	0.203	0.038	0.017
	(0.025)	(0.005)	(0.008)
One year later, *t* + 1	0.246	0.064	0.025
	(0.026)	(0.006)	(0.008)
Years *t* + 2 to *t* + 4	0.371	0.101	0.045
	(0.026)	(0.006)	(0.009)
Polynomial in vote share	Yes	Yes	Yes
R-squared	0.560	0.579	0.759
Observations	3,637	3,637	3,697

Notes. The regressions are estimated using the dynamic RDD specification of Cuñat *et al.* (2012) with firm-meeting fixed effects. Standard errors (reported in parentheses) are clustered at the firm level.

Table A7. External validity

	[–5%, +5%] vs. other LT proposals			[–10%, +10%] vs. other LT proposals			Public firms with activist shareholders LT proposal vs. no LT proposal			Public firms with and without activist shareholders LT proposal vs. no LT proposal / no activist shareholder		
	Mean [–5%, +5%]	Mean other	*p* -value	Mean [–10%, +10%]	Mean other	*p* -value	Mean sample	Mean other	*p* -value	Mean sample	Mean other	*p* -value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Total assets ($ billion)	115.722	108.582	0.808	112.359	108.414	0.814	109.156	101.681	0.417	109.156	14.983	0.000
Market value ($ billion)	41.088	37.595	0.715	37.157	38.043	0.872	37.876	35.957	0.334	37.876	7.663	0.000
Total CEO compensation ($ million)	13.139	13.223	0.962	13.995	13.034	0.513	13.217	12.534	0.388	13.217	5.411	0.000
Long-term CEO compensation ($ million)	5.851	4.197	0.227	5.178	4.127	0.175	4.327	3.689	0.295	4.327	1.796	0.000
LT-index	0.732	0.751	0.262	0.731	0.753	0.088	0.749	0.731	0.552	0.749	0.710	0.000
Capital expenditures	0.045	0.046	0.906	0.043	0.046	0.371	0.046	0.048	0.467	0.046	0.048	0.514
R&D expenditures	0.050	0.038	0.208	0.045	0.038	0.306	0.039	0.031	0.312	0.039	0.048	0.017
ROA	0.095	0.114	0.064	0.108	0.114	0.363	0.113	0.110	0.410	0.113	0.123	0.072
NPM	0.181	0.190	0.660	0.192	0.189	0.840	0.190	0.197	0.393	0.190	0.170	0.069
Sales growth	0.078	0.070	0.734	0.097	0.064	0.07	0.070	0.064	0.411	0.070	0.107	0.000
Tobin's Q	1.503	1.680	0.146	1.611	1.679	0.409	1.666	1.678	0.283	1.666	1.858	0.001
Leverage	0.279	0.289	0.611	0.267	0.293	0.076	0.288	0.265	0.178	0.288	0.223	0.000
KZ-index	0.153	0.165	0.901	0.195	0.157	0.510	0.164	0.109	0.249	0.164	0.072	0.086
KLD-index	4.034	4.517	0.346	4.298	4.522	0.586	4.479	3.820	0.215	4.479	1.749	0.000
G-index	8.917	8.994	0.808	8.877	9.015	0.538	8.988	9.056	0.798	8.988	9.248	0.086
Institutional ownership (%)	71.323	68.250	0.286	71.794	67.682	0.028	68.505	70.267	0.303	68.505	74.561	0.000

Notes. For variables in dollar terms, difference-in-mean tests are conducted with respect to the logarithm of the variables. The *p*-values pertaining to the difference-in-means tests are based on standard errors clustered at the firm level.

Table A8. First stage of Heckman's selection model

	Selection dummy
Activist submitting LT proposal to all portfolio companies	0.572
	(0.080)
Log(total assets)	-0.001
	(0.004)
Log(market value)	0.001
	(0.002)
Log(total CEO compensation)	0.009
	(0.053)
Log(long-term CEO compensation)	-0.001
	(0.001)
LT-index	0.192
	(0.144)
Capital expenditures	-0.081
	(0.506)
R&D expenditures	1.965
	(1.198)
R&D dummy	0.075
	(0.079)
ROA	-1.423
	(1.176)
NPM	-0.030
	(0.063)
Sales growth	0.379
	(0.248)
Tobin's Q	-0.015
	(0.037)
Leverage	0.659
	(0.383)
KZ-index	0.051
	(0.057)
KLD-index	0.015
	(0.047)
G-index	-0.048
	(0.035)
Institutional ownership	-0.003
	(0.002)
Pseudo R-squared	0.089
Observations	4,211

Notes. The regression is estimated using a Probit model, and includes year fixed effects. Standard errors (in parentheses) are clustered at the firm level.

Table A9. Second stage of Heckman's selection model

		Operating performance			Long-term strategies	
	Abnormal returns	ROA	NPM	Sales growth	R&D expenditures	KLD-index
	(1)	(2)	(3)	(4)	(5)	(6)
Pass	0.0109					
	(0.0045)					
Year of vote, t		-0.0083	-0.0072	-0.0322	0.0035	0.261
		(0.0051)	(0.0101)	(0.0211)	(0.0020)	(0.213)
One year later, $t+1$		0.0015	0.0083	0.0183	0.0046	0.441
		(0.0051)	(0.0102)	(0.0212)	(0.0020)	(0.219)
Years $t+2$ to $t+4$		0.0125	0.0206	0.0397	0.0048	0.910
		(0.0056)	(0.0105)	(0.0232)	(0.0022)	(0.234)
Inverse Mills ratio	-0.0149	-0.0143	-0.0017	-0.0095	-0.0128	0.608
	(0.0145)	(0.0197)	(0.0349)	(0.0756)	(0.0085)	(0.723)
Polynomial in vote share	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.012	0.790	0.787	0.380	0.941	0.864
Observations	492	2,250	2,250	2,250	1,215	2,250

Notes. The regressions in columns (2)-(6) are estimated using the dynamic RDD specification of Cuñat *et al*. (2012) with firm-meeting fixed effects. Standard errors (reported in parentheses) are clustered at the firm level.

Table A10. Robustness—alternative instruments

Panel (A): Number of LT proposals submitted by activist to other companies

	Abnormal returns	ROA	NPM	Sales growth	R&D	KLD-index
	(1)	(2)	(3)	(4)	(5)	(6)
Pass	0.0105					
	(0.0045)					
Year of vote, *t*		-0.0081	-0.0066	-0.0303	0.0035	0.298
		(0.0051)	(0.0101)	(0.0211)	(0.0020)	(0.213)
One year later, *t* + 1		0.0016	0.0077	0.0182	0.0044	0.446
		(0.0051)	(0.0102)	(0.0212)	(0.0020)	(0.219)
Years *t* + 2 to *t* + 4		0.0129	0.0185	0.0388	0.0049	0.899
		(0.0056)	(0.105)	(0.0233)	(0.0022)	(0.234)
Inverse Mills ratio	-0.0170	-0.0027	-0.0283	-0.0097	-0.0107	0.949
	(0.0126)	(0.0178)	(0.0315)	(0.0683)	(0.0078)	(0.652)
Polynomial in vote share	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.011	0.792	0.789	0.382	0.942	0.870
Observations	492	2,250	2,250	2,250	1,215	2,250

Panel (B): Number of LT proposals submitted by activist to other companies in different industries

	Abnormal returns	ROA	NPM	Sales growth	R&D	KLD-index
	(1)	(2)	(3)	(4)	(5)	(6)
Pass	0.0102					
	(0.0045)					
Year of vote, *t*		-0.0081	-0.0068	-0.0314	0.0035	0.303
		(0.0051)	(0.0101)	(0.0211)	(0.0020)	(0.213)
One year later, *t* + 1		0.0015	0.0081	0.0183	0.0045	0.446
		(0.0051)	(0.0102)	(0.0212)	(0.0020)	(0.219)
Years *t* + 2 to *t* + 4		0.0128	0.0191	0.0393	0.0049	0.897
		(0.0056)	(0.105)	(0.0233)	(0.0022)	(0.234)
Inverse Mills ratio	-0.0189	-0.0045	-0.0221	-0.0007	-0.0114	1.129
	(0.0135)	(0.0194)	(0.0343)	(0.0743)	(0.0083)	(0.710)
Polynomial in vote share	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.011	0.792	0.788	0.382	0.942	0.872
Observations	492	2,250	2,250	2,250	1,215	2,250

Panel (C): Number of LT proposals submitted by activist to other companies in different states

	Abnormal returns	ROA	NPM	Sales growth	R&D	KLD-index
	(1)	(2)	(3)	(4)	(5)	(6)
Pass	0.0104					
	(0.0045)					
Year of vote, t		-0.0081	-0.0069	-0.0303	0.0036	0.291
		(0.0051)	(0.0101)	(0.0211)	(0.0020)	(0.213)
One year later, $t+1$		0.0015	0.0081	0.0183	0.0045	0.446
		(0.0051)	(0.0102)	(0.0212)	(0.0020)	(0.219)
Years $t+2$ to $t+4$		0.0129	0.0189	0.0396	0.0049	0.896
		(0.0056)	(0.105)	(0.0233)	(0.0022)	(0.234)
Inverse Mills ratio	-0.0209	-0.0030	-0.0226	-0.0078	-0.0107	1.132
	(0.0139)	(0.0204)	(0.0362)	(0.0964)	(0.0087)	(0.749)
Polynomial in vote share	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.011	0.791	0.788	0.381	0.941	0.872
Observations	492	2,250	2,250	2,250	1,215	2,250

Panel (D): Activist submitting LT proposals to all portfolio companies (extended sample)

	Abnormal returns	ROA	NPM	Sales growth	R&D	KLD-index
	(1)	(2)	(3)	(4)	(5)	(6)
Pass	0.0105					
	(0.0045)					
Year of vote, t		-0.0082	-0.0078	-0.0302	0.0037	0.251
		(0.0051)	(0.0102)	(0.0219)	(0.0020)	(0.212)
One year later, $t+1$		0.0015	0.0079	0.0185	0.0046	0.440
		(0.0051)	(0.0103)	(0.0223)	(0.0020)	(0.219)
Years $t+2$ to $t+4$		0.0122	0.0213	0.0391	0.0044	0.897
		(0.0056)	(0.105)	(0.0230)	(0.0022)	(0.234)
Inverse Mills ratio	-0.0138	-0.0227	-0.0046	-0.0071	-0.0003	0.714
	(0.0162)	(0.0251)	(0.0444)	(0.0837)	(0.0082)	(0.815)
Polynomial in vote share	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.012	0.791	0.787	0.378	0.940	0.863
Observations	492	2,250	2,250	2,250	1,215	2,250

Notes. The regressions in columns (2)-(6) are estimated using the dynamic RDD specification of Cuñat *et al.* (2012) with firm-meeting fixed effects. Standard errors (reported in parentheses) are clustered at the firm level.