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Qian, C, [Crilly, D](#), Lin, Y, Zhang, K and Zhang, R

(2023)

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Organization Science, 34 (1). pp. 358-379. ISSN 1047-7039

DOI: <https://doi.org/10.1287/orsc.2022.1576>

INFORMS (Institute for Operations Research and Management Sciences)

<https://pubsonline.informs.org/doi/10.1287/orsc.20...>

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**SHORT-SELLING PRESSURE AND WORKPLACE SAFETY: CURBING SHORT-
TERMISM THROUGH STAKEHOLDER INTERDEPENDENCIES**

Cuili Qian
Naveen Jindal School of Business
University of Texas at Dallas

Donal Crilly*
London Business School
London, UK

Yupeng Lin
NUS Business School
National University of Singapore

Keyuan Zhang
NUS Business School
National University of Singapore

Rengong (Alex) Zhang
College of Business
City University of Hong Kong

*Correspondence to: Donal Crilly (dcrilly@london.edu, London Business School, Regent's Park, London NW1 4SA, United Kingdom).

We are grateful to Senior Editor Timothy Werner and two reviewers for their excellent guidance. For their valuable comments, we thank Jay Barney, Yuyan Guan, Oliver Zhen Li, Riki Takeuchi, Zheng Wang, Haibin Wu, Wenbo Yang, Yangxin Yu, Liandong Zhang, and Zilong Zhang as well as participants at the London Business School, Bocconi, University of Michigan, University of Pittsburgh, and USI seminar series.

ABSTRACT

We advance a multi-stakeholder framework that highlights the influence of stakeholders in tempering short-termist responses to capital market pressures. When firms face pressure from short sellers in the capital market, they sometimes shift attention to short-term stock performance and neglect critical investments that pay off in the long run. Relying on a quasi-natural experiment and establishment-level data on workplace injuries, we find that short-selling pressure causes an increase in employee injuries. Critically, however, the degree to which the response is short-termist depends on the salience of multiple stakeholders (analysts, shareholders, employees, and managers). We discuss the implications for understanding firms' relations with their stakeholders and, particularly, how these stakeholders influence corporate responses to capital market pressures in ways that matter for long-term value creation. This study also contributes to strategy research by highlighting the downside of capital market deregulation.

Keywords: *Stakeholder interdependency; Stakeholder salience; Short-selling pressure; Workplace safety; Intertemporal perspective.*

“Capitalism and market forces are very powerful in producing wealth and innovation. But we need to ensure that these forces act in the common interest...Market forces and capitalism by themselves aren’t sufficient to ensure the common good.”

Thomas Piketty, *Capital in the Twenty-First Century*

Whilst extensive research investigates the relationship between capital markets and corporate financial performance, recent developments underscore that “performance must be measured not only on the return to shareholders, but also on how it achieves its environmental, social, and good governance objectives” (Schwab 2019, p. 2). Whether capital markets drive companies to perform well on non-financial dimensions is disputed. Though stakeholder-friendly actions, such as efforts to boost employee well-being or to care for the environment, can ultimately contribute to firm value (DesJardine et al. 2019, Flammer 2015, Flammer and Bansal 2017), capital markets initially undervalue investment in intangible assets (Aboody and Lev 1998, Litov et al. 2012), including stakeholder relationships (DesJardine et al. 2021). Thus, when facing capital market pressures, corporate executives often sacrifice the interests of their non-shareholding stakeholders and make myopic decisions (Slawinski and Bansal 2015).

Of course, not all organizations respond to capital market pressures in the same way. Studies identify the temporal orientation of the CEO (Das 1987) or executive team (DesJardine and Bansal 2019) as a key determinant of corporate short-termism. Our point of departure is to recognize that the influence of capital market pressures is not solely a question of the temporal orientation of top managers. Rather, responses also depend on the temporal demands of a range of stakeholders, who attenuate the short-termist impact of capital market pressures. In many instances, stakeholders have aligned interests—i.e., different stakeholders may share a long-term interest in the viability of the firm so that short-termist efforts that harm one stakeholder could ultimately harm others. Stakeholders become salient when they have the power to enforce their own legitimate and urgent interests (Mitchell et al. 1997). Saliency, we argue, allows stakeholders to counteract the potential negative effects of capital market pressures on stakeholder welfare. As such, we advance a multi-stakeholder framework that highlights the influence of various stakeholders—intermediaries (financial analysts), shareholders,

employees, and managers—in tempering short-termist responses to capital market pressures and, in turn, influencing outcomes for stakeholders themselves.

Specifically, we investigate the influence of short-selling pressure on a key dimension of employee welfare: workplace safety. Short sellers, who borrow and sell shares in the market in the hope of repurchasing them at a lower price and returning them, provide value-relevant information to capital markets (Boehmer et al. 2008, Saffi and Sigurdsson 2011). Because short sellers profit from downward stock price movements, they place firms under scrutiny for any sign that current valuations are too high. As a result, managers become conservative and eschew risk (e.g., Shi et al. 2018, Shi et al. 2020). Whether risk avoidance extends to managing the social risk inherent in stakeholder relations is disputed, with evidence pointing to both negative (Bai et al. 2020) and positive (Brockman et al. 2020) associations between short selling and employee welfare.

To reconcile these conflicting findings, we develop a framework that accounts for how short-selling pressure in the capital market leads firms to cut corners in workplace safety to achieve short-term goals, whilst theorizing about the temporal demands of multiple stakeholders in attenuating this effect. An increase in short-selling pressure is a disruptive event that may alter organizational rhythms and create a sense of urgency (e.g., Staudenmayer et al. 2002). While decreasing safety expenditures and imposing heavier workloads can fulfill short-term efficiency goals, over the longer term these measures risk decreasing firm value (Cohn and Wardlaw 2016). Our multi-stakeholder framework investigates contestation over temporal horizons, situating the influence of the capital market within the context of interactions between the firm and its stakeholders (Aguilera and Jackson 2003, Harrison et al. 2010). We hypothesize that short-termism is mitigated when financial analysts, investors, and managers have a long-term orientation and when employees can better protect their long-term interests through the presence of labor unions.

We rely on a quasi-natural experiment instituted by the Regulation SHO (Reg SHO) and data on 17,203 establishment-level employee injuries from 2002 to 2006. In 2004, the Securities and Exchange Commission (SEC) temporarily suspended the so-called uptick rule for a random sample of stocks, which exogenously increased short-selling pressure for affected firms. This quasi-natural experiment potentially altered existing relations between firms and their stakeholders (e.g., Bundy et al. 2018). The

increase in short-selling pressure was also exogenous to other stakeholders' characteristics. Thus, the Reg SHO provides a laboratory to causally investigate how firms' responses to capital market pressures depend on *ex ante* stakeholders' temporal orientations. Our results show that an increase in short-selling pressure creates injuries at a firm's establishment by around 10%. Crucially, the increase in injuries is mitigated when stakeholders are motivated to secure long-term performance and can enforce their interests. We also provide evidence of tension between managing for the short-term and achieving long-term performance: firms that reduce spending on workplace safety benefit from a short-term stock price rise but suffer from a long-term performance decline.

Our multi-stakeholder explanation recognizes that “those with power can exert control over their own and others' time” (Feldman et al. 2020, p.602). As such, we call for a more inclusive understanding of the forces that shape corporate short-termism. Recognizing the multi-stakeholder influence on temporal orientation is critical as U.S. firms become more short-term oriented (Sampson and Shi 2020). Other than capital markets, manifold contextual influences likely contribute to short-termist (and long-termist) responses (Lempert and Phelps 2016). Recognizing that stakeholders have their own temporal demands implies that short-termism is a consequence not only of a firm's leadership or of capital market pressures, but also of the influence and interests of its stakeholders. While employees could protect their interests through unions, our study shows that other stakeholders may also help lower the detrimental impact of short-selling pressure. Thus, long-term investors and analysts as well as managers may protect employees in terms of workplace safety. This resulting stakeholder interdependence through aligned interests is the unique contribution from taking a multi-stakeholder view of the firm when examining the trade-offs between short- and long-term performance, prioritizing one or another stakeholder.

THEORY AND HYPOTHESIS DEVELOPMENT

Stakeholder Salience and Intertemporal Tradeoffs

A tenet in stakeholder theory is that “creating value for stakeholders creates value for shareholders” (Freeman et al. 2004, p.366). Nonetheless, when responding to stakeholders, firms face trade-offs—i.e., “compromise situations when a sacrifice is made in one area to obtain benefits in another” (Byggeth and Hochschorner 2006, p.1420). A decision to prioritize a stakeholder depends on its salience—its power to influence the firm via legitimate and urgent claims (Agle et al. 1999, Mitchell

et al. 1997)—and impacts its relations with other stakeholders because of the existence of stakeholder interdependencies. Stakeholder interdependencies denote the aligned interests of stakeholders (Freeman, 2010); one stakeholder’s action may influence the interests of other stakeholders due to their connected relations with the firm. For example, long-term investors may gain (lose) when employees are treated well (badly) and work more (less) productively as a result (Edmans 2011, Qian et al. 2021). Correspondingly, stakeholder scholarship increasingly adopts a multi-stakeholder perspective that views firms within a complex network of relationships (Rowley 1997). Neville and Menguc (2006, p.377) refer to the complex interactions between stakeholders as stakeholder multiplicity, defined as “the degree of multiple, conflicting, complimentary, or cooperative stakeholder claims made to an organization.”

A trade-off is intertemporal when “firms must choose between investing less for smaller profits sooner and investing more for greater profits later” (Bansal and DesJardine 2014, p.71, Kim et al. 2019). Some stakeholders place weight on long-term payoffs. For example, employees make firm-specific investments in learning skills and ways of working that may not be transferable to other enterprises (Blair and Stout 1999, Wang et al. 2009). Their investments are at risk if the firm performs poorly over the long run. In contrast, transient shareholders do not always gain when the firm makes long-term investments because —initially, at least— markets do not necessarily value them correctly (e.g., Litov et al. 2012). Maximizing a firm’s stock price at a given point in time may not be the same as maximizing its long-term value. Long-term effectiveness and short-term efficiency often reflect different priorities and organizational processes (Wang and Bansal 2012, Zhang and Gimeno 2016).

The tension between short- and long-term performance is acute when firms must meet stakeholder requirements from both the capital and labor markets. Over the long run, investors may benefit from efforts to treat employees well, as such efforts typically increase worker commitment (and thereby productivity). Yet, at any point, conflicting interests may arise when managers have to account for short-term performance. Whilst prioritizing short-term performance may ease relations with the capital market, doing so raises conflict with those stakeholders who risk losing out. When these stakeholders are salient, they may attenuate the tendency towards short-termist responses to capital

market pressures. As we subsequently argue, responses must balance pressures emanating from the capital market and those emanating from the interests of salient stakeholders.

Workplace Safety

5,190 fatal and approximately 2.9 million nonfatal workplace injuries and illnesses occurred in U.S. private industry in 2016. As per the Occupational Safety and Health Administration (OSHA)—the regulatory body belonging to the Department of Labor, workplace injuries are work-related injuries that “result in days away from work, restricted work or transfer to another job, [and/or] loss of consciousness or medical treatment beyond first aid.” Such injuries cost approximately 4% of global GDP, and \$550 billion in the U.S. (Leigh 2011).

Regulators are limited in their capacity to constrain workplace injuries. The OSHA is in charge of federal regulation and allows states to run their own safety programs that offer no less protection than OSHA regulation. Regulatory compliance is insufficient to cover all operating procedures and to prevent all injuries.¹ For example, in an effort to meet quotas warehouse workers at Amazon often “twist and bend over to grab boxes,” which can produce injuries even when the firm does not appear to infringe safety violations.² Many injuries arise from the unforeseen consequences of resource allocation policies rather than from purposeful decisions to flout safety legislation. Unintentional violations often result from pressure to meet deadlines.³ The primary enforcement mechanism is through safety inspections.⁴ Moreover, the penalties that OSHA can levy are capped. In 2021, the maximum penalty is \$13,653 per serious violation, and \$136,532 per willful or repeated violation.⁵

Baseline Hypothesis: Short-selling Pressure and Workplace Safety

¹ See <https://riskandinsurance.com/regulatory-compliance-not-always-enough-ensure-critical-equipment-safe-reliable/>

² See <https://www.theatlantic.com/technology/archive/2019/11/amazon-warehouse-reports-show-worker-injuries/602530/>

³ Our discussion with practitioners indicates that some firms would rather risk higher fines for unintentional safety violations than miss important deadlines. The inadequacy of OSHA fines in deterring injuries has been acknowledged by legislators. See <https://www.govinfo.gov/content/pkg/CHRG-111hhrg48731/html/CHRG-111hhrg48731.htm>

⁴ There are two types of safety inspections. One consists of “programmed” inspections, selecting establishments at random. The other consists of “facility event triggered” inspections, which are motivated by employee complaints, “referrals” by other government agencies or media, or “catastrophes” that resulted in the hospitalization or deaths of three or more workers (Johnson 2020).

⁵ See <https://www.osha.gov/penalties>.

Profiting from firms' downside risk, short sellers have incentives to discover corporate wrongdoing and disseminate negative information (Christophe et al. 2010). Pressure from short sellers leaves firms vulnerable to predatory trading and stock price risk. To mitigate the consequences of such pressure, managers do what they can to support the stock price. In practice, this means that they reduce investments (Grullon et al. 2015), lower the precision of bad news forecasts (Li and Zhang 2015), and limit growth modes (Shi et al. 2018, Shi et al. 2020). Some studies also suggest that short-selling pressure will lead firms to improve their employee relations (Brockman et al. 2020). As workplace injuries comprise a source of bad news that could depress the stock price, treating employees well should insure the firm against social risk (e.g., Godfrey et al. 2009).

In contrast, consistent with the finding of Bai et al. (2020), our baseline argument is that short-selling pressure will lead firms to neglect the interests of non-shareholding stakeholders and, thus, to decrease workplace safety. Whilst Bai and colleagues attribute this effect to distorted managerial incentives resulting from short selling, we advance an explicitly intertemporal explanation: the market does not always immediately value stakeholder relationships (Hawn et al. 2018). Firms with superior stakeholder relations may even become targets of activists, who view them as signaling a lack of focus on shareholder value (DesJardine et al. 2021). The tendency to prioritize short-term performance is magnified when firms seek to avoid negative outcomes, as potential losses (such as falling stock prices) loom larger than do potential gains (such as higher productivity) (Bilgen and LeBoeuf 2010). Responding to short-selling pressure is time-sensitive and critical. A rapid way to boost stock prices is to focus on short-term earnings. For example, Nobilis Health Corporation fended off short sellers by delivering quarterly earnings that beat estimates by more than 97% (Hodson 2016).

Efforts to boost short-term results leave firms with limited resources for investments in employee training and machinery upgrades.⁶ Decreasing expenditures reduces employees' opportunities to learn about safety policies and procedures. It can also lead to outdated machinery and hostile working conditions. With limited resources, employees experience burnout and become less careful, leading to more injuries (Schaufeli and Bakker 2004). In addition, firms may boost short-term performance by

⁶ Since short-term earnings are equal to total revenues minus all expenses, reducing expenses, including those on employee training and upgrades in machinery, will mechanically boost short-term earnings.

imposing heavier workloads. High workloads deplete mental and physical strength, increasing injuries (Nahrgang et al. 2011). These arguments lead to our baseline hypothesis:

Hypothesis 1: Short-selling pressure increases workplace injuries.

Stakeholder Salience and Stakeholder Interdependencies

Our premise is that capital market pressures—in the form of short-selling pressure—encourage short-termist responses with consequences for employee well-being. Nonetheless, we nuance this claim, arguing that the relationship is far from deterministic. Rather, the interests and power of stakeholders shape the degree to which responses are short-termist. Critically, firms confront differences in stakeholders' perception and value of time. We theorize that long-term orientated capital market actors—financial analysts and investors—make the interdependence between employee well-being and long-term shareholder value salient to firms. Likewise, major internal stakeholders influence the balance firms strike between supporting short-term stock prices and protecting employees. Employees with power and prominence to enforce their claims will achieve salience, leading firms to care more about their welfare. Finally, top managers are critical stakeholders who allocate resources; their temporal orientation will influence whether they consider the interdependence between employee well-being and shareholder value when responding to short-selling pressure.

Analysts' Horizons. Financial analysts influence firms' valuations and shareholders' decisions by forecasting earnings and making recommendations (Brauer and Wiersema 2018, He and Tian 2013). Even though analysts do not have investments in firms, many investors, including fund managers, delegate the collection and interpretation of information to analysts, legitimating their information intermediary and monitoring role (Bradshaw et al. 2017). Analysts' judgments and evaluations influence managerial myopia, leading managers to improperly assess the long-term consequences of their decisions (DesJardine and Bansal 2019, Marginson and McAulay 2008). When analysts expect earnings to deteriorate, they revise their forecasts, resulting in negative market reactions. Firms with more analyst coverage face greater scrutiny and pressure from analysts and investors alike (Gentry and Shen 2013, Roychowdhury 2006). Meeting or beating analysts' forecasts can yield positive market outcomes, while missing targets gives rise to negative stock returns and imperils top managers' compensation and job security (Bartov et al. 2002; Kothari et al. 2016). To meet or beat analysts'

earnings expectations, firms may limit investments with long pay-off periods (Souder and Shaver 2010). For instance, they may cut their research and development and social responsibility spending (He and Tian 2013, Qian et al. 2019).

Yet, whilst analyst pressure is often viewed as contributing to corporate short-termism, analysts differ in terms of their preferences and capability to issue long-term versus short-term forecasts, and the pressure on a firm to perform in the short term is particularly high when most analysts covering the firm issue short-term forecasts. Analysts vary in the attention they allocate between firms' short- and long-run performance prospects in making their recommendations. For instance, due to differences in backgrounds and skills, some analysts issue more short-term forecasts while others issue more long-term forecasts (Chen et al. 2020). Pressure on firms to perform in the short term is particularly salient when analysts are themselves myopic, i.e., place a premium on immediate performance. In contrast, analysts who issue long-term forecasts have a better understanding of how changes in firms' resource allocation influence their future growth prospects and ultimately help ensure that stock prices reflect actions whose effects might not materialize in the near future (Jung et al. 2012).

Long-term-oriented analysts take more value-relevant factors into account when making their forecasts (Jung et al. 2012). They are therefore likely more sensitive to the interdependencies that exist between stakeholders, such as the consequences for shareholders that emanate from reducing investment in employee safety. When covered by analysts that report long-term forecasts, firms will aspire to meet long-term performance targets in order to maintain or to obtain favorable coverage. Otherwise, the risk is that analyst coverage will provide negative information which short sellers will exploit to short the firm's stock. In short, whereas pressure from short-term-oriented analysts, who press firms to deliver immediate performance, will magnify the pressure exerted by short sellers and push managers to sacrifice employees' welfare to a greater extent to achieve a short-run increase in earnings, coverage from long-term-oriented analysts will press firms to consider the long-term performance implications of cutting back on safety expenditure (and the potential for negative analyst reactions).

Hypothesis 2: The positive effect of short-selling pressure on workplace injuries is weakened for firms covered by more long-term oriented analysts.

Investor Horizons. Investors are heterogeneous (Gompers and Metrick 2001). Importantly, many shareholders are interested in long-term corporate value. Their presence reduces the tendency for a firm's stock to be mispriced in the short term (Derrien et al. 2013), mitigating firms' inclination to act short-termist (Zhang and Gimeno 2016). In particular, institutional investors have considerable power and legitimacy, two criteria to be salient (Mitchell et al. 1997). They wield power over a firm through their voting rights and resource provision. Due to their large ownership stakes, institutional investors are perceived as more legitimate than shareholders with smaller stakes (David et al. 2007).

Regarding claim urgency, institutional investors have heterogeneous investment horizons—some investors are more time-sensitive to returns than others. Specifically, dedicated institutional investors acquire concentrated equity in a few firms and have extended investment horizons, whereas transient institutional investors hold a dispersed portfolio of firms and have shorter investment horizons (Bushee 2001, Connelly et al. 2010). As dedicated institutional investors care more about long-term performance than short-term payoffs, firms are more likely to allocate resources to long-term investments and capital expenditures even if doing so depresses quarterly earnings. Institutions with long investment horizons evaluate managers' performance over the long term, freeing them from focusing on near-term earnings (Bushee 2001). Such ownership is less frequently associated with tactics to create value in the short term via direct influence on current earnings and market share (Connelly et al. 2010).

Whereas the mere existence of dedicated institutional investors may lead to a long-term focus that attenuates the extent to which firms will cut back on employee safety, we argue that it will also mitigate the short-selling pressure experienced by firms. As dedicated investors are not momentum traders (Cremer and Pareek 2015), they are not likely to follow short sellers even though the latter impose significant price pressure. Based on these arguments, we argue that when a firm has a higher level of dedicated institutional ownership, it will be less sensitive to a short-term earning focus, and the detrimental effect of short-selling pressure on the number of employee injuries will be less pronounced.

Hypothesis 3: The positive effect of short-selling pressure on workplace injuries is weakened for firms with more long-term oriented investors.

Employee salience. We next develop arguments that the effect of short-selling pressure on employee injuries will be mitigated if employees have higher bargaining power to achieve salience and

demand managerial responses. We note that employees often have “horizon preferences” focused on the long term (Reilly et al. 2016, p.1184). Employees, similar to other nonshareholding stakeholders such as debtholders, are more concerned about the downside risk of firms going out of business and less about the upside benefits of increased cash flows. Employees make firm-specific investments, and the returns of such investments tend to be long term. They usually enjoy long-lasting relations with firms, meaning that their interests are better served by improvements in long-term value rather than in short-term stock performance (Blair and Stout 1999). The challenge, then, is to understand when employees are sufficiently salient so that firms will favor the kinds of long-term investments that protect employee interests (Wang et al. 2009).

Employees’ bargaining power is higher if they belong to strong labor unions—an important nonfinancial stakeholder group. Although unions do not have a direct equity or debt stake in the firm, they have considerable bargaining power as they can monopolize the labor supply and extract rent in the form of higher-than-market wages (Myers and Saretto 2016). Union strength increases the immediate costs—and, hence, the urgency—to firms from employee injuries because unions can threaten disruption to work processes (Dixon and Martin 2012). Thus, union pressure raises the costs of treating employees inappropriately. Additionally, employees associated with strong labor unions are systematically involved in corporate decision-making, which may mitigate the negative influence of strategic decisions on employee welfare. Strong unions limit the capacity of executives to focus on short-term stock performance. Dialogue between management and employees facilitates collaborative problem-solving and flexible labor-management relationships that enhance long-term competitiveness, help firms adjust to shifting market demands, and supersede short-term pressures (Campbell 2007).

Critically, for our theory, labor unions seek to advance employees’ long-term interests. As Lee and Kim (2018) explain, strong unions make it difficult for firms to implement short-termist employment policies. Collective bargaining by unions protects employees’ interests even in the presence of short-term performance pressures. In particular, unions can bargain for reduced working hours (Chyz et al. 2013, DeAngelo and DeAngelo 1991, Matsa 2010) and also enforce employment protection agreements and legislation, further discouraging firms from engaging in cost-shifting activities (i.e., reducing expenditures on training, delaying machinery upgrades, and imposing heavier

workloads). Strong labor unions will monitor firm behaviors, making it more difficult to cut expenses and increase workloads while buffering the influence of short-selling pressure on employees' injuries.

Hypothesis 4: The positive effect of short-selling pressure on workplace injuries is weakened for firms with labor unions.

Top management team (TMT) horizons. As Mitchell and colleagues (1997, p.871) explained, while stakeholder attributes can be measured, ultimately “it is the firm's managers who determine which stakeholders are salient and therefore will receive management attention.” TMTs vary in the degree to which they prioritize short-term vs. long-term outcomes. Evidence shows that some management teams are less susceptible than others to capital-market pressures for short-term performance (Slawinski and Bansal 2015). The time orientation of the TMT has critical implications for how the team allocates resources (Nadkarni et al. 2019, Souitaris and Maestro 2010). Firms with short-term-oriented management teams place emphasis on achieving results in the coming quarter. As such, they systematically manage earnings to meet or beat analysts' forecasts (Zhang and Gimeno 2016). They overvalue the present and refrain from making positive-net present value investments when they fear a negative initial market reaction (Roychowdhury 2006). These management teams are sensitive to the potential benefits to earnings from cutting costs and thus not likely to bear in mind the long-term consequences for firm value of neglecting employee safety. Such teams are arguably more alert to, and perhaps even have an exaggerated perception of, potential tensions between shareholding and non-shareholding stakeholders (Bansal and DesJardine 2014).

In contrast, firms with long-term-oriented management teams are less concerned with meeting quarterly earnings targets and more concerned with ensuring long-term value creation. Long-term-oriented management teams invest extensively in research and development (Brochet et al. 2015) and stakeholder relationships (Flammer and Bansal 2017), even when the returns from such investments may take time to materialize. They are sensitive to potential complementarities between stakeholders—such as how shareholders may gain over extended periods from costly actions to keep employees safe and motivated. They thus may devote more attention to their employees and investment in the development of human capital and well-being (Flammer and Bansal 2017). More sensitive to the future consequences of an increase in employee injuries, long-term-oriented management teams readily

recognize convergent interests across shareholders and employees and are less motivated to engage in tactics to inflate short-term stock performance at the expense of employee interests.

Hypothesis 5: The positive effect of short-selling pressure on workplace injuries is weakened for firms with long-term-oriented top management teams.

METHODS

A Natural Experiment Research Design

We obtained workplace injury data at the establishment level from the Data Initiative Program (ODI) conducted in the U.S. by OSHA from 2002 to 2011. OSHA ODI investigates all manufacturing and non-construction industries with high hazard rates.⁷ Establishments with 11 or more employees are required to record work-related injuries. Those who fail to comply are audited and fined under OSHA Directive 00-1 (CPL2). As per OSHA standard 1904.46, an establishment is a physical location where business is conducted or where services or industrial operations are performed. The public data, OSHA-ODI, used in our sample, mainly cover large establishments with more than 40 employees. For each establishment, the database provides information on the name, location, total injuries, injuries resulting in work absence, number of employees, and number of hours worked. OSHA makes data publicly available two years after collection through the Bureau of Labor Statistics. Since 1996, the program has included more than 80,000 private sector establishments every year. The OSHA-ODI database is the most comprehensive data set for research on employee injuries (e.g., Caskey and Ozel 2017). As OSHA modified its recording criteria in 2002, we rely on injury data after that year for consistency.

Several empirical challenges exist to establish the impact of stakeholder interdependencies on a company's response to short-selling pressure. First, a company's stakeholders take actions simultaneously during ongoing operations. As a result, potential reverse causality makes it unclear which stakeholder takes the first step and how outcomes depend on other stakeholders' characteristics. Second, injury data may be subject to survival bias. If factors determining survivorship are correlated with short selling workplace injuries, a simple ordinary least square (OLS) estimation would provide a misleading indication. To mitigate these concerns, our identification strategy relies on a quasi-natural

⁷ Industries with high hazard rates are defined by OSHA as DART/LWDII rate of 5.000 or greater. DART = (injury cases with days away from work, restricted work activity, or job transfer) * 200,000 / (work hours). LWDII = (the number of lost workdays) * 200,000 / (work hours).

experiment instituted by the passage of Reg SHO. Prior to Reg SHO, regulators implemented price test restrictions for short sales (e.g., the uptick test in NYSE, and the bid price test in NASDAQ). During the Reg SHO, the SEC ranked Russell 3000 Index firms according to their daily trading volume and picked every third firm. Price tests were stopped for these pilot firms between May 2, 2005, and August 6, 2007. Because the selection of pilot firms was unrelated to core stakeholders' characteristics or factors determining survivorship, the treatment indicator based on this pilot program satisfies the exclusion condition. After the passage of Reg SHO, short-selling activities became more frequent for pilot firms than for others (e.g., Diether et al. 2009), making these firms more vulnerable to short sellers. Therefore, the treatment indicator meets the relevance condition. Also, this near-exogenous event addresses possible endogeneity insofar as short sellers might target firms with greater safety concerns.

Our sample began with Russell 3000 Index firms listed in 2004 and 2005, resulting in 999 pilot firms and 2,032 control firms. We merged the Russell 3000 Index firms with OSHA-ODI data from 2002 to 2006 using names and online searches. For each match, we searched company and establishment websites, Bloomberg, Capital IQ, and other online sources to confirm that the establishment was a subsidiary of the matched firm, and we eliminated cases when in doubt. This process resulted in 22,851 establishment-year observations. We further screened the sample by excluding: (1) observations in 2004 as the SEC did not identify the pilot firms until halfway through that year ($N = 4,731$); (2) observations in regulated industries (SIC codes from 4900 to 4999 and from 6000 to 6999; $N = 825$); and (3) 92 observations that lacked sufficient accounting and equity market information. We were left with a final sample of 17,203 establishment-years covering 5,482,510 employees from 2002 to 2006. These establishments were owned by 361 (34%) pilot firms and 682 (66%) non-pilot firms, and the ratio of pilot to non-pilot firms is similar to that in the full Russell 3000 Index (33%).

We obtained data on financial analysts, institutional investors, labor union membership data, and other firm characteristics from IBES, Thomson Reuters, the Federal Mediation & Conciliation Service and Compustat, etc. Panel A of Table 1 shows the sample selection procedure. Our final sample consists of 5,069 treatment observations and 12,134 control observations.

Measures and Estimations

We relied on the following DID design to causally establish the baseline relationship between short-selling pressure and workplace injuries and the moderation effect of stakeholder horizons.

$$\begin{aligned} \text{Workplace injuries}_{i,j,t} = & \beta_0 + \beta_1 \text{Pilot}_j \times \text{Post}_t + \beta_2 \text{Firm size}_{j,t} + \beta_3 \text{Leverage}_{j,t} + \beta_4 \text{Fixed assets}_{j,t} \\ & + \beta_5 \text{Capital expenditures}_{j,t} + \beta_6 \text{Market-to-book}_{j,t} + \beta_7 \text{Meet or beat forecasts}_{j,t} \\ & + \beta_8 \text{Strike}_{i,j,t} + \beta_9 \text{Shutdowns}_{i,j,t} + \beta_{10} \text{Seasonal workers}_{i,j,t} + \beta_{11} \text{Disaster}_{i,j,t} \\ & + \beta_{12} \text{Establishment size}_{i,j,t} + \beta_{13} \text{Hours/employees}_{i,j,t} \\ & + \text{Firm FE} + \text{Year} \times \text{Industry FE} + \varepsilon_{i,j,t}, \end{aligned} \quad (1)$$

$$\begin{aligned} \text{Workplace injuries}_{i,j,t} = & \beta_0 + \beta_1 \text{Pilot}_j \times \text{Post}_t \times \text{Moderation}_j + \beta_2 \text{Pilot}_j \times \text{Post}_t + \beta_3 \text{Post}_t \times \text{Moderation}_j \\ & + \Sigma \beta \text{Control variables} + \text{Firm FE} + \text{Year} \times \text{Industry FE} + \varepsilon_{i,j,t}, \end{aligned} \quad (2)$$

In Eq.(1) and Eq.(2)., i indicates establishment, j indicates firm, and t indicates the fiscal year. *Workplace injuries* is the sum of injury cases scaled by total working hours of establishment i of firm j in fiscal year t , and the sum is multiplied by 200,000.⁸ The injury cases involved general injuries, skin disorders, respiratory conditions, poisonings, all other illnesses, and work-related deaths. *Pilot* is an indicator that equals 1 for establishments affiliated to a pilot firm and 0 otherwise. *Post* is an indicator that equals 1 for fiscal years 2005 to 2006 and 0 for 2002 to 2003.

We included three sets of control variables. The first set captured firm-specific characteristics including *firm size*, *leverage*, *fixed assets*, *capital expenditures*, *market-to-book ratio*, as well as whether firms *meet or beat forecasts* issued by analysts. These characteristics control for production technology, short-run, and long-run growth (Cohn and Wardlaw 2016) and earning pressures which may affect workplace safety. The second set of controls is at the establishment level. *Strike*, *Shutdowns*, *Seasonal workers*, and *Disaster* are indicator variables that measure strikes, shutdowns, employment of seasonal workers, and natural disasters for the establishment i of firm j in fiscal year t —all of which may affect injuries. Taking *Strike* as an example, a strike might reduce workplace injuries in the near future. We also control the number of employees (*establishment size*) and *hours/employees* in the establishment. We include *firm* fixed effects and *year-industry interactive* fixed effects to mitigate the potential factors affecting the pre-Reg SHO injury trend.⁹ For example, the time-varying industry fixed effect captures

⁸ When calculating the injury ratio, OSHA mentions that 200,000 hours are equivalent to 50 workers working 40 hours and 50 weeks in a year.

⁹ Industries are classified according to 4-digit SIC.

changes in technology or regulation for the industry over time as well as injury patterns across industry-year (e.g., Gobillon and Magnac 2016). *Pilot* and *Post* are fully absorbed by the fixed effects included.

Our focal regression model is Eq.(2). We include the *Moderation* variable and its interaction items with main effects. Note that *Pilot*×*Moderation* is fully absorbed by firm fixed effects because both *Pilot* and *Moderation* are time-invariant at the firm level. Other variables in Eq.(2) is the same as those in Eq.(1). We identified four *moderation* variables. *Analyst horizon* is measured based on the time horizons of earnings per share (EPS) forecasts issued by analysts. Analysts with longer time orientations issue long-term EPS forecasts, helping mitigate managerial myopia (Chen et al. 2020, Jung et al. 2012). Along the same line, *Analyst horizon* is defined as the number of analysts who issue long-term forecasts, scaled by the number of analysts who issue short-term forecasts.¹⁰ We use analyst data during a three-year period *before the Reg SHO pilot program* to construct *Analyst horizon*. A higher value of *Analyst horizon* indicates that the firm confronts more long-term-oriented analysts.

Investor horizon is measured based on investors' portfolio churn ratio. We first calculate investor-level churn ratio, which captures how frequently an investor reshuffles its portfolio (Gaspar et al. 2005, Li et al. 2016):

$$investor - level\ churn\ ratio_{k,q} = \frac{\sum_j |N_{j,k,q} \times P_{j,q} - N_{j,k,q-1} \times P_{j,q-1} - N_{j,k,q-1} \times \Delta P_{j,q}|}{\sum_j \frac{(N_{j,k,q} \times P_{j,q} + N_{j,k,q-1} \times P_{j,q-1})}{2}}$$

In the above formula, j , k , q , N and P indicate stock, institutional investor, year-quarter, the number of shares and the prices of shares. A short-term investor should buy and sell his investments frequently, which results in a large absolute change in the value of each stock in its portfolio. *Investor-level churn ratio* is always positive. To obtain a firm-level churn ratio, we use the following formula:

$$firm - level\ churn\ ratio_{j,q} = \sum_k \frac{shares\ held_{k,j,q}}{shares\ outstanding_{j,q}} \times investor - level\ churn\ ratio_{k,q}$$

where j , k , and q indicate firm, institutional investor, and year-quarter, respectively. The weight of the investor k 's churn ratio for firm j in year-quarter q (*investor-level churn ratio*) is the number of shares held by k (*shares held*) divided by the number of shares outstanding of j (*shares outstanding*). Then, we obtain the firm-level churn ratio in a specific year-quarter. Lastly, we take the average value of firm-

¹⁰ Our results are robust to using the number of total analysts as the denominator.

level churn ratios across eight quarters before the Reg SHO pilot program. Because the original churn ratios are always positive and indicate investor short-termism, for the convenience to interpret, we multiply this measure by -1 to reflect investor long horizon, which is labelled as *Investor horizon*. A higher value of *Investor horizon* indicates that a firm's shares are held by more long-horizon investors.

To construct *Labor union*, we collected labor union data from the Federal Mediation & Conciliation Service (FMCS) (Chyz et al. 2013, Matsa 2010). Employees are required to submit F7 forms to “notify FMCS that written notice of proposed termination or modification of the existing collective bargaining contract was served upon the other party to this contract and that no agreement was reached.”¹¹ We link the names of employers in the FMCS data to the names of public firms and their subsidiaries. We investigate labor union status from 2000 to 2004 to construct an *ex ante* firm-level measure of bargaining power. If there are any records indicating a firm or its subsidiaries as affiliated to labor unions, we will take 1 for the variable *Labor union*, and 0 otherwise.

Lastly, relying on conference call manuscripts, we employed linguistic analysis to construct a measure of top managers' time orientation— an established way of assessing temporal orientation of TMTs (Brochet et al. 2015, DesJardine and Bansal 2019). The transcripts we used consist of the words in CEO presentation sessions during the conference calls. We define long-term oriented keywords such as year (or annual), long-term (or long-run), and look(ing) forward; we define short-term oriented keywords mentioned in the transcript such as day(-s or daily) and week(-s, or -ly), consistent with Brochet et al. (2015). In each transcript, we count the number of long-term and short-term keywords respectively. Following Brochet et al. (2015), we use the number of long-term keywords divided by the number of short-term keywords to capture TMT long-time orientation.¹² We take the average value of TMT time orientation for all transcripts before the Reg SHO pilot program, which is the *TMT horizon*. A greater value of *TMT horizon* indicates that a firm's TMT is more long-term-oriented.¹³

¹¹ See https://www.fmcs.gov/wp-content/uploads/2015/06/FMCS_F-7_Notice-web.pdf for the form, in which FMCS describes the purpose of a F-7 Notice.

¹² Brochet et al. (2015) use the number of short-term keywords divided by the number of long-term keywords to capture TMT short-termism. We do the reverse to reflect TMT *long-term* orientation and to keep consistency with other moderation variables. We focus on CEO content because, within management teams, CEOs generally have the greatest influence and frequently present in conference calls. Our results are robust to analyzing the speech of all TMT members.

¹³ Please refer to Appendix 1 for variable definitions and the full dictionary of long- and short-term key words.

Panel B of Table 1 reports the descriptive statistics of our sample. The mean value of *Workplace injuries* is 8.646, indicating approximately 8 injury cases per establishment per year, consistent with prior studies such as that of Caskey and Ozel (2017) (7.700).

Insert Table 1 Panels A and B about here

RESULTS

Baseline Results: Short-Selling Pressure and Workplace Safety

We begin the analyses with two validation tests of our natural experiment. First, we examine whether Reg SHO increases short-selling activities of pilot firms (i.e., relevance condition). In Figure 1(a), we plot the mean value difference in *Short interest* between pilot and non-pilot firms. We measure *Short interest* as the short shares to the total number of shares outstanding. The figure shows an increase in *Short interest* for pilot firms compared with non-pilot firms after the passage of Reg SHO. Second, we argue that Reg SHO meets the parallel trend assumption that inclusion into the pilot group is not driven by the time-varying trend in workplace injuries. Figure 1(b) shows that, prior to the program, the pilot and non-pilot firms are associated with parallel trends.

Insert Figures 1(a), 1(b), and Table 2 about here

Table 2 Models (1) and (2) present firm-fixed effect multivariate analyses of Hypothesis 1. Standard errors are clustered at the firm level. The coefficient of *Pilot*×*Post* is positively significant in both Model (1) without controls ($\beta = 0.720$, t -value = 2.067) and Model (2) after including firm and establishment controls ($\beta = 0.837$, t -value = 2.176). Relative to non-pilot firms, pilot firms compromised workplace safety in response to an increase in short-selling pressure. This effect is economically important. The coefficient in Model (2) suggests that injury rates increased by 10% ($= 0.837 / 8.588$) for pilot firms during Reg SHO compared with the mean value of injuries for pilots before the regulation (8.588).¹⁴

¹⁴ We also directly examine the association between short selling interests and workplace injuries. Short interest captures actual short selling activities. We report the results in Online Appendix Table OA1.

The Moderating Effects of Stakeholders

Table 3 reports the moderating effects. Standard errors are clustered at the firm level. To test hypotheses 2–5, we interact the moderation variables defined in the previous section with *Pilot*×*Post*. Model (1) reports the moderation effect of analysts’ (long-term) horizons. The coefficient on *Pilot*×*Post*×*Moderation* is -7.809 with a *t*-value of -2.014. The result suggests that the effect of short-selling pressure on workplace safety is attenuated when a firm is covered by analysts with longer time horizons. Economically speaking, every additional long-termist analyst is equal to a change in *Analyst horizon* of 0.049 (1/20.402) which reduces the effect of short-selling pressure on workplace injury by 46% (0.049*7.809/0.837). These findings lend support for Hypothesis 2.

To test Hypothesis 3, Model (2) reports the results of investor long-term horizons. The coefficient on *Pilot*×*Post*×*Moderation* is negatively significant ($\beta = -11.720$, *t*-value = -2.147). The result implies that a one-standard-deviation decrease in the firm-level investor churn ratio reduces the effect of short-selling pressure on workplace injuries by 63% (= 0.045*11.720/0.837). The result provides support for Hypothesis 3 that longer-horizon investors mitigate the negative effect of short-selling pressure whereas shorter-horizon investors aggravate the negative effect.

Model (3) presents the results for the moderation of employee salience, captured by labor unions. We document a negative and significant coefficient when interacting *Labor union* with *Pilot*×*Post* ($\beta = -1.425$, *t*-value = -1.962). The presence of labor unions almost cancels out the short-term performance pressures caused by short sellers. The results are consistent with the notion that unions shield employees from managerial short-termism, which supports Hypothesis 4.

Lastly, in Model (4), we show the results for Hypothesis 5. We posit that TMT long-term horizons mitigate short-selling pressure. The coefficient on *Pilot*×*Post*×*Moderation* is -1.264 with a *t*-value of -2.096, supporting Hypothesis 5. For firms subject to long-term-oriented TMTs (one-standard-deviation is 0.678 for pilot firms), the effect of short-selling pressure on workplace injuries becomes minimal.

Insert Table 3 about here

CEO stakeholder orientation and other robustness checks

In this section, we show that our moderation results are internally valid and robust. To substantiate that stakeholder interests drive our results, we perform an additional test to identify whether firms whose executives pay greater heed to stakeholders are less likely to suffer from workplace injuries subsequent to a rise in short-selling pressure. To assess this, we used an established dictionary (Pietraszkiewicz et al. 2019, Zemba et al. 2006) to identify CEOs' use of communal language (family, friends, social, affiliation, etc.) and agentic language (achievement, reward, insight, power, etc.) in CEO presentation sessions during the conference calls. Whereas agentic language reflects attention to achieving goals, communal language reflects the importance attached to maintaining relationships with others. In each transcript, we count the number of communal keywords to obtain a communal value score. To control for the influence of text length and agentic language, we divide the communal value score by the number of agentic keywords. We take the average value of the *ex ante* communal value scores, namely *CEO communal value*. The results are presented in Table 4. The variable of interest is *Pilot*×*Post*×*CEO communal value*. Indeed, we find that firms led by communal CEOs are partially immune from increases in workplace injuries ($\beta = -2.428$, t -value = -2.071). This finding substantiates that *ex ante* CEOs' attention to stakeholders influences how firms react to an exogenous increase in capital market pressures.

We also conduct a series of other tests to show the robustness of moderating effects. We summarize and report them in Table 5. Full results are in the Online Appendix. First, we show that the pre-trend of workplace injuries is parallel in the DID baseline results, which is an important condition for a triple difference design (Olden and Møen 2020). Second, to assess the internal validity of our moderations, we perform a placebo test. Third, we conduct different analyses using alternative samples with different observation windows. Fourth, in terms of measures, we have conducted additional analyses using alternative measures for workplace safety, employee horizon, and TMT horizon. Fifth, we have checked our results after controlling for serial correlation and local economic shocks.

Insert Tables 4 and 5 about here

Evidence for Mechanisms and Intertemporal Tradeoffs

We also examine the mechanisms through which short-selling pressure affects workplace injuries. We first examine the channel of cutting safety expenditures. Under the U.S. Generally Accepted Accounting Principles, safety expenditures are recognized under selling, general, and administrative expenditures (SG&A). In some firms, safety expenditures account for a significant proportion of SG&A expenses. Discretionary SG&A can better capture unexpected changes in safety expenditures (Caskey and Ozel 2017). Thus, we follow the approach of Caskey and Ozel (2017) to derive discretionary safety expenditures (*Safety expenditures*) from observable SG&A expenditures using the following equation by each industry-year:

$$SGA_{j,t}/Firm\ employees_{j,t-1} = \beta_0 + \beta_1 1/Firm\ employees_{j,t-1} + \beta_2 Sales_{j,t}/Firm\ employees_{j,t-1} + e_{j,t}, \quad (3)$$

where *SGA* is the total SG&A expenditures, *Firm employees* is the firm's total employees, and *Sales* is the annual sales for firm *j* in year *t*. *Safety expenditures* is obtained from the residuals in Eq. (3), which are likely to capture changes in discretionary safety expenditure. We replace the dependent variable in Eq. (1) with *Safety expenditures*, and the results are shown in Model (1) of Table 6. The coefficient on *Pilot*×*Post* is negatively significant ($\beta = -0.015$, t -value = -6.271). Compared with non-pilot firms, pilot firms decrease their safety expenditure during Reg SHO. When we include *Safety expenditures* in Eq. (1), the coefficient on *Pilot*×*Post* becomes smaller compared with the coefficient in Table 2 Panel B Model (2) (H_0 : coefficient $0.792 = 0.837$: $\chi^2 = 2.708$, p -value < 0.10).

We then test the channel of increasing workloads by using two outcome measures. *Workload (Production)* is the sum of the cost of goods sold and inventory divided by total assets. *Workload (Revenue)* is the annual sales divided by total assets. We first show that an increase in *Workload (Production)* and *Workload (Revenue)* for pilot firms during the Reg SHO relative to non-pilot firms in Model (3) ($\beta = 0.028$, t -value = 3.393) and in Model (5) ($\beta = 0.013$, t -value = 1.408), respectively. After including these two workload measures into Eq. (1), the coefficient on *Pilot*×*Post* reduces significantly in magnitude in Model (4) (H_0 : coefficient $0.805 = 0.837$: $\chi^2 = 2.859$, p -value < 0.10). However, in Model (6), the reduction in magnitude of the coefficient on *Pilot*×*Post* is statistically weaker (H_0 : coefficient $0.825 = 0.837$: $\chi^2 = 1.141$) than the one in Model (4). Generally speaking, we find evidence in support of the workload channel.

Insert Tables 6 and 7 about here

Last, we provide analyses (Table 7) to show that safety expenditures and workloads are strategic variables reflecting an intertemporal tradeoff in firm performance proxied by equity market returns over a six-year window. Specifically, we show in Panel A that an increase in safety expenditures leads to a reduction in short-term performance ($Return_t$ in Model (1)), but an increase in long-term performance ($Return_{t+1}$ to $Return_{t+5}$ in Models (2) to Model (6), respectively). Similarly, results in Panels B and C show that increased workloads lead to improved short-term performance, but jeopardize long-term performance. As such, a (presumably unintended) consequence of firms' efforts to support stock prices is a decline in long-term stock prices.

DISCUSSION

Our multi-stakeholder perspective identifies the interests and power of stakeholders as consequential for whether firms prioritize short-term or long-term returns with implications for the well-being of a critical stakeholder group (employees). A rise in short-selling pressure results in a 10% increase in workplace injuries. But, the effect is not universal. The short-termist impact is mitigated when firms have stakeholders — i.e., analysts with long-term horizon, long-term owners, employees with strong bargaining power, and management with a long-term orientation— who recognize the performance consequences from underinvesting in employees.

Curbing Short-termism through Stakeholder Interdependencies

The stakeholder literature highlights that firms do well by doing good (Lev et al. 2010). Yet, though many stakeholder-friendly actions produce positive returns in the long term (Slawinski and Bansal 2015), capital markets do not always correctly value stakeholder-friendly actions in the short term (DesJardine et al. 2021, Shi et al. 2021). The extent to which firms prioritize short-term stock performance to thwart short sellers depends on the confluence of their stakeholders. Increasingly, research on intertemporal choice in management focuses on behavioral responses to external pressures (DesJardine and Shi 2020). Threatening situations often lead people to neglect long-term consequences (Gray 1999), and potential losses—for example, price pressure exerted by short sellers—loom large. We extend this research by articulating the role of stakeholders in tempering the effect of capital market

pressures. Whilst stakeholders shape firm responses to external pressures (Bundy et al. 2013, Heugens et al. 2002) and social interactions influence perceptions of time (Ancona et al 2001, Orlikowski and Yates 2002), there have been limited investigations of how stakeholders influence intertemporal choice (Reilly et al. 2016). Our study documents the relevance of a multi-stakeholder model to explain how firms manage the tension between the short and long term. Theory must account for stakeholders' preferences (e.g., whether the firm has long-term owners) and their ability to enforce their interests (e.g., whether employees have bargaining power).

Stakeholder theory, which views the firm as a nexus of stakeholders who participate in its activities, challenges the assumption that pursuit of profits is the preeminent management concern (Laplume et al. 2008). Yet, firms routinely face trade-offs and prioritize some stakeholders over others (Phillips et al. 2003). Our perspective helps explain why firms sometimes neglect employees despite their role in firms' competitive advantage. Stakeholder salience, reconceptualized as dependent on interactions among stakeholder groups, their claims, and the firm, is critical in explaining corporate responses (den Hond and de Bakker 2007, Eesley and Lenox 2006). The interests of employees and shareholders may conflict in the short term when firms do not have enough long-term oriented investors: cutting back on investments creates an earnings boost. Such actions not only harm employee interests, but also potentially harm shareholder interests over the long term. Critically, such short-termist response is less likely when salient stakeholders can enforce their own temporal demands, often focus on the long-term viability of the firm. Acknowledging the time horizons over which investing in stakeholder relationships produces financial returns is critical for extending theories of stakeholder salience.

Our findings have implications for how employees, as a legitimate but less urgent stakeholder group, may better protect their interests. We demonstrate conditions under which the negative externality of short sellers on employees (i.e., workplace injuries) is weakened. Stakeholders' influence lies in their bargaining power and the extent to which their interests are aligned with other stakeholders. Managers' attention to short-selling pressure decreases when legitimate and powerful stakeholders have long-term performance expectations and preferences. Similarly, this negative externality is mitigated when employees have bargaining power. Whilst joining labor unions helps gain managerial attention, this option is not open to all workers. In much of the world, union membership is declining, and firms

rely increasingly on temporary labor. Power might be gained in other ways—for example, through political campaigning for higher labor standards and their enforcement.¹⁵ More pertinently, based on our findings, employees may seek alliances with other stakeholders who place emphasis on the firm’s long-run viability. These stakeholders risk loss when managers pursue short-term objectives that may put workplace safety and, ultimately, long-term performance at risk. Stakeholder interdependencies may facilitate the formation of stakeholder coalitions that effectively exert pressure for firms to behave according to their aligned interests. Therefore, our study alludes to how stakeholders might access different means to impose their will in firm-stakeholder relationships, increase their legitimacy, and reinforce the urgency of their claims.

Implications for Capital Market and Labor Market Conflict

The capital market provides funds that foster growth and employment, but it may also amplify the pursuit of short-term stock performance at the expense of other stakeholders. Other studies have mainly examined workplace safety within the organizational context, focusing on employee personality, leadership, and safety climates (Beus et al. 2010, Christian et al. 2009, Clarke 2006, Zacharatos et al. 2005). In underscoring the conflict between the capital market and labor market as well as how other stakeholders advance or undermine employee interests, our study engages in a meaningful conversation with these prior studies. Capital market pressure extends beyond short selling. Institutional investor activism also adversely influences workplace safety (Shi et al. 2021). Employees pay the price for pressure put on firms by the capital market. Our study provides first-hand evidence of the cost to society due to short-selling pressure. The rationale is that pecuniary losses from injuries do not affect short-term corporate performance, even though in the long term, firms suffer from low employee morale, reduced commitment and productivity and must pay more for retention and recruitment. Nonpecuniary losses from injuries are borne by employees. Using death as an extreme example, one’s own death reduces the utility of pecuniary benefits to almost zero. Employees are willing to pay more to prevent death rather than receive compensation in the event of their death (e.g., Viscusi and Evans 1990).

¹⁵ This is an argument also made by the Century Foundation thinktank (<https://tcf.org/content/report/roadmap-rebuilding-worker-power/>).

Our study has strong policy implications. The effects of market forces versus those of regulations on labor welfare are contested. As articulated by Shleifer (2012), multiple parties are involved in workplace safety issues. There is asymmetric information and a horizontal mismatch between firms and their workers, limiting the effectiveness of contracts and market discipline. Therefore, Shleifer (2012) conjectures that market forces can hardly yield desirable outcomes in the area of workplace safety and suggests that social institutions, such as safety regulations, should play a dominant role. Although his argument is theoretically appealing, our findings provide supportive empirical evidence that market forces (i.e., short-selling pressure) indeed affect employee safety negatively. However, as noted earlier, social institutions also did not perform as Shleifer expects because they oftentimes have limited resources to effectively constrain firms' negative externalities. Our findings suggest that firms' long-term oriented stakeholders may mitigate the negative impact of the capital market on safety outcomes.

Our multi-stakeholder perspective also contributes to recent discussions about the downside of modern capitalism. Thus far, most studies of short selling highlight the benefits to firms insofar as short-selling pressures reduce agency problems by disciplining managers and curbing financial misconduct (Engelber et al. 2012, Fang et al. 2016). Yet, when left unchecked, markets can produce undesirable consequences for society (Karnani, 2007). A stakeholder lens recognizes that short selling affects various stakeholders, with stakeholders—employees, customers, and even investors — paying a price when executives cede to excessive pressure from the capital market. For instance, the two recent Boeing 737 MAX crashes (October 29 2018, and March 10 2019) took 349 lives and led to shareholder lawsuits accusing Boeing of hiding problems because of the desire to produce short-term returns.¹⁶ “Producing brand new aircraft would have been technically exciting and challenging, but the costs and time involved in doing so made Boeing’s executives anxious that they would lose out in competition to Airbus. Boeing needed a competitive profit-making commercial aircraft, and the company believed 737 MAX was the answer” (Committee on Transportation and Infrastructure 2020, p.40). Such corporate scandals have fueled reflections over whether modern capitalism serves the public interest.

¹⁶ Also see <https://www.chicagotribune.com/business/ct-biz-viz-boeing-737-max-crash-timeline-04022019-story.html>. Critics of capitalism have argued that corporate scandals reveal slipping standards in U.S. firms.

The multi-stakeholder perspective also speaks to the debate on whether low-income groups benefit from modern capitalism (Piketty 2014). Financial deregulation improves the economic return on resources, contributing to corporate success (Cornaggia et al. 2015). However, the benefits of deregulation are disproportionately seized by high-income groups, increasing inequality (Philippon and Reshef 2012). The removal of short-selling constraints by the SEC in July 2004 for a random sample of stocks aimed to reduce agency problems. However, our study shows that financial deregulation does not necessarily improve firms' long-run performance and even hurts the interests of front-line employees. In short, employees bear some of the costs of deregulation. Our finding echoes that of Spector (2004), i.e., although product market competition increases employment, it may cause real wages to fall, particularly when competition leads to calls for looser labor market regulations. By showing the conditions under which employee interests are likely to be heeded by management, we shed light on an important policy question about the costs and benefits of deregulation.

Although we investigated short-selling pressure as an antecedent to workplace safety, capital market pressures also affect the well-being of other stakeholders. There may be spillovers to other actors such as partners and investors. Spillovers include the reputational damage to firms when suppliers infringe worker safety legislation. Similarly, short-term pressures emanate from many stakeholders—not just those in the capital market. For instance, politicians facing short electoral cycles have limited interest in devising industrial policies to advance long-run corporate development (Cox 2013). Thus, future studies might consider the influence of workplace safety infringements on non-employee stakeholders, as well as how non-employee stakeholders reinforce or undermine commitments to safety. Moreover, we have shown an intertemporal trade-off for firms that choose to cut safety expenses and increase workloads. As our exogenous shock only allows us to observe a relatively short window, we encourage future research to take a longer panel and observe the long-term dynamic effects between firm short-term decisions and long-term outcomes that impact employees and investors.

Conclusion

Short-selling pressure in the capital market often shifts managers' focus to short-term stock performance at the cost of investments that produce long-term returns to workplace safety. Yet, short-termism is not an inevitable consequence of capital market pressure. A multi-stakeholder view helps

explain why. When stakeholders have joint interests in the long-term viability of the firm, their salience attenuates the short-termist impact of capital market pressures, protecting employees in terms of workplace safety. We hope this study sparks interest in examining workplace safety and other corporate outcomes from the perspective of stakeholder interdependencies and fosters more effort toward addressing conflicts between the capital and labor markets.

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FIGURE 1
Yearly Trend of Difference in *Short Interest* and *Workplace Injuries* between Pilot Firms and Non-pilot Firms

FIGURE 1(a) The Difference in *Short Interest* between Pilots and Non-pilots

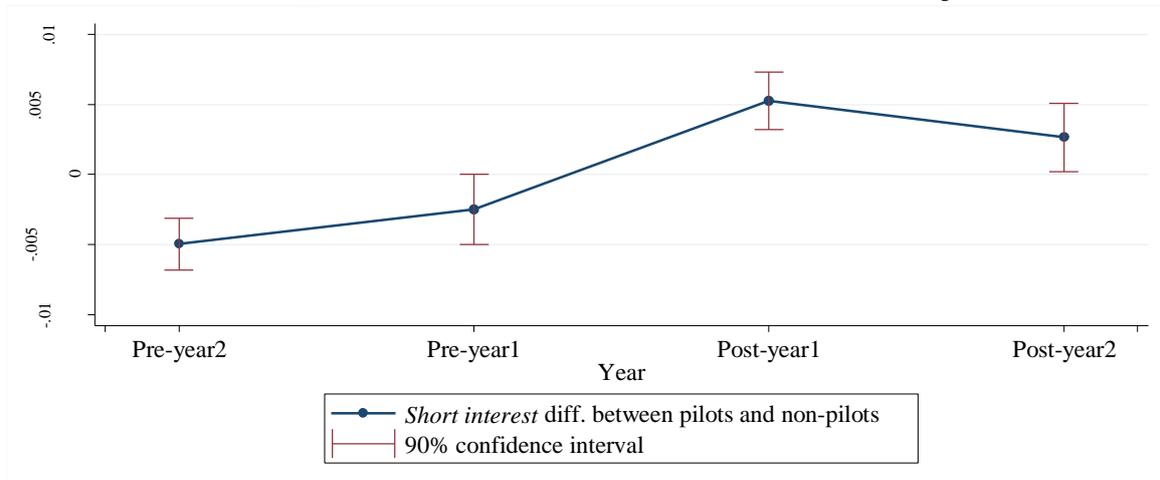


FIGURE 1(b) The Difference in *Workplace Injuries* between Pilots and Non-pilots

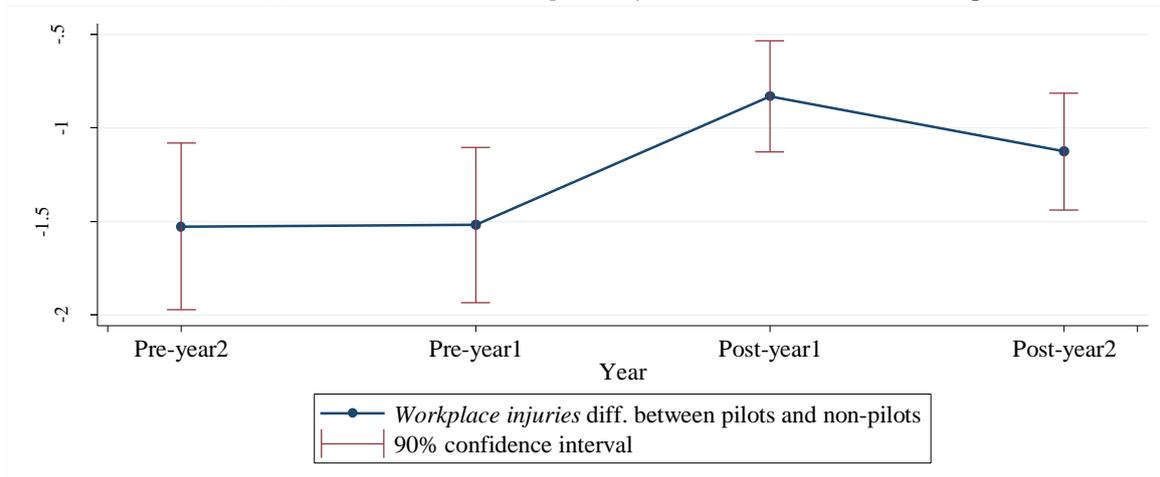


TABLE 1 Descriptive Statistics

Panel A: Sample selection

Selection procedure	Number of observations
Initial sample (establishment-years from 2002 to 2006)	22,851
Excluding:	
Event year 2004	(4,731)
Regulated industry	(825)
Missing in data on control variables	(92)
Final sample	17,203
<i>Pilot</i> = 1	5,069
<i>Pilot</i> = 0	12,134

Panel B: Summary statistics and correlation of key variables

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 <i>Workplace injuries</i>	8.646	7.371																
2 <i>Analyst horizon</i>	0.980	0.071	0.033															
3 <i>Investor horizon</i>	-0.138	0.045	-0.007	-0.050														
4 <i>Labor union</i>	0.464	0.499	0.055	-0.035	-0.075													
5 <i>TMT horizon</i>	1.406	0.706	0.093	-0.038	0.082	-0.087												
6 <i>Firm Size</i>	0.295	0.456	0.073	0.085	0.014	0.269	-0.046											
7 <i>Leverage</i>	0.552	0.497	-0.001	-0.062	-0.130	0.181	0.062	0.302										
8 <i>Fixed assets</i>	8.507	1.684	0.232	0.024	-0.014	-0.027	-0.095	0.205	0.034									
9 <i>Capital expenditures</i>	0.578	0.184	0.156	0.010	-0.005	-0.166	0.018	0.089	-0.122	0.682								
10 <i>Market-to-book ratio</i>	0.338	0.181	0.069	0.110	0.094	-0.090	0.027	0.008	-0.457	0.049	0.235							
11 <i>Meet or beat forecasts</i>	0.053	0.036	0.113	0.134	0.008	0.160	-0.029	0.146	-0.052	0.076	0.076	0.247						
12 <i>Strike</i>	1.242	0.882	0.013	0.008	-0.007	0.028	-0.028	-0.008	0.027	-0.006	-0.016	-0.031	-0.008					
13 <i>Shutdowns</i>	0.130	0.337	0.041	-0.007	-0.011	-0.034	0.057	-0.026	0.123	-0.038	-0.086	-0.114	-0.047	0.012				
14 <i>Seasonal</i>	0.003	0.053	0.059	0.035	0.027	0.012	-0.006	0.012	0.000	0.002	-0.017	0.002	0.034	0.002	0.035			
15 <i>Disaster</i>	0.082	0.275	0.002	-0.002	0.012	-0.010	-0.014	0.000	-0.019	0.014	0.030	-0.004	-0.012	0.019	0.026	0.029		
16 <i>Establishment size</i>	0.035	0.183	-0.004	-0.009	0.004	0.005	0.079	0.149	0.088	-0.006	-0.002	-0.038	0.003	0.016	0.068	0.004	0.002	
17 <i>Hours /employees</i>	0.009	0.092	-0.231	-0.136	-0.004	0.043	-0.056	-0.129	-0.019	-0.165	-0.069	-0.112	-0.197	0.008	-0.004	-0.128	0.009	-0.041

Note: |correlations| > 0.015 are significant at p < 0.05 level (two-tailed test).

TABLE 2 Baseline Results: Short-Selling Pressure on Workplace Injuries

Dependent variable	<i>Workplace injuries</i>	
	(1)	(2)
<i>Pilot×Post</i>	0.720** (2.067)	0.837** (2.176)
<i>Firm size</i>		-0.066 (-0.166)
<i>Leverage</i>		-3.692*** (-2.648)
<i>Fixed assets</i>		-3.138 (-1.292)
<i>Capital expenditures</i>		5.325 (0.938)
<i>Market-to-book</i>		-0.026 (-0.085)
<i>Meet or beat forecasts</i>		-0.462* (-1.826)
<i>Strike</i>		1.766 (1.363)
<i>Shutdowns</i>		0.978*** (3.496)
<i>Seasonal workers</i>		1.169*** (3.385)
<i>Disaster</i>		0.446 (0.793)
<i>Establishment size</i>		-0.073 (-0.693)
<i>Hours/employees</i>		-5.356*** (-3.469)
Firm FE	Yes	Yes
Year×Industry FE	Yes	Yes
Observations	17,203	17,203
Adj-R ²	0.334	0.346

*, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively (two-tailed t-test).

TABLE 3 Short-Selling Pressure on Workplace Injuries: The Moderating Effect of Primary Stakeholders

<i>Moderation =</i>	<i>Analyst horizon</i>	<i>Investor horizon</i>	<i>Labor union</i>	<i>TMT horizon</i>
	(1)	(2)	(3)	(4)
<i>Pilot×Post×Moderation</i>	-7.809** (-2.014)	-11.720** (-2.147)	-1.425* (-1.962)	-1.264** (-2.096)
<i>Pilot×Post</i>	8.617** (2.260)	-0.722 (-0.889)	1.293*** (2.711)	3.140*** (2.921)
<i>Post×Moderation</i>	2.334 (0.889)	-1.611 (-0.415)	1.044*** (2.867)	1.094* (1.811)
<i>Firm size</i>	0.063 (0.139)	-0.053 (-0.128)	0.116 (0.288)	-0.271 (-0.268)
<i>Leverage</i>	-4.039*** (-2.642)	-4.700*** (-3.442)	-3.701*** (-2.800)	-2.030 (-0.747)
<i>Fixed assets</i>	-3.173 (-1.248)	-1.362 (-0.529)	-2.540 (-1.076)	0.683 (0.185)
<i>Capital expenditures</i>	8.930 (1.603)	2.563 (0.408)	5.221 (0.946)	-9.778 (-1.040)
<i>Market-to-book</i>	-0.176 (-0.581)	-0.417 (-1.415)	0.096 (0.310)	-0.286 (-0.393)
<i>Meet or beat forecasts</i>	-0.490* (-1.874)	-0.453* (-1.831)	-0.490** (-2.010)	-0.758 (-1.601)
<i>Strike</i>	1.377 (1.029)	1.934 (1.452)	1.767 (1.398)	4.740** (2.302)
<i>Shutdowns</i>	0.901*** (3.204)	1.057*** (3.715)	0.975*** (3.568)	1.415*** (3.016)
<i>Seasonal workers</i>	1.243*** (3.494)	1.140*** (3.204)	1.163*** (3.440)	1.406 (1.614)
<i>Disaster</i>	0.477 (0.842)	0.483 (0.855)	0.446 (0.811)	0.635 (0.908)
<i>Establishment size</i>	-0.060 (-0.564)	-0.085 (-0.802)	-0.071 (-0.689)	0.021 (0.126)
<i>Hours/Employees</i>	-5.379*** (-3.337)	-5.417*** (-3.467)	-5.361*** (-3.557)	-3.588*** (-4.109)
Firm FE	Yes	Yes	Yes	Yes
Year×Industry FE	Yes	Yes	Yes	Yes
Observations	15,928	16,372	17,203	7,567
Adj-R ²	0.340	0.332	0.334	0.324

*, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively (two-tailed t-test).

TABLE 4 Short-Selling Pressure on Workplace injuries: The Moderating Effect of CEO Stakeholder Orientation

	<i>Workplace injuries</i>
<i>Pilot×Post×CEO communal value</i>	-2.428** (-2.071)
<i>Pilot×Post</i>	6.469** (2.231)
<i>Post×CEO communal value</i>	0.948 (1.630)
<i>Firm size</i>	-1.313 (-1.246)
<i>Leverage</i>	-2.199 (-0.793)
<i>Fixed assets</i>	2.022 (0.426)
<i>Capital expenditures</i>	-7.290 (-0.641)
<i>Market-to-book</i>	-0.027 (-0.040)
<i>Meet or beat forecasts</i>	-1.050*** (-2.966)
<i>Strike</i>	4.828** (2.260)
<i>Shutdowns</i>	1.566*** (3.152)
<i>Seasonal workers</i>	1.376 (1.522)
<i>Disaster</i>	0.655 (0.914)
<i>Establishment size</i>	0.021 (0.125)
<i>Hours/Employees</i>	-4.168*** (-4.379)
Firm FE	Yes
Year×Industry FE	Yes
Observations	7,283
Adj-R ²	0.328

*, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively (two-tailed t-test).

TABLE 5 Robustness Tests of the Moderating Effect

Tests	Concerns and executions
Parallel pre-trend of workplace injuries in triple-difference	Econometrically, a valid triple-difference design requires that no contemporaneous shock affects the relative workplace safety of pilot and non-pilot firms in the same high/low moderation-variable group (Olden and Møen 2020). The results support the parallel pre-trend assumption. Thus, the selection into the pilot group of the program is exogenous to firm characteristics.
Placebo test	If our findings are driven by Reg SHO (i.e. the removal of short-selling restrictions on pilot firms) rather than other omitted variables, the effect of short-selling pressure and the stakeholder moderation effects on workplace safety should disappear when Reg SHO is absent. We randomly assign 33% of Russell 3000 firms as pseudo pilots. We find that most of the coefficients on <i>Pilot×Post×Moderation</i> based on placebo tests are insignificant. It is not random that we find significant stakeholder moderation effects.
Alternative samples	First, we require a company to appear both in the pre- and post-shock periods. Second, we require an establishment to appear in the pre- and post-shock periods. These two balanced sample requirements help eliminate the influence of firm/establishment inclusion or exclusion on our moderating effects. All coefficients on <i>Pilot×Post×Moderation</i> have the negative sign, and seven out of eight remain statistically significant.
Alternative safety measures	We scale the number of injury cases by the number of employees x 100 (instead of the number of working hours). We also exclude safety issues that are less observed in our sample to make sure that our findings are not driven by such cases (e.g., death). All coefficients on <i>Pilot×Post×Moderation</i> remain negatively significant.
Control for serial correlation and local economic shocks	The serial correlation in safety at the different dimensions or local economic shocks may bias our findings. First, we cluster the standard errors at the establishment level. Second, we cluster at the firm and year levels by additionally controlling for serial correlation on the time dimension. Lastly, we include establishment-state fixed effects to control for local economic shocks. All coefficients on <i>Pilot×Post×Moderation</i> remain negatively significant.
Alternative measures of employee horizons	To provide further evidence that employee horizons play a moderating role, we capture employee horizons using the turnover rate from Quarterly Workforce Indicators (QWI), which is maintained by the Census Bureau. The turnover rate measures how frequently an employee changes her/his job from quarter to quarter. The data are at the NAICS 4digit-state-quarter-year level and are matched to establishment industry and state information. We use the average turnover rate during three years prior to the Reg SHO pilot program to measure employee horizons for each establishment and label it as <i>Employee turnover rate</i> . A higher value of <i>Employee turnover rate</i> indicates that employees have a higher turnover rate and shorter horizon. The coefficient on <i>Pilot×Post×Employee turnover rate</i> is positively significant ($\beta = 0.271$, t -value = 1.931), which supports that employee horizon moderates the effect of short-selling pressure on workplace injuries.
Tone management in TMT horizon	An issue in inferring TMT horizon from language is that TMTs manage the tone of their language when communicating with investors. Huang, Teoh, and Zhang (2014) consider abnormal tones, i.e. those that cannot be explained by firm fundamentals, as tone management. Following their approach, we regress <i>TMT horizon</i> on firm and establishment fundamentals (the control variables used in the main analyses) before the pilot program. This regression decomposes <i>TMT horizon</i> into <i>TMT horizon_hat</i> and <i>TMT horizon_residual</i> . The coefficient on <i>Pilot×Post×TMT horizon_hat</i> remains negatively significant ($\beta = -6.081$, t -value = -2.066), but the one on <i>Pilot×Post×TMT horizon_residual</i> is insignificant and small ($\beta = -0.599$, t -value = -0.781). The results suggest that our finding using <i>TMT horizon</i> is unlikely to be driven by tone management.

TABLE 6 Short-Selling Pressure and Workplace injuries: Testing the Mediating Mechanisms

	<i>Safety expenditures</i> (1)	<i>Workplace injuries</i> (2)	<i>Workload (Production)</i> (3)	<i>Workplace injuries</i> (4)	<i>Workload (Revenues)</i> (5)	<i>Workplace injuries</i> (6)
<i>Pilot</i> × <i>Post</i>	-0.015*** (-6.271)	0.792** (2.548)	0.028*** (3.393)	0.805*** (2.594)	0.013 (1.408)	0.825*** (2.655)
<i>Safety expenditures</i>		-2.993 (-1.613)				
<i>Workload (Production)</i>				1.165* (1.885)		
<i>Workload (Revenue)</i>						0.921* (1.703)
<i>Firm size</i>	0.059*** (11.435)	0.112 (0.279)	-0.458*** (-17.597)	0.417 (0.867)	-0.567*** (-20.181)	0.457 (0.922)
<i>Leverage</i>	0.062*** (4.841)	-3.506*** (-2.624)	0.089** (2.122)	-3.709*** (-2.781)	0.052 (1.138)	-3.740*** (-2.813)
<i>Fixed assets</i>	0.220*** (9.247)	-2.478 (-1.035)	-0.009 (-0.070)	-3.199 (-1.348)	0.040 (0.296)	-3.175 (-1.338)
<i>Capital expenditures</i>	0.165*** (4.823)	5.818 (1.033)	0.775*** (4.233)	4.793 (0.843)	1.019*** (4.988)	4.387 (0.773)
<i>Market-to-book</i>	0.014*** (5.881)	0.015 (0.050)	0.028*** (3.873)	-0.060 (-0.200)	0.091*** (10.916)	-0.110 (-0.362)
<i>Meet or beat forecasts</i>	-0.001 (-1.156)	-0.466* (-1.727)	0.014** (2.481)	-0.480* (-1.785)	0.011* (1.901)	-0.472* (-1.753)
<i>Strike</i>	-0.005 (-0.979)	1.751 (1.517)	-0.018 (-1.522)	1.789 (1.547)	-0.014 (-1.078)	1.779 (1.538)
<i>Shutdowns</i>	0.000 (0.487)	0.979*** (3.955)	0.002 (0.845)	0.976*** (3.941)	0.003 (0.869)	0.976*** (3.940)
<i>Seasonal workers</i>	0.002 (1.446)	1.175*** (3.431)	0.002 (0.415)	1.167*** (3.405)	0.003 (0.540)	1.167*** (3.405)
<i>Disaster</i>	0.002 (1.328)	0.452 (0.885)	-0.008 (-0.974)	0.454 (0.889)	-0.009 (-0.992)	0.454 (0.890)
<i>Establishment size</i>	0.000 (0.130)	-0.073 (-0.955)	0.001* (1.823)	-0.074 (-0.967)	0.001 (1.390)	-0.074 (-0.967)
<i>Hours/employees</i>	0.001 (0.841)	-5.352*** (-11.122)	0.009** (2.015)	-5.368*** (-11.152)	0.014*** (2.676)	-5.369*** (-11.155)
Coef. diff. test	$H_0: Pilot \times Post (2) = 0.837$ $\chi^2 = 2.708^*$		$H_0: Pilot \times Post (4) = 0.837$ $\chi^2 = 2.859^*$		$H_0: Pilot \times Post (4) = 0.837$ $\chi^2 = 1.141$	
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year×Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,203	17,203	17,195	17,195	17,203	17,203
Adj-R ²	0.960	0.346	0.985	0.346	0.985	0.346

Coef. diff. test shows whether the coefficient on *Pilot*×*Post* is statistically different from the benchmark case (Table 2 Model 2). *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively (two-tailed t-test).

TABLE 7 Safety Expenditures, Workloads, and Firm Performance

Panel A: Safety expenditures and firm performance

	$Return_t$	$Return_{t+1}$	$Return_{t+2}$	$Return_{t+3}$	$Return_{t+4}$	$Return_{t+5}$
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Safety expenditures</i>	-0.045**	0.038*	0.059***	0.069***	0.050**	0.066***
	(-2.011)	(1.900)	(3.241)	(3.572)	(2.477)	(3.152)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year×Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	54,826	50,635	46,832	43,093	37,493	32,553
Adj-R ²	0.223	0.197	0.161	0.157	0.160	0.165

Panel B: Workload (Production) and firm performance

	$Return_t$	$Return_{t+1}$	$Return_{t+2}$	$Return_{t+3}$	$Return_{t+4}$	$Return_{t+5}$
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Workload (Production)</i>	0.006	0.027***	0.015***	-0.000	-0.005	-0.005
	(1.148)	(4.396)	(3.028)	(-0.034)	(-0.885)	(-0.904)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year×Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	63,341	61,990	57,367	52,808	45,912	39,776
Adj-R ²	0.220	0.192	0.158	0.151	0.153	0.155

Panel C: Workload (Revenue) and firm performance

	$Return_t$	$Return_{t+1}$	$Return_{t+2}$	$Return_{t+3}$	$Return_{t+4}$	$Return_{t+5}$
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Workload (Revenue)</i>	0.022***	0.017***	0.009**	-0.003	-0.015***	-0.016***
	(4.126)	(3.375)	(2.105)	(-0.661)	(-3.374)	(-3.180)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year×Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	63,924	62,556	57,892	53,296	46,336	40,149
Adj-R ²	0.219	0.191	0.158	0.152	0.153	0.155

*, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively (two-tailed t-test).

APPENDIX 1 Variable Definitions

Variable name	Definition
Workplace safety variables	
<i>Workplace injuries</i>	The sum of injury and death cases scaled by total working hours of establishment <i>i</i> of firm <i>j</i> in fiscal year <i>t</i> , multiplied by 200,000.
Explanatory variables	
<i>Pilot</i>	A dummy indicator equal to 1 for establishments affiliated with a pilot firm in Reg SHO, and 0 otherwise.
<i>Post</i>	A dummy indicator equal to 1 for fiscal years 2005 to 2006 and equal to 0 for 2002 to 2003.
<i>Analyst horizon</i>	<i>Analyst horizon</i> is the number of analysts who issues long-term forecasts from 2002 to 2004 divided by the number of analysts who issues short-term forecasts during the same period. A higher value of <i>Analyst horizon</i> indicates that a firm's analysts have a longer time orientation.
<i>Investor horizon</i>	<i>Investor horizon</i> were measured based on investors' portfolio churn ratio. We follow Gaspar et al. (2005) to construct investor-level churn ratio, which captures how frequently an investor reshuffles its portfolio. Firm-level churn ratio is obtained as follows: $firm - level\ churn\ ratio_{j,q} = \sum_k \frac{shares\ held_{k,j,q}}{shares\ outstanding_{j,q}} \times investor - level\ churn\ ratio_{k,q}.$ <p>In the above formula, <i>j</i>, <i>k</i>, and <i>q</i> indicate firm, institutional investor, and year-quarter, respectively. The weight of the investor <i>k</i>'s churn ratio for firm <i>j</i> in year-quarter <i>q</i> (<i>investor-level churn ratio</i>) is the number of shares held by <i>k</i> (<i>shares held</i>) divided by the number of shares outstanding of <i>j</i> (<i>shares outstanding</i>). Then, we obtain the firm-level churn ratio in a specific year-quarter. Lastly, we take the average value of firm-level churn ratios across eight quarters <i>before the Reg SHO pilot program</i>. We multiply this measure by -1 to reflect investor long horizon.</p>
<i>Labor union</i>	We search the labor union status from 2000 to 2004 in FMCS records (Chyz, Leung, Li, & Rui, 2013; Matsa, 2010). If there are any records for a firm or its subsidiaries to be affiliated to labor unions, we will take 1 for the variable Labor union and 0 otherwise.
<i>TMT horizon</i>	We use CEO presentation session in conference calls as the transcript to capture TMT horizon. In each transcript, we count the number of long-term and short-term keywords respectively. Following Brochet, Loumioti, and Serafeim (2015), we use the number of long-term keywords divided by the number of short-term keywords to capture TMT long-time orientation. We take the average value of TMT time orientation for all transcripts before the Reg SHO pilot program, which is the <i>TMT horizon</i> . <p>We use the following dictionary (Brochet, Loumioti, and Serafeim 2015). Long-term keywords: year(-s or annual(-ly)), long-term, long-run, look(ing) forward, go(ing) forward, looking ahead, trend, expect, anticipate, outlook, intend. Short-term keywords: day(-s or daily), week(-s or -ly), month(-s or -ly), quarter(-s or -ly), latter half (of the year), short-term, short-run.</p>
Control variables	
<i>Firm size</i>	The natural logarithm of total assets.
<i>Leverage</i>	The total liabilities divided by total assets.
<i>Fixed assets</i>	The net property, plant, and equipment divided by total assets.
<i>Capital expenditures</i>	The capital expenditures scaled by total assets.
<i>Market to book</i>	The market to book value, which is a measure of growth in the long run.
<i>Meet or beat forecasts</i>	A dummy variable that equals 1 if a firm meets or beats the consensus analyst forecasts; 0 otherwise.
<i>Strike; Shutdowns; Seasonal workers; Disaster</i>	Four dummy variables that equal 1 if there are a respective special event in an establishment; 0 otherwise. A special event can be strike, shutdown, having seasonal workers, or disaster.
<i>Establishment size</i>	The natural logarithm of the number of workers in the establishment.
<i>Hours/employees</i>	The natural logarithm of the ratio of total working hours to the number of workers.
Other variables	
<i>Workload (Production)</i>	The sum of cost of goods sold and inventory divided by total assets.
<i>Workload (Revenue)</i>	The annual sales divided by total assets.
<i>Safety expenditures</i>	The discretionary selling, general, and administrative expenses estimated following Caskey and Ozel (2017).
<i>SGA</i>	Firms' total selling, general, and administrative (SG&A) expenditures
<i>Firm Employees</i>	Firms' total employees.
<i>Sales</i>	Firms' total annual sales.
<i>Return_{t+x}</i>	The annual stock market return during the year <i>t+x</i> , where <i>x</i> is from 0 to 5.
<i>CEO communal value</i>	We use CEO presentation session in conference calls as the transcript. We count the number of keywords related to communal value disclosed divided by the number of keywords related to agentic value disclosed in a transcript to obtain the communal value score. We take the average value of short-term score before the Reg SHO pilot program to obtain <i>CEO communal value</i> . A higher value of <i>CEO communal value</i> reflects the importance attached to maintaining relationships. Please refer to Pietraszkiewicz et al (2019) for the dictionaries.