

Nothing to fear: Strong corporate culture and workplace safety

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Abstract: In this paper, we investigate the link between corporate culture and workplace safety. Using a machine learning based measure of corporate culture and data on employee- and safety-related violations, we find that firms with stronger corporate culture are less likely to be penalized, incur lower regulatory fines, and have a reduced number of violations. As a potential channel, we document higher safety expenditures with stronger corporate culture. When we examine establishment-level data on actual injuries and illnesses, we find that firms with stronger corporate culture have significantly lower injury and illness rates. While shareholders have previously been found to benefit from a stronger corporate culture, we contribute with both research and practical implications on the positive effects of a strong corporate culture for employees and society at large.

Keywords: Employee well-being; Corporate culture; Workplace injuries; Workplace safety

JEL classification: G3; J28; K32; M41

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1. Introduction

The recent survey by Graham et al. (2022) highlights that Chief Executive Officers (CEOs) view corporate culture as a key component of financial performance. Li et al. (2021a) and Li et al. (2021b) empirically validate the finding, by showing that firms with stronger corporate culture have greater operational efficiency and higher firm value, in both normal and exceptional circumstances. However, it is still unclear whether these economic benefits arise at the expense of other stakeholders, or whether a stronger corporate culture promotes benefits for shareholders and other stakeholders alike. To shed further light on this question, we focus on the employees which constitute a key corporate stakeholder that may suffer from shareholder wealth maximization in the context of workplace safety. Prior research (Ostrom et al., 1993; Beck & Woolfson, 1999; Choudry et al., 2007; Beus et al., 2016) recognizes the importance of a safety-oriented corporate culture when it comes to mitigating workplace accidents. This is perhaps not surprising considering that such a culture should have a positive impact on workplace safety. However, a strong safety-oriented corporate culture does not necessarily indicate a strong corporate culture more broadly, and we are unaware of any study examining whether the strength of corporate culture in general influences workplace safety.

This is a salient omission because the level of safety at the workplace is an ethical consideration for business and a real corporate social responsibility (CSR) issue which translates to substantial costs and human suffering. On a yearly level, the International Labor Organization (2019) estimates a global number of 2.78 million workplace deaths and 374 million workplace accidents. In the United States (U.S.), Leigh (2011) notes that the medical

and indirect costs of workplace injuries and illnesses are sizable, exceeding the cost of cancer.¹ Given the significant impact of workplace injuries, accidents, and illnesses on individuals and the society at large, it is crucial to understand the factors that contribute to their prevention and mitigation. Recent research suggests that CEOs have placed greater emphasis on corporate culture over time (Li et al., 2021b), which further highlights the need to investigate how it affects individuals and groups beyond shareholders.

Anecdotal evidence suggests that the absence of a strong corporate culture can be a fundamental aspect in avoidable institutional breakdowns. For example, the shared beliefs and values regarding appropriate attitudes and behaviors that characterize a strong corporate culture (O'Reilly & Chatman, 1996) were absent in early large-scale failures such as the Chernobyl nuclear disaster (Pidgeon, 1998) and Piper Alpha oil rig explosion (Paté-Cornell, 1993). Furthermore, a strong corporate culture is associated with a long-term emphasis (Graham et al., 2019; Li et al., 2021a; Li et al., 2021b) and improved coordination of activities, which has been documented to create a safer working environment (Pagell et al., 2015; Cohn & Wardlaw, 2016; Caskey & Ozel, 2017). However, a strong corporate culture is not necessarily a panacea for workplace safety. Willmott (1993) highlights the dark side of a strong corporate culture and argues that blind adherence to a monolithic set of values and norms might rob employees of their personal autonomy and good judgement. The Deepwater Horizon disaster is a prominent example, where the profit-oriented culture disregarded both employee and environmental safety by sanctioning myopic exploration of resources which had disastrous consequences (Edersheim, 2010; Amernic & Craig, 2017). Finding inferior safety records in firms with stronger corporate culture would also be in line with Vaughan (1999), who underscores that

¹ The costs in Leigh (2011) amount to \$250 billion which includes \$67 billion in direct medical costs (e.g., costs of hospital stay and treatment by physicians) and \$183 billion in indirect costs (e.g., lost current and future earnings).

the process of producing desirable financial outcomes may simultaneously create toxic corporate behavior that generates mistakes and misconduct.

At the same time, Posner et al. (1985) provide evidence that the characteristics of a strong corporate culture are related to ethical behavior and reduced work-related stress. Similarly, Hoi et al. (2013) find that firms adopting a strong corporate culture focus more on non-shareholder stakeholders in the context of tax avoidance. With employees as a primary internal stakeholder, firms with stronger corporate culture may improve employee well-being by increasing safety spending or by reducing workloads. If they do so, we would expect a higher level of workplace safety in firms with a stronger corporate culture. Without altering the use of resources, firms with stronger corporate culture may also experience a higher level of safety due to a superior ability to establish collective beliefs, norms, and knowledge within the organization (Carrol & Harrison, 1991; De Jesus-Rivas et al., 2016). Furthermore, firms with stronger corporate culture have incentives to allocate resources to safer workplaces (Edmans, 2011; Unsal & Hassan, 2023), even though such actions initially may transfer utility from shareholders to other stakeholders (i.e., employees). In this study, we empirically disentangle the association between corporate culture and workplace safety.

Despite the pivotal importance of understanding how and why culture matters, we have a limited comprehension about corporate culture and its implications primarily due to definition and measurement issues in previous research (O'Reilly & Chatman, 1996; Zingales, 2015; Graham et al., 2022). We overcome many challenges by measuring the strength of corporate culture with a novel machine learning approach developed and validated by Li et al. (2021b). This analytical technique utilizes computers to identify cultural values communicated by top executives to financial analysts during the question and answer (Q&A) session of earnings calls. The starting point is the most frequently advertised corporate values of the S&P

500 firms: innovation, integrity, quality, respect, and teamwork. The final measure captures corporate culture for a broad cross-section of publicly listed firms in the U.S.

In our main statistical analyses, we combine the measure of corporate culture with data on regulatory fines for employee- and safety-related violations from Violation Tracker for a sample of 16,242 firm-year observations spanning 2002-2018. This approach allows us to estimate a direct cost of breaches in workplace safety and unveils that firms with stronger corporate culture are associated with both fewer and lower fines. We conduct several additional tests to unravel the underlying reasons behind this pattern and to ensure its robustness. First, we examine the channels behind the observed relationship and document that firms with stronger corporate culture allocate more resources to workplace safety. Second, we follow Li et al. (2021a) and separately study the safety implications of people- and tech-oriented corporate cultures and observe that firms with stronger tech-oriented corporate cultures have better workplace safety. Third, we use an instrumental variable and a propensity-score matching (PSM) approach to alleviate potential concerns about endogeneity and functional form misspecifications. Fourth, we use an alternative measure of corporate culture based on Fiordelisi and Ricci (2014) and find that stronger collaborative and creative cultures are associated with better workplace safety. Finally, we examine workplace injuries and illnesses recorded by the U.S. Occupational Safety and Health Administration (OSHA). We observe that firms with stronger corporate culture have lower injury and illness rates, as well as fewer days away, restricted, or transferred due to illnesses and injuries.

We add to the existing literature in three distinct ways. First, we contribute to the workplace safety literature by studying how cultural factors within corporations can reduce misconduct towards employees. Even though the underlying factors behind workplace safety have been thoroughly documented by previous research (Christian et al., 2009; Gyekye &

Salminen 2009; Beus et al., 2016), it is relevant to acknowledge that the interaction between these factors and corporate culture remains unexplored in wider cross-sectional settings. We approach the topic in a similar way as prior finance studies showing that firms with higher leverage (Cohn & Wardlaw, 2016), firms facing high external pressure (Caskey & Ozel, 2017), and firms in less religious areas (Amin et al., 2021) are associated with inferior safety records. We add to prior literature with evidence that implicit values and norms within corporations can assist in mitigating the human suffering and substantial societal cost of poor workplace safety.

Second, we contribute to a relatively recent stream of literature documenting how corporate culture influences corporate behavior and decision-making with large samples (Guiso et al., 2015; Liu, 2016; Jiang et al., 2019; Li et al., 2021a; Li et al., 2021b). Prior studies in this field have primarily focused on the financial effects of corporate culture and thus not emphasized potential implications for corporate stakeholders beyond shareholders. We extend this literature by documenting that corporate culture has non-financial implications which benefit both employees and society at large.

Finally, we extend the accounting and finance literature on corporate culture and commitment to CSR. This field is characterized by mixed conclusions and much of the previous findings are based on country-level measures of culture or commercial black box Environmental, Social and Corporate Governance (ESG) scores (e.g., Hoi et al., 2013; Di Giuli & Kostovetsky, 2014; Bajaj et al., 2023). We contribute to this literature by providing new evidence connecting corporate culture to real workplace safety outcomes which constitutes an unambiguous component of CSR.

We discuss the concepts of corporate culture and workplace safety, related research, and develop a hypothesis in Section 2. In Section 3, we present the data, methodology, and the

descriptive statistics of the sample. In Section 4, we report the results of our analyses. Finally, we discuss our findings and limitations and offer suggestions for future research.

2. Theory and hypothesis

2.1. Corporate culture

Corporate culture is a multidimensional subject that poses several challenges to researchers. One challenge is the many different definitions of “culture”. In this regard, we follow O’Reilly and Chatman (1996), Kreps (1990), and Sørensen (2002) by viewing corporate culture as a system of shared values and norms within a firm that defines appropriate attitudes and behaviors for the members of the firm, thus serving as an internal social control system. Importantly, we refrain from arguing that only one specific dimension of culture drives a certain behavior since several different aspects of corporate culture can result in the same business outcome (Crémer, 1993). Moreover, we rely on the theoretical foundations in the management literature, especially regarding the strong culture hypothesis, where Denison (1984) and O’Reilly and Chatman (1996) define a culture as strong if the values and norms are widely shared and intensely held throughout the organization.

Measurement is another challenge (Zingales, 2015; Nash & Patel, 2019; Graham et al., 2022). One stream of research examines country-level culture or deeply held national cultural values. For example, cross-country studies highlight the effects of culture on earnings management (Haga et al., 2019), merger outcomes (Cao et al., 2019), and audit quality (Fung et al., 2022). At the same time, several researchers (e.g., Baskerville, 2003; Zingales, 2015) note problems of studying culture at an international and aggregate level. Capturing corporate culture at the firm-level in a broad sense can also be problematic and the sample sizes in early research on corporate culture were rather small. For example, Denison (1984) draws on survey data as an indication of cultural managerial style and find higher performance ratios with

stronger corporate culture, based on a sample of 34 large U.S. firms. Gordon and DiTomaso (1992) measure culture strength as the coherence of replies to survey items across managers and find better growth rates with strong corporate culture in 11 insurance firms. This is consistent with Denison (1990), who argues that consensus surrounding corporate values increases firm performance. According to Kotter and Heskett (1992), the main driver of the culture and performance link is that strong cultures are more likely to achieve their goals than weak cultures. Furthermore, strong corporate cultures tend to generate an unusual level of personal commitment among employees and establish informal control structures relieved from formal bureaucracy. Building on Kotter and Heskett (1992), Sørensen (2002) finds that strong corporate cultures promote steady firm performance under relatively stable market conditions, but these benefits diminish as volatility increases.

In more recent empirical papers, researchers examine different outcomes of corporate culture with larger samples. Liu (2016) uses the culture of insiders' country of ancestry to construct a proxy for corporate culture and find more opportunistic behavior in firms with a high corruption culture. Guiso et al. (2015) proxy for corporate culture with employee surveys and find that strong cultures relate positively to financial performance, industrial relations, and prospective job applicant attractiveness. Jiang et al. (2019) focus on a single dimension of culture and rely on textual analysis of Chinese firm disclosures to identify the strength and type of corporate culture. Their results suggest that firms with a culture of high integrity exhibit lower investment-cash flow sensitivity relative to other firms.

Instead of relying on proxies or national culture data, Li et al. (2021b) take a machine learning approach. Consistent with the most influential factor in building a firm's culture being the CEO (Di Giuli and Kostovetsky, 2014; O'Reilly et al., 2014; Graham et al., 2022), Li et al. (2021b) use earnings calls, where mostly CEOs speak, to score corporate culture. Firms are

scored based on the five cultural dimensions of innovation, integrity, quality, respect, and teamwork that S&P 500 firms often promote as core values on their corporate websites.² After thorough validation of the final measure, Li et al. (2021b) find that strong corporate culture is associated with an executive compensation design promoting long-term orientation, greater operational efficiency, more corporate risk-taking, less earnings management, and higher firm value. Li et al. (2021a) extend Li et al. (2021b) by separating strong corporate culture into people-oriented and technology-oriented culture.³ Li et al. (2021a) further find that firms strong in either culture orientation outperform their peers during the COVID-19 pandemic.

2.2. Workplace safety

Considering the economic impact and human suffering associated with workplace injuries and illnesses (International Labor Organization, 2019), workplace safety is indisputably an ethical issue. Consequently, rating agencies aiming to measure CSR often account for the level of workplace safety in ESG scores (Christensen et al., 2022). Thus, it is essential to understand the mechanisms shaping workplace safety.

In general, high safety standards should be a goal since incidents create direct economic costs for firms in the form of fines (Kniesner & Leeth, 2014; Heese & Pérez-Cavazos, 2020) as well as indirect costs through higher insurance (Caskey & Ozel, 2017) and wage premiums (Viscusi, 2010). Furthermore, poor safety records may impede the ability to win government contracts (e.g., U.S. Army, 2017, §4) and harm the general perception of the firm (Smith et al., 2011). Higher workplace safety also increases employee satisfaction and Edmans (2011) highlights the importance of satisfied employees in terms of the stock price.

² Guiso et al. (2015) note that innovation is the most advertised value (80%). Integrity (70%), respect (70%), and quality (60%) are then the most common with teamwork advertised by half of the S&P 500 firms. Only 2.4% advertise all values.

³ People-oriented corporate culture consists of the dimensions: integrity, respect, and teamwork. Tech-oriented corporate culture comprises the dimensions: innovation and quality.

While most research on workplace safety have been conducted in the fields of industrial relations and operations management, there is a growing number of wider cross-sectional studies investigating how incentives derived from capital markets and other factors influence workplace safety. Cohn and Wardlaw (2016) show that illness and injury rates increase with financial leverage. Caskey and Ozel (2017) find that capital market pressure leading to cuts of discretionary expenditures may reduce workplace safety. Amin et al. (2021) focus on a risk-based aspect of religion and argue that local religiosity, which is linked to community solidarity, influences managers' attitude toward workplace safety. In terms of monitoring effects, Heese et al. (2022) find that workplace safety violations and regulatory fines, among other signs of misconduct, increase in local establishments of publicly listed firms after a local newspaper closure. Consistent with upper echelons theory (Hambrick & Mason, 1984; Hambrick, 2007), Haga et al. (2022) conclude that structurally powerful CEOs increase workplace safety whereas founder CEOs are associated with inferior safety records. Wu et al. (2023) argue that CEO compensation structure also matters and show that a CEO compensation structure aligned with the interests of corporate debtholders is associated with safer workplaces. Thus, executives seem to play an instrumental part in establishing shared values and norms which reduce the risk of workplace injuries and illnesses. De Jesus-Rivas et al. (2016) furthermore show that the presence of foreign employees, with variations in beliefs and norms, increases the probability of an unsafe work environment.

2.3. Hypothesis development

The importance of corporate culture in promoting workplace safety garnered increased attention following large scale failures in the 1980s (Pidgeon, 1998; Paté-Cornell, 1993), where the attitudes and behaviors that characterize a strong corporate culture (O'Reilly & Chatman, 1996) were absent and resulted in catastrophic consequences. Subsequent research

has established the importance of culture in this context, demonstrating that safety climate and a safety-oriented culture lead to safer work environments (Beus et al., 2016). However, it is important to note that the concept of safety climate or safety-oriented culture is a specific component of corporate culture and distinct from an organization's other culture characteristics (Choudry et al., 2007).

The prominent relationship between shareholder value and corporate culture (Guiso et al., 2015; Graham et al., 2019; Li et al., 2021b) constitutes a reason to suspect that firms with a stronger corporate culture adopt a more conservative approach towards allocating resources to employee well-being. When firms start allocating resources to improve workplace safety, it could initially appear as if they are transferring utility from shareholders to the employees. However, such resource reallocation may align shareholder and stakeholder interest, particularly if safety-related expenditures result in increased employee satisfaction. Edmans (2011) shows that employee satisfaction is positively correlated with accounting profitability and long-run stock returns. Unsal and Hassan (2023) also find that employee lawsuits lead to lower financial performance. Moreover, high injury and illness rates lead to disruptions (Wokutch, 1990; Choo and Gabrowski, 2018). Because such disruptions are costly and will hurt the interests of the shareholders, lower injury and illness rates should be desirable in strong corporate cultures where shareholder value is a key component (e.g., Denison, 1984; Kotter & Heskett, 1992; Sørensen, 2002).

We also note several other factors that underpin a positive association between strong corporate culture and workplace safety. First, survey findings of Posner et al. (1985) show that the characteristics of a strong corporate culture are related to ethical behavior and the work by Hoi et al. (2013) documents that firms adopting stronger corporate culture take a more stakeholder-oriented course of action and tend to forgo tax avoidance activities, reflecting the

principles of good corporate citizenship. These findings suggest that stronger corporate culture should be positively related to workplace safety as well, since promoting safe work environments is consistent with ethical behavior and good corporate citizenship. Thus, while we refrain from assuming all firms with strong corporate culture adopt a safety-oriented culture, we consider this contingency, since the opposite would contravene the principles of good corporate citizenship. Moreover, safe work environments can be achieved through improved coordination of activities (Pagell et al., 2015) or technological optimization (Heese & Pacelli, 2023). Kitchell (1995) shows that the long-term emphasis, that characterizes strong corporate culture, is predictive of a firms' propensity to embrace new technology and considering that a strong corporate culture also improves coordination and control (Sørensen, 2002), we expect positive implications for employee well-being. Carrol and Harrison (1991) further show that a strong corporate culture improves firms' ability to establish collective beliefs, norms, and knowledge throughout the organization. While Willmott (1993) argues that a monolithic set of corporate values and norms deprive employees of their good judgement, we emphasize the bright side of strong corporate communality which shape implicit behavioral guidelines that prevent unforeseen contingencies such as regulatory fines. Finally, considering that myopic actions has been shown to be detrimental to workplace safety (Cohn & Wardlaw, 2016; Caskey & Ozel, 2017), and that a strong corporate culture is associated with a long-term emphasis (Graham et al., 2019; Li et al., 2021a; Li et al., 2021b), we posit that there is a positive relationship between stronger corporate culture and workplace safety. Building on these arguments and an expectation of better employee well-being in firms with stronger corporate culture, we express a directional hypothesis as follows:

H1: Firms with stronger corporate culture are associated with safer workplaces.

3. Research design

3.1. Sample and variables of interest

Because corporate culture is multidimensional and inherently hard to measure, we mainly rely on the strong culture hypothesis literature (e.g., Denison, 1984; O'Reilly & Chatman, 1996; Sørensen, 2002) and the established and validated measure of corporate culture by Li et al. (2021b). The measure captures five corporate cultural values of innovation, integrity, quality, respect, and teamwork. To evaluate the strength of each value dimension, Li et al. (2021b) use a semi-supervised machine learning approach for textual analysis. This method uses a neural network word embedding model that can learn the meaning of the words and phrases in the Q&A section of earnings call transcripts so that synonymous words and phrases are used to construct a dictionary of words and phrases associated with corporate culture. The dictionary contains five lists of words and phrases, each of which corresponds to one of the five value dimensions.⁴ Finally, a weighted-frequency count of the dictionary words and phrases is used to score the culture of a firm based on earnings calls. We then follow Graham et al. (2022) and take the aggregate of the five value dimensions to create our main corporate culture measure (*Culture*).^{5,6} Crémer (1993) provides theoretical justification for this approach since different aspects of corporate culture can result in the same business outcome.

⁴ In Appendix A, we note the most frequently occurring words for each dimension. Regarding *Integrity*, we acknowledge that there is an association with safety-related words and therefore conduct additional analyses with alternative measures where such words are not included in the underlying dictionary.

⁵ We conduct a principal component analysis (PCA) to empirically investigate the reasonableness of aggregating the five value dimensions to a one-dimensional measure of corporate culture. In our (untabulated) PCA, the first factor has an eigenvalue of 2.07 and accounts for 41.34 % of the total variation among the five value dimensions. Moreover, the factor is positively associated with all dimensions. The second factor's eigenvalue is 0.97. Following Custódio et al. (2013), we only consider factors with eigenvalue larger than 1.00. Using the PCA, we obtain a single factor, which supports our use of a one-dimensional measure of corporate culture.

⁶ Li et al. (2021a) construct a dummy variable for strong culture by first aggregating the values of the five culture dimensions and then defining firms with strong corporate culture as those in the top quartile of Compustat firms for a given year. We are able to reproduce our main results using the strong culture dummy (untabulated).

To quantify the level of workplace safety, we mainly use a dataset from Violation Tracker that records fines for workplace misconduct. The Violation Tracker dataset has recently gained attention in the finance and accounting literature (e.g., Heese & Pérez-Cavazos, 2020; Zaman et al., 2021; Heese et al., 2022). This data source is assembled by the Corporate Research Project of Good Jobs First and incorporates statistics from more than 40 federal regulatory agencies. While the data covers a wide range of regulatory violations and other forms of malpractice, we focus on observations with fines related to employee misconduct from establishments of publicly listed firms in the private sector.⁷ Following Zaman et al. (2021), we aggregate the establishment-level data to the firm-level.

We use the Violation Tracker dataset to generate three measures of workplace safety. The first is *Fined*, which is a dichotomous variable taking the value of one given that the firm was fined during the year and zero otherwise. Our second measure, *Fines*, is the dollar amount of fines. By considering the magnitude, we also manage to obtain the severity of the misconduct. The third measure is *Numb*, which is the number of fines during the year. To construct our sample, we begin with 158,859 firm-year observations from Compustat covering the period 2002-2018. We combine the dataset with data on corporate culture from Li et al. (2021b). We further match this dataset with executive and board data from Execucomp and BoardEx. These initial steps yield a sample of 21,751 firm-year observations. We combine this sample with data on employee violations from Violation Tracker. We exclude firms from regulated (SIC 4900-4999) and financial industries (SIC 6000-6999) and observations with missing data items on any of the variables used in our main analysis (see description of Eq. (1)). The final sample covers 16,242 firm-year observations from 1,747 firms.

⁷ Of the employee violations and related fines, 80.14% are given for workplace safety violations. Using only workplace safety violations do not impact our results (untabulated).

3.2. Regression models and control variables

To examine the association between corporate culture and workplace safety, we estimate the following model:

$$Fined_{i,t} = \alpha_0 + \beta_1 Culture_{i,t} + \beta Controls_{i,t} + \varepsilon_{i,t} \quad (1)$$

where $Fined_{i,t}$ is a dichotomous variable taking the value one given that firm i was fined for employee-related misconduct at time t . We firstly estimate the model using a logit regression. In alternative setups, we use the count variables, *Fines* and *Numb*, as dependent variables and estimate Eq. (1) using Poisson regressions.⁸ *Culture* is our variable of interest, and to obtain robust estimates, we control for firm characteristics in accordance with Cohn and Wardlaw (2016). We include independent variables measuring firm size (*LnAssets*), financial constraints (*Cash/Assets*, *CashFlow/Assets*, *Dividend/Assets*, and *Leverage*), asset turnover (*Sales/Assets*), growth opportunities (*Capex/Assets*, *Market/Book*) and tangibility (*PPE/Assets*). Besides firm characteristics, we add additional controls for corporate governance characteristics. More specifically, we include variables for CEO age (*CEOage*), female CEOs (*CEOgender*), whether the CEO acts as the chairperson of the board (*CEOduality*), and the proportion of independent directors on the board (*BoardInd*). In Eq. (1), we also employ fixed effects (*Industry* and *Year*) to mitigate potential bias from omitted variables. Variable definitions are available in Appendix A.

3.3. Descriptive statistics

Panel A of Table 1 reports descriptive statistics for our sample. The average of *Fined* indicates that 16% of the firm-year observations have employee violations that have resulted

⁸ Cohn et al. (2022) propose that researchers should rely on Poisson regressions when dealing with count variables or continuous zero-bounded variables. Poisson regressions assume that the dependent variables' variance equals its mean. Importantly, even if this assumption is violated Poisson regressions produce unbiased estimates (Wooldridge, 2002).

in a regulatory fine. The average of *Culture* is 5.69, which is consistent with the average of 5.51 in Li et al. (2021b) for the universe of U.S. firms with earnings calls over the period 2001-2018. *Culture* is the sum of the values for each culture dimension and following Li et al. (2021b), and we view higher values as a sign of stronger culture. By aggregating the strength across all dimensions, we get a firm-level measure of corporate culture strength. Panel A also reports descriptive statistics for the individual culture dimensions. Among the dimensions, *Innovation* has the highest average (2.02) which indicates that innovation is the most frequently mentioned cultural value in earnings calls. Meanwhile, *Integrity* has the lowest average (0.49) and is thus the least frequently mentioned cultural value. Moreover, the average sample firm has 8,907.58 million dollars in total assets (*LnAssets* 7.54), a leverage ratio of 22%, and the proportion of property, plant and equipment to total assets is 25%. The average age of a CEO is 55.83 years (*CEOage* 4.01) and the CEO acts as president or chairperson in 23% of the cases. Panel B of Table 1 reports descriptive statistics based on Fama-French 12 industries. Our measure of corporate culture is highest for firms in the Telecom industry and lowest for firms in the Energy industry. Firms in the Business Equipment and Healthcare industry have few violation fines. Industries with the highest proportion of violations are Consumer Durables and Manufacturing. Panel C of Table 1 shows how the culture measure, the proportion of fined firms, and the size of the fines have changed over time. Consistent with Li et al. (2021b), we find that the strength of firm culture has increased over time. Panel C also indicates that the proportion of fined firms have monotonically increased over time. The same trend is not apparent for the size or number of fines.

[TABLE 1 HERE]

Table 2 reports correlations between our variables. The correlation between *Fined* and *Culture* is -0.11 , which indicates a negative univariate relationship between corporate culture

and employee violations. The correlations between the count variables, *Fines* and *Numb*, and *Culture* are also negative and statistically significant, which provides preliminary support for our hypothesis. The correlation between our independent variable of interest (*Culture*) and any of the control variables is modest, where the correlation with *PPE/Assets* is the highest correlation in absolute value. The correlation of 0.43 between *Cash/Assets* and *Market/Book* is the highest between any of the control variables. Overall, the low correlations suggest that our estimates should not be sensitive to small changes in the chosen control variables.

[TABLE 2 HERE]

4. Results

4.1. Main results

Column (1) of Table 3 reports the results from a logit regression with *Fined* as the dependent variable and *Culture* as the independent variable of interest. Controlling for firm characteristics and including *Industry* and *Year* fixed effects, we find a negative and statistically significant coefficient on *Culture* (coef. -0.09 , t-stat -4.27). The coefficient suggests that a one standard deviation increase in *Culture* is associated with a 23 percentage point decrease in the likelihood of being penalized. Furthermore, Column (1) reveals that *Cash/Assets* is associated with a lower likelihood of getting fined while *CashFlow/Assets*, *Dividends/Assets*, and *Sales/Assets* are associated with a greater likelihood.

In Column (2) of Table 3, we estimate a Poisson regression with *Fines* as the dependent variable. The coefficient on *Culture* is negative and statistically significant (coef. -0.07 , t-stat -2.39). With regards to the economic magnitude, a one standard deviation increase in *Culture* is then associated with a 17.4 percentage point decrease in regulatory fines.⁹ In

⁹ We assess the economic magnitude by multiplying the standard deviation of *Culture* (2.58) with $e^{-0.07} - 1$.

Column (3) of Table 3, we study the association with *Numb* and we find that the coefficient on *Culture* is negative and statistically significant (coef. -0.05 , t-stat -2.50). The result shows that firms with higher numerical values of *Culture* are associated with fewer employee-related fines. In economic magnitude, the coefficient on *Culture* in Column (3) implies that a one standard deviation increase is associated with a 12.6 percentage point decrease in number of fines. Taken together, Table 3 provides evidence that firms with stronger corporate culture are less likely to be penalized, incur lower regulatory fines, and have a reduced number of violations. In other words, we find evidence supporting the arguments that stronger corporate culture is associated with safer workplaces.

[TABLE 3 HERE]

4.2. Additional results

Firms with stronger corporate culture could improve workplace safety by increasing safety-related expenditures in maintenance, training, and oversight programs. Alternatively, it is possible that firms with stronger corporate culture provide unique working conditions, where employees work fewer hours and face less work-related stress. Additional recovery time and less rushed employees could thus constitute an indirect channel which could explain our main results. To disentangle the legitimacy of these conjectures, we investigate the relation between corporate culture and numerical proxies for workplace safety spending and employee workload. First, we turn to abnormal selling, general, and administrative expenses (SG&A). Even though safety-related expenditures are seldom explicitly observable in the income statement, it is relevant to acknowledge that such expenditures can constitute a non-negligible part of SG&A.¹⁰ We adopt the procedure in Caskey and Ozel (2017) and estimate abnormal

¹⁰ For example, Andy Hendricks, president and CEO of Patterson-UTI Drilling Co., estimates that the firm over the year 2001 to 2010 spent \$150 million to improve workplace safety, which corresponds to 32% of the firm's SG&A over the same period (Tedesco, 2013).

SG&A per employee (*AbnormalSGA*) as the residual in Eq. (2), which is estimated for firm i in year t within each two-digit SIC code and year with a minimum of 15 observations:

$$\frac{SG\&A_{i,t}}{Emp_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{Emp_{i,t-1}} + \beta_2 \frac{Sales_{i,t-1}}{Emp_{i,t-1}} + \varepsilon_{i,t} \quad (2)$$

where *Emp* is total number of employees, *Sales* is total revenues, and *SG&A* equals selling, general, and administrative expenses. If additional safety-related expenditures constitute an economic channel through which firms with strong corporate culture improve workplace safety, then we expect stronger corporate culture to be associated with higher *AbnormalSGA*. Second, we turn to the two measures of *Production/Emp* (cost of goods sold adjusted for the annual change in inventory scaled by total employees) and *Revenue/Emp* (total revenues scaled by total employees). If reduced workloads constitute a partial explanation for the relationship between corporate culture and workplace safety, we expect *Culture* to be associated with lower employee workloads. To test the conjecture, we create a sample by combining the corporate culture dataset with data from Compustat and Execucomp. The sample contains 14,865 firm-year observations and covers the period 2002-2018.¹¹

Column (1) of Table 4 reports results for a firm-level regression where we employ *AbnormalSGA* as our dependent variable. The coefficient on *Culture* is 2.13 (t-stat 3.41), which establishes the direction and statistical significance of the relationship between *Culture* and *AbnormalSGA*. Columns (2) to (3) of Table 4 report estimates for firm-level regressions where we employ our proxies for employee workload as the dependent variable. With *Production/Emp*, Column (2) unveils a positive but insignificant coefficient on *Culture*. With *Revenue/Emp* in Column (3), the coefficient on *Culture* remains positive and insignificant.

¹¹ Missing data on the total number of employees decreases the number of observations from 16,242 to 14,865.

Taken together, the results in Table 4 identify higher safety spending in firms with stronger corporate culture as a potential driver of our main results.

[TABLE 4 HERE]

So far, we have embraced the theoretical assumptions in Crémer (1993) and treated the concept of corporate culture as a whole, without addressing the potential impact of alternative cultural orientations. Yet, when we explore the channels through which strong corporate culture may influence workplace safety, we observe that higher safety-related spending could account for our main results. The observation aligns with Edmans (2011) and further substantiates that strong corporate culture fosters long-term orientation. However, the finding in Table 4 yields limited insight regarding the underlying cultural mechanisms that spur safety-related expenditures. To shed further light on this matter, we follow Li et al. (2021a) and explore how the inner elements of corporate culture affect workplace safety. More specifically, we divide our measure of strong corporate culture into a people-oriented corporate culture (*PeopleCulture*) that assimilates the dimensions integrity, respect, and teamwork and into a technology-oriented corporate culture (*TechCulture*) consisting of the culture dimensions innovation and quality.

Column (1) of Table 5 shows the outcome of the logit regression, where *Fined* is regressed on *PeopleCulture* along with *TechCulture* and the control variables from Eq. (1). We obtain an insignificant coefficient on *PeopleCulture* (coef. -0.05 , t-stat -0.97), while we find a negative and statistically significant coefficient on *TechCulture* (coef. -0.12 , t-stat -3.61). The result suggests that the likelihood of getting fined is lower for firms with a strong cultural emphasis on technology adoption. We notice a similar pattern in Columns (2) and (3), where we estimate Poisson regressions with *Fines* and *Numb* as our dependent variables. Namely, insignificant coefficients on *PeopleCulture* and negative and statistically significant

coefficients on *TechCulture*.¹² In summary, Table 5 show that particularly strong technology-oriented culture is associated with better workplace safety.

[TABLE 5 HERE]

4.3. Robustness tests

We conduct several robustness tests to address potential endogeneity concerns, biases arising from functional form misspecification, and potential measurement errors in our dependent- and independent variables. We employ an instrumental variable approach using a two-stage least-squares (2SLS) regression.¹³ While it is challenging to find suitable instruments for corporate culture (Nash and Patel, 2019), we rely on Harrington and Gelfand (2014) and Hasan (2022) by using the state-level tightness-looseness index (*TightnessIndex*) as an instrument for our main measure of corporate culture (*Culture*). We expect firms headquartered in states with greater tightness to exhibit lower cultural orientation. This implies a negative relationship between tightness and *Culture*, which is in accordance with the relevance condition. At the same time, it is unlikely that state-level tightness affects workplace safety directly which is consistent with the exclusion condition. For the first-stage regression in Column (1) of Table 6, where *Culture* is the dependent variable, the coefficient on *TightnessIndex* is negative and statistically significant (coef. -0.01 , t-stat -3.57). The sign of the coefficient is in line with our expectation. The Kleibergen-Paap F-stat for the first-stage regression is 12.72. The significant coefficient on *TightnessIndex* and the Kleibergen-Paap F-stat over 10 suggest that the relevance condition is met (Stock and Yogo, 2005). Column (2)

¹² The insignificant coefficients on *PeopleCulture* in Table 5 indicate that our main finding regarding the effect of *Culture* on workplace safety is not mechanically driven by safety-related words and phrases because only *PeopleCulture* puts some weight on safety-related words and phrases via the *Integrity* dimension.

¹³ In the 2SLS regressions, we use the logarithmic transformed values of *Fines* and *Numb*. $\ln Fines$ is the natural logarithm of 1 + the size of the fines and $\ln Numb$ is the natural logarithm of 1 + number of fines.

reports the second-stage regression results with *Fined* as the dependent variable and here the coefficient on the estimated value of corporate culture is negative and statistically significant (coef. -0.07 , t-stat -1.70). In Column (3), we re-estimate the second-stage regression with *LnFines* as the dependent variable, and the results again show a negative and significant coefficient on the estimated value of corporate culture. Finally, Column (4) reports the second-stage regression with *LnNumb* as dependent variable. The results show that the estimated value of corporate culture from the first-stage has a statistically significant negative relation with *LnNumb*. Taken together, the results in Table 6 support our hypothesis that firms with stronger corporate culture are associated with safer workplaces.

[TABLE 6 HERE]

Next, we use a PSM approach to address potential functional form misspecification (Shipman et al., 2017). We begin by defining *StrongCulture*, which is an indicator variable equal to one if *Culture* is in the highest quartile and zero otherwise (Li et al., 2021a). Observations with a strong culture belong to the treatment group and we use PSM to generate a control group based on the control covariates in Eq. (1), relying on one-to-one matching without replacement and a caliper of 0.01 (Rosenbaum and Rubin, 1983). Panel A of Table 7 shows the univariate differences between our treatment and control groups. With respect to workplace safety, the univariate comparison shows that observations with *StrongCulture* equal to one are less likely to be penalized and have lower total fine amounts. The aim of a PSM approach is to create two homogeneous groups with respect to the control covariates and we conclude that the matching is successful because Panel A shows no statistically significant differences between means of the control variables. In Panel B of Table 7, we estimate Eq. (1) using only the observations in the treatment and control group. All three columns of Panel B show negative and statistically significant coefficients on *StrongCulture*, which supports our

main results. In summary, the PSM approach indicates that the finding that firms with stronger corporate culture have higher workplace safety is not driven by a functional form misspecification.

[TABLE 7 HERE]

We continue the robustness analyses by examining an alternative measure of corporate culture. Given the novelty of applying machine learning-based proxies for corporate culture, there might be concerns that our textual measures capture some systematic error related to the earnings calls setting rather than identifying a pure culture-specific effect. Despite the Q&A section of earnings calls presumably mirroring the tone at the top, and restricting managers ability to select topics, we cannot entirely rule out alternative agendas. To validate our measure of corporate culture and further substantiate that firms actually “walk as CEOs talk”, we turn to an alternative measure of corporate culture and investigate whether the underlying values also are reflected in annual reports.

We follow the procedure Fiordelisi and Ricci (2014) and use their dictionary method, to gauge people- and tech-oriented elements of corporate culture, as in Table 5, through the lens of the competing values framework. We analyze all available 10-K filings from the Securities and Exchange Commission’s Electronic Data Gathering, Analysis, and Retrieval (EDGAR) during the period 2002-2018 and construct two new cultural variables, *Collaborate* and *Create*.¹⁴ We generate these variables by dividing the count of a specific set of synonyms by the total number of words in the 10-K. For example, words like “cooperate”, “human”, and “partner” (“dream”, “trend”, and “pioneer”) are assigned to *Collaborate* (*Create*) and a

¹⁴ Following Fiordelisi and Ricci (2014), we include one report for each fiscal year and exclude tables and figures from this procedure.

relatively high frequency of such words in the 10-K suggest that a firm has a people-oriented (tech-oriented) culture.¹⁵

Column (1) of Table 8 reports the estimates of the regression, where *Fined* is regressed on *Collaborate* along with *Create* and the control variables from Eq. (1). We observe negative and statistically significant coefficients on *Collaborate* (coef. -0.67 , t-stat -4.06) and *Create* (coef. -0.39 , t-stat -2.12). We notice a similar pattern in Column (2), where we estimate a Poisson regression with *Fines* as the dependent variable, namely, negative and statistically significant coefficient on *Collaborate* (coef. -0.44 , t-stat -1.99) and *Create* (coef. -0.67 , t-stat -2.21). Finally, in Column (3), we substitute our dependent variable and regress *Numb* on our cultural dimensions along with the previously used controls. While we continue to observe a negative in sample effect across both variables of interest, the coefficient on *Create* is no longer statistically significant. The results in Table 8 suggest that a strong cultural emphasis on human- and technological capital may improve workplace safety.

[TABLE 8 HERE]

Finally, we substitute the dependent variables from Violation Tracker in Eq. (1) with data on workplace injuries and illnesses documented by the OSHA Data Initiative Program. This dataset covers the period 1996-2011 and consists of annual observations on workplace injuries and illnesses from establishments of firms in the private sector operating in hazardous industries (e.g., transportation, manufacturing, and sanitary services).¹⁶ We quantify two annual establishment-level measures of workplace safety. First, we define the Total Case Rate (*TCR*) as the number of workplace injuries and illnesses divided by the number of hours worked multiplied by 200,000. *TCR* represents the workplace injury and illness rate per 100 full-time

¹⁵ The exact bag of words used to capture these dimensions are available in Fiordelisi and Ricci (2014).

¹⁶ We use a subsample of the OSHA dataset, since the data collection procedure changed in 2002 which means that the data on injuries and illnesses covering 1996 to 2001 is not comparable with the data for the post-2001 years.

employees in a given year. Second, we calculate *DART* as the number of days away from work or days with job restrictions or transfers due to workplace injuries and illnesses, divided by the number of hours worked by all employees in a given establishment-year multiplied by 200,000.

In addition to records of illnesses and injuries, the OSHA dataset provides details on establishment name and location, standard industry classification (SIC), total employees and the total number of hours worked.¹⁷ We follow the procedure in Caskey and Ozel (2017) and match the observations of publicly listed firms with data on corporate culture based on Li et al. (2021b), Compustat and Execucomp. Column (1) of Table 9 reports the estimates obtained when we regress *TCR* on *Culture*, a plethora of control variables, as well as *Industry*, *State*, and *Year* fixed effects. The result suggests that establishments of firms with higher numerical values of *Culture* exhibit fewer workplace injuries and illnesses. The economic magnitude of the result is also considerable. The estimated coefficient of -0.39 (t-stat -3.20) in Column (1) suggests that a one standard deviation increase in *Culture* is associated with 1.01 fewer workplace injuries and illnesses per year for 100 full-time employees.

In Column (2) of Table 9, we study the association between corporate culture and *DART*. The coefficient of -7.93 (t-stat -3.46) indicates that a one standard deviation increase in *Culture* is associated with 20.46 fewer days away, restricted, or transferred due to illnesses and injuries per year for 100 full-time employees. Whereas the regression results in Columns (1) and (2) of Table 9 are based on establishment-level data, we report regression results for firm-level data in Columns (3) and (4). We use *TCR* as the dependent variable in Column (3) and find a negative and statistically significant coefficient on *Culture*. For the firm-level regressions with *DART* as the dependent variable in Column (4), we find a negative and insignificant coefficient on *Culture*. In general, we notice a weaker relationship between

¹⁷ The dataset also contains dichotomous variables which specify whether the establishment experienced any unusual event such as seasonal work, strikes, shutdowns, or natural disasters.

corporate culture and workplace safety in our firm-level regressions with the relatively few firm-level observations as a potential explanation. However, taken together, Table 9 provides evidence of a negative association, which indicates that firms with stronger corporate culture have lower injury and illness rates.

[TABLE 9 HERE]

5. Conclusions

In this study, we propose that corporate culture is an important determinant of workplace safety. Our findings are consistent with the notion in Posner et al. (1985) and Hoi et al. (2013) that firms with stronger corporate culture comply with standards of good corporate citizenship and take more stakeholder-oriented actions. Where Hoi et al. (2013) analyze tax avoidance, our study centers on the well-being of employees.

According to the strong culture hypothesis, corporate values and norms may boost financial performance in proportion to the strength of their manifestation (e.g., Denison, 1984; Kotter & Heskett, 1992; Sørensen, 2002). Recent studies also find a positive link between stronger corporate culture and firm value (e.g., Graham et al., 2022; Li et al., 2021b). Based on this, shareholders may be seen as the primary beneficiaries of a stronger corporate culture. While our study primarily examines non-financial effects and underscores that employees need not fear a stronger corporate culture, our results do not contradict the aim of maximizing shareholder wealth. In fact, Edmans (2011) discovered that a firm's concern for employees can ultimately benefit shareholders through long-term stock returns. Building on this finding, we propose that stronger corporate culture can have positive financial value implications via better employee relations and a reduction in costly disruptions caused by workplace accidents. Besides employees and shareholders benefiting from safer workplaces, we also stress that there

is a positive effect of stronger corporate culture for the families involved as well as the local community and society at large.

We acknowledge several limitations with our study. One limitation is that we are not able to infer causality from our regressions or conduct a changes analysis. However, we provide evidence of a robust association with other means. Another limitation is that the main measure of strong culture overlaps slightly with the concept of safety climate through the integrity dimension. Importantly, our results are evident also when technology-oriented culture without a direct safety reference is used. We are also limited to only studying physical well-being at work, while studying more holistic well-being would include several other aspects. We leave such a research avenue open for future research. Finally, we note higher safety spending as an explanation for our findings but do not consider the net economic effects. We also leave such an analysis for future research.

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Appendix A Variable definitions

Variable	Description	Source
<i>Fined</i>	Dichotomous variable, equal to 1 given that the firm has been fined for employee violations, otherwise 0.	Violation Tracker
<i>Fines</i>	The total dollar amount of fines for employee violations.	Violation Tracker
<i>Numb</i>	The number of fines for employee violations.	Violation Tracker
<i>Culture</i>	Total culture score calculated as the sum of the five cultural dimensions of <i>Innovation</i> , <i>Integrity</i> , <i>Quality</i> , <i>Respect</i> , and <i>Teamwork</i> .	Li et al. (2021b)
<i>Innovation</i>	Weighted-frequency count of innovation-related words (e.g., “brand”, “technology”, “focus”, “great”, and “platform”) in the Q&A section of earnings calls averaged over a three-year window.	Li et al. (2021b)
<i>Integrity</i>	Weighted-frequency count of integrity-related words (e.g., “control”, “management”, “careful”, “honestly”, and “regulator”) in the Q&A section of earnings calls averaged over a three-year window.	Li et al. (2021b)
<i>Quality</i>	Weighted-frequency count of quality-related words (e.g., “customer”, “product”, “client”, “service”, and “build”) in the Q&A section of earnings calls averaged over a three-year window.	Li et al. (2021b)
<i>Respect</i>	Weighted-frequency count of respect-related words (e.g., “people”, “team”, “company”, “hire”, and “folk”) in the Q&A section of earnings calls averaged over a three-year window.	Li et al. (2021b)
<i>Teamwork</i>	Weighted-frequency count of teamwork-related words (e.g., “partner”, “relationship”, “discussion”, “together”, and “integrate”) in the Q&A section of earnings calls averaged over a three-year window.	Li et al. (2021b)
<i>LnAssets</i>	Natural logarithm of a firm’s total assets (at) from the preceding year (t-1).	Compustat
<i>Cash/Assets</i>	Current year (t) cash and cash equivalent (che) divided by total assets (at) from the preceding year (t-1).	Compustat
<i>CashFlow/Assets</i>	Current year (t) depreciation and amortization (dp) plus income before extraordinary items (ib) divided by total assets (at) from the preceding year (t-1).	Compustat
<i>Dividends/Assets</i>	Current year (t) ordinary dividends paid (dvc) divided by total assets (at) from the preceding year (t-1).	Compustat
<i>Capex/Assets</i>	Current year (t) capital expenditures (capx) divided by total assets (at) from the preceding year (t-1).	Compustat
<i>Leverage</i>	Current year (t) long-term and short-term debt (dltt+dlc) divided by total assets (at) from the preceding year (t-1).	Compustat
<i>Market/Book</i>	Current year (t) market value of assets divided by total assets (at) from the preceding year (t-1). Market value of assets equals market value of equity (cshpri×prcc_f) plus total liabilities (lt) plus liquidation value of preferred stock (pstkl) minus deferred tax liabilities (txdb).	Compustat
<i>Sales/Assets</i>	Current year (t) sales (sale) divided by total assets (at) from the preceding year (t-1).	Compustat

<i>PPE/Assets</i>	Current year (t) net property, plant, and equipment (ppent) divided by total assets (at) from the preceding year (t-1).	Compustat
<i>CEOage</i>	Natural logarithm of the CEO's age.	Execucomp
<i>CEOgender</i>	Dichotomous variable equal to 1 given that the CEO is female, otherwise 0.	Execucomp
<i>CEOduality</i>	Dichotomous variable equal to 1 given that the CEO acts as either chairperson or president of the firm, otherwise 0.	Execucomp
<i>BoardInd</i>	Number of independent directors divided by number of directors.	BoardEx
<i>AbnormalSGA</i>	Abnormal selling, general and administrative expenses estimated following Caskey and Ozel (2017).	Compustat
<i>Production/Emp</i>	Current year (t) inventory and cost of goods sold (inv+co) divided by number of employees (emp) from the preceding year (t-1).	Compustat
<i>Revenue/Emp</i>	Current year (t) sales (sale) divided by number of employees (emp) from the preceding year (t-1).	Compustat
<i>PeopleCulture</i>	People-oriented culture score calculated as the sum of the cultural dimensions of <i>Integrity</i> , <i>Respect</i> , and <i>Teamwork</i> .	Li et al. (2021a)
<i>TechCulture</i>	Technology-oriented culture score calculated as the sum of the cultural dimensions of <i>Innovation</i> and <i>Quality</i> .	Li et al. (2021a)
<i>LnFines</i>	Natural logarithm of 1 plus <i>Fines</i> .	Violation Tracker
<i>LnNumb</i>	Natural logarithm of 1 plus <i>Numb</i> .	Violation Tracker
<i>TightnessIndex</i>	The tightness-looseness index is a state-level composite index of nine dimensions. Four dimensions are related to the strength of punishment, two dimensions are related to permissiveness, two dimensions are related to morally constrained behavior, and the final dimension is related to influences from foreigners.	Harrington and Gelfand (2014)
<i>StrongCulture</i>	Dichotomous variable equal to 1 given that the <i>Culture</i> value is in the top quartile, otherwise 0.	Li et al. (2021a)
<i>Collaborate</i>	Collaboration-oriented corporate culture score of a firm obtained from the 10-K filing using textual analysis and keywords (e.g., "cooperate", "human", and "partner") specified in Fiordelisi and Ricci (2014).	EDGAR
<i>Create</i>	Creativity-oriented corporate culture score of a firm obtained from the 10-K filing using textual analysis and keywords (e.g., "dream", "trend", and "pioneer") specified in Fiordelisi and Ricci (2014).	EDGAR
<i>TCR</i>	Number of injury and illness cases divided by the number of hours worked by employees and multiplied by 200,000.	OSHA
<i>DART</i>	Number of days away from work or days with job restrictions or transfers due to workplace injuries and illnesses divided by the number of hours worked by employees and multiplied by 200,000.	OSHA
<i>Hours/Emp</i>	Hours worked per year divided by number of employees.	OSHA
<i>EstablishmentSize</i>	Natural logarithm of average number of employees working in a given establishment during the year.	OSHA
<i>Strike</i>	Dichotomous variable, equal to 1 given that the establishment experienced a lockout or strike during the year, otherwise 0.	OSHA
<i>Shutdown</i>	Dichotomous variable, equal to 1 given that the establishment experienced layoffs or shutdowns during the year, otherwise 0.	OSHA

<i>Seasonal</i>	Dichotomous variable equal to 1 given that the establishment contracts seasonal employees, otherwise 0.	OSHA
<i>Disaster</i>	Dichotomous variable equal to 1 given that the establishment experienced a natural disaster or extreme weather conditions during the year, otherwise 0.	OSHA

Table 1 Descriptive statistics and sample composition

Panel A: By variable						
	Observations	Mean	p25	Median	p75	St. Dev
<i>Fined</i>	16242	0.16	0.00	0.00	0.00	0.36
<i>Fines</i>	16242	6114.59	0.00	0.00	0.00	45081.98
<i>Numb</i>	16242	0.37	0.00	0.00	0.00	1.42
<i>Culture</i>	16242	5.69	3.87	5.17	6.97	2.58
<i>Innovation</i>	16242	2.02	1.18	1.71	2.54	1.24
<i>Integrity</i>	16242	0.49	0.25	0.42	0.65	0.36
<i>Quality</i>	16242	1.45	0.89	1.28	1.83	0.82
<i>Respect</i>	16242	0.98	0.45	0.74	1.23	0.85
<i>Teamwork</i>	16242	0.75	0.38	0.60	0.95	0.57
<i>LnAssets</i>	16242	7.54	6.41	7.44	8.57	1.59
<i>Cash/Assets</i>	16242	0.17	0.04	0.11	0.25	0.17
<i>CashFlow/Assets</i>	16242	0.10	0.06	0.10	0.15	0.11
<i>Dividends/Assets</i>	16242	0.01	0.00	0.00	0.02	0.02
<i>Capex/Assets</i>	16242	0.05	0.02	0.03	0.06	0.06
<i>Leverage</i>	16242	0.22	0.05	0.20	0.33	0.19
<i>Market/Book</i>	16242	1.76	0.93	1.37	2.13	1.28
<i>Sales/Assets</i>	16242	1.17	0.65	0.98	1.46	0.76
<i>PPE/Assets</i>	16242	0.25	0.09	0.18	0.35	0.21
<i>CEOage</i>	16242	4.01	3.93	4.03	4.09	0.13
<i>CEOgender</i>	16242	0.03	0.00	0.00	0.00	0.18
<i>CEOduality</i>	16242	0.23	0.00	0.00	0.00	0.42
<i>BoardInd</i>	16242	0.79	0.73	0.83	0.89	0.12

Panel B: By industry						
Fama–French 12-industry	Observations	Mean	Observations	Mean	Mean	
		<i>Culture</i>	<i>Fined</i>	<i>Fined</i>	<i>Fines</i>	<i>Numb</i>
Business Equipment	3718	6.72	0.03	125	16765.74	1.28
Chemicals and Allied Products	763	4.43	0.20	151	23482.11	1.56
Consumer Durables	577	4.87	0.26	254	25478.71	1.87
Consumer Nondurables	1100	5.70	0.23	150	42481.54	2.78
Energy	875	3.82	0.19	163	68936.97	2.66
Healthcare	1847	5.82	0.04	71	16123.80	1.10
Manufacturing	2421	4.61	0.27	647	37263.46	2.20
Other	2260	5.84	0.23	518	40987.94	2.97
Telecom	398	6.70	0.13	52	23279.40	2.04
Wholesale and Retail	2283	6.08	0.19	435	46267.46	2.43

Table 1 continued

Panel C: By year

Year	Observations	Culture	Mean <i>Fined</i>	Observations <i>Fined</i>	Mean <i>Fines</i>	Mean <i>Numb</i>
2002	586	4.65	0.12	72	35890.93	2.10
2003	745	4.87	0.11	82	31231.43	1.91
2004	811	5.09	0.11	88	28469.49	1.97
2005	836	5.32	0.10	86	36478.93	1.80
2006	845	5.31	0.11	94	20206.68	1.84
2007	1085	5.47	0.10	112	59041.24	2.46
2008	1068	5.05	0.12	124	36696.55	2.30
2009	1075	5.06	0.13	138	34065.48	2.30
2010	1073	5.27	0.15	160	42870.31	2.66
2011	1090	5.55	0.15	162	42386.56	2.70
2012	1056	5.68	0.17	183	38953.68	2.27
2013	1046	5.95	0.18	187	40834.14	2.16
2014	1012	6.17	0.17	171	37503.63	2.27
2015	1018	6.49	0.19	197	37665.42	2.32
2016	994	6.55	0.23	225	43474.14	2.56
2017	989	6.79	0.24	241	38141.40	2.61
2018	913	6.89	0.27	244	38790.20	2.45

This table reports descriptive statistics. Panel A reports mean, 25th percentile, median, 75th percentile, and standard deviation for the variables. Panel B (Panel C) reports descriptive statistics by Fama-French 12 industry (year). *Fined* is equal to 1 for years when the firm has been fined for violating their employees' rights, and 0 otherwise, *Fines* is the amount of fines for employee violations in dollars, and *Numb* is the number of fines for employee violations. The measure of corporate culture (*Culture*) is created following Li et al. (2021b) by summing the five numerical cultural values *Innovation*, *Integrity*, *Quality*, *Respect*, and *Teamwork*. Detailed descriptions of the variables are available in Appendix A.

Table 2 Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) <i>Fined</i>	1.00															
(2) <i>Fines</i>	0.31***	1.00														
(3) <i>Numb</i>	0.60***	0.54***	1.00													
(4) <i>Culture</i>	-0.11***	-0.04***	-0.06***	1.00												
(5) <i>LnAssets</i>	0.31***	0.13***	0.24***	-0.09***	1.00											
(6) <i>Cash/Assets</i>	-0.21***	-0.07***	-0.14***	0.26***	-0.35***	1.00										
(7) <i>CashFlow/Assets</i>	0.03***	0.02***	0.03***	-0.02**	0.05***	-0.05***	1.00									
(8) <i>Dividends/Assets</i>	0.10***	0.03***	0.07***	0.01	0.20***	-0.02**	0.27***	1.00								
(9) <i>Capex/Assets</i>	0.00	0.02***	0.02***	-0.12***	-0.01	-0.13***	0.28***	-0.05***	1.00							
(10) <i>Leverage</i>	0.13***	0.04***	0.09***	-0.15***	0.31***	-0.35***	-0.10***	0.02**	-0.00	1.00						
(11) <i>Market/Book</i>	-0.09***	-0.03***	-0.06***	0.22***	-0.20***	0.43***	0.33***	0.24***	0.08***	-0.15***	1.00					
(12) <i>Sales/Assets</i>	0.09***	0.03***	0.06***	0.02***	-0.18***	-0.14***	0.24***	0.05***	0.04***	-0.16***	0.06***	1.00				
(13) <i>PPE/Assets</i>	0.12***	0.07***	0.12***	-0.27***	0.18***	-0.37***	0.13***	0.01	0.64***	0.21***	-0.19***	-0.05***	1.00			
(14) <i>CEOage</i>	0.08***	0.03***	0.05***	-0.14***	0.12***	-0.13***	0.02***	0.08***	-0.00	0.08***	-0.08***	0.01	0.09***	1.00		
(15) <i>CEOgender</i>	0.01	-0.00	-0.00	0.05***	-0.00	0.01*	0.01	0.01*	0.01	-0.03***	0.02***	0.05***	0.01	-0.04***	1.00	
(16) <i>CEOduality</i>	0.03***	0.00	0.02	-0.07***	0.05***	-0.07***	0.00	0.01	-0.01	0.01	-0.04***	-0.03***	0.05***	0.10***	-0.02***	1.00
(17) <i>BoardInd</i>	0.09***	0.03***	0.06***	0.04***	0.18***	-0.04***	-0.02**	0.06***	-0.06***	0.06***	-0.05***	-0.06***	-0.02**	-0.00	0.05***	0.13***

This table reports correlations between the variables in the main analyses. Detailed descriptions of the variables are available in Appendix A.

Table 3 Corporate culture and workplace safety

	(1) <i>Fined</i>	(2) <i>Fines</i>	(3) <i>Numb</i>
<i>Culture</i>	-0.09*** (-4.27)	-0.07** (-2.39)	-0.05** (-2.50)
<i>LnAssets</i>	0.63*** (14.84)	0.65*** (11.55)	0.61*** (14.78)
<i>Cash/Assets</i>	-3.68*** (-6.58)	-3.39*** (-4.76)	-2.91*** (-3.90)
<i>CashFlow/Assets</i>	0.86 (1.37)	3.23*** (2.85)	2.32* (1.74)
<i>Dividends/Assets</i>	2.71 (1.24)	-7.52 (-1.61)	-3.26 (-1.08)
<i>Capex/Assets</i>	0.14 (0.12)	3.35 (1.45)	1.30 (1.07)
<i>Leverage</i>	0.10 (0.37)	0.12 (0.28)	0.46 (1.13)
<i>Market/Book</i>	-0.01 (-0.19)	0.05 (0.56)	-0.02 (-0.23)
<i>Sales/Assets</i>	0.59*** (5.93)	0.35*** (2.70)	0.46*** (4.96)
<i>PPE/Assets</i>	0.65* (1.74)	0.32 (0.53)	0.62 (1.62)
<i>CEOage</i>	0.02 (0.05)	0.25 (0.46)	0.14 (0.36)
<i>CEOgender</i>	-0.19 (-0.74)	-0.48* (-1.66)	-0.44* (-1.90)
<i>CEOduality</i>	0.05 (0.54)	-0.13 (-0.84)	-0.12 (-1.20)
<i>BoardInd</i>	-0.12 (-0.28)	-0.07 (-0.12)	0.02 (0.04)
<i>Constant</i>	-5.85*** (-3.62)	3.43 (1.46)	-5.49*** (-3.30)
Fixed effects	Industry, Year	Industry, Year	Industry, Year
Pseudo R-squared	0.266	-	-
Log pseudolikelihood	-	-1.6*10 ⁸	-10527.7
Observations	16242	16242	16242

This table reports regression outputs where measures of regulatory fines (*Fined*, *Fines* and *Numb*) are regressed on *Culture* and control variables. Column (1) report results from a logit regression with the dichotomous dependent variable *Fined*, taking the value 1 for years when the firm has been fined for violating their employees' rights, and 0 otherwise. Column (2) reports results from a Poisson regression with the dependent variable size of fines (*Fines*). Column (3) reports results from a Poisson regression with the dependent variable number of fines (*Numb*). The measure of corporate culture (*Culture*) is created following Li et al. (2021b) by summing the five numerical cultural values *Innovation*, *Integrity*, *Quality*, *Respect*, and *Teamwork*. Detailed descriptions of the variables are available in Appendix A. The t-statistics disclosed in the parentheses are based on robust standard errors clustered at the firm-level and coefficients labeled with *, **, and *** are significant at 10%, 5%, and 1% level, respectively.

Table 4 Corporate culture, safety-related expenditures, and employee workload

	(1)	(2)	(3)
	AbnormalSGA	Production/Emp	Revenue/Emp
<i>Culture</i>	2.13*** (3.41)	0.63 (0.19)	4.66 (1.07)
<i>LnAssets</i>	-1.63 (-1.04)	65.49*** (6.40)	83.44*** (6.04)
<i>Cash/Assets</i>	141.44*** (10.36)	273.11*** (5.07)	516.17*** (7.21)
<i>CashFlow/Assets</i>	-41.08*** (-2.62)	-531.85*** (-5.99)	85.33 (0.91)
<i>Dividends/Assets</i>	-387.91*** (-4.43)	-1380.97*** (-4.24)	-2363.73*** (-5.53)
<i>Capex/Assets</i>	6.03 (0.18)	-149.60 (-0.76)	630.42** (2.00)
<i>Leverage</i>	-0.27 (-0.03)	-64.38 (-1.56)	-47.10 (-0.81)
<i>Market/Book</i>	16.80*** (7.72)	-16.79*** (-3.01)	-15.06* (-1.92)
<i>Sales/Assets</i>	-23.30*** (-6.50)	245.11*** (7.26)	193.12*** (4.13)
<i>PPE/Assets</i>	-72.61*** (-5.65)	183.64** (2.03)	46.63 (0.37)
<i>CEOage</i>	-24.43** (-2.25)	-28.16 (-0.77)	-27.22 (-0.50)
<i>CEOgender</i>	-5.15 (-0.86)	-33.99 (-1.13)	-48.66 (-1.38)
<i>CEOduality</i>	-9.85*** (-3.18)	12.46 (0.84)	5.75 (0.28)
<i>BoardInd</i>	-5.34 (-0.38)	19.16 (0.34)	22.84 (0.27)
<i>Constant</i>	42.50 (0.80)	-438.75** (-2.28)	-568.06** (-1.98)
Fixed Effects	Industry, Year	Industry, Year	Industry, Year
R-squared	0.341	0.474	0.445
Observations	14865	14865	14865

This table reports regression outputs where *AbnormalSGA*, *Production/Emp*, and *Revenue/Emp* are regressed on *Culture* and control variables. Abnormal SG&A expenses (*AbnormalSGA*) are estimated following Caskey and Ozel (2017). *Production/Emp* and *Revenue/Emp* are defined as cost of goods sold and inventory per employee and revenue per employee, respectively. The measure of corporate culture (*Culture*) is created following Li et al. (2021b) by summing the five numerical cultural values *Innovation*, *Integrity*, *Quality*, *Respect*, and *Teamwork*. Detailed descriptions of the variables are available in Appendix A. The t-statistics disclosed in the parentheses are based on robust standard errors clustered at the firm-level and coefficients labeled with *, **, and *** are significant at 10%, 5%, and 1% level, respectively.

Table 5 Inner elements of corporate culture and workplace safety

	(1)	(2)	(3)
	<i>Fined</i>	<i>Fines</i>	<i>Numb</i>
<i>PeopleCulture</i>	-0.05 (-0.97)	0.06 (0.75)	0.02 (0.42)
<i>TechCulture</i>	-0.12*** (-3.61)	-0.15*** (-3.16)	-0.09*** (-3.04)
<i>LnAssets</i>	0.63*** (14.90)	0.65*** (11.44)	0.61*** (14.75)
<i>Cash/Assets</i>	-3.68*** (-6.57)	-3.41*** (-4.82)	-2.93*** (-3.96)
<i>CashFlow/Assets</i>	0.90 (1.44)	3.42*** (2.98)	2.42* (1.81)
<i>Dividends/Assets</i>	2.74 (1.25)	-7.29 (-1.54)	-3.12 (-1.03)
<i>Capex/Assets</i>	0.18 (0.15)	3.23 (1.45)	1.26 (1.04)
<i>Leverage</i>	0.10 (0.38)	0.17 (0.40)	0.47 (1.17)
<i>Market/Book</i>	-0.01 (-0.18)	0.06 (0.65)	-0.01 (-0.21)
<i>Sales/Assets</i>	0.58*** (5.92)	0.33** (2.55)	0.45*** (4.81)
<i>PPE/Assets</i>	0.65* (1.73)	0.28 (0.49)	0.59 (1.58)
<i>CEOage</i>	-0.00 (-0.01)	0.17 (0.29)	0.10 (0.26)
<i>CEOgender</i>	-0.17 (-0.68)	-0.46 (-1.60)	-0.43* (-1.85)
<i>CEOduality</i>	0.05 (0.56)	-0.12 (-0.78)	-0.12 (-1.18)
<i>BoardInd</i>	-0.10 (-0.24)	0.01 (0.01)	0.06 (0.13)
<i>Constant</i>	-5.83*** (-3.61)	3.54 (1.48)	-5.45*** (-3.25)
Fixed effects	Industry, Year	Industry, Year	Industry, Year
Pseudo R-squared	0.266	-	-
Log pseudolikelihood	-	-1.6*10 ⁸	-10515.9
Observations	16242	16242	16242

This table reports regression outputs where measures of regulatory fines (*Fined*, *Fines* and *Numb*) are regressed on *PeopleCulture*, *TechCulture* and control variables. Column (1) reports results from logit regressions with the dichotomous dependent variable *Fined*, taking the value 1 for years when the firm has been fined for violating their employees' rights, and 0 otherwise. Column (2) reports results from a Poisson regression with the dependent variable size of fines (*Fines*). Column (3) reports results from a Poisson regression with the dependent variable number of fines (*Numb*). The measures of corporate culture (*PeopleCulture* and *TechCulture*) are created following Li et al. (2021a). *PeopleCulture* is the sum of *Integrity*, *Respect*, and *Teamwork* and *TechCulture* is the sum of *Innovation* and *Quality* following Li et al. (2021b). Detailed descriptions of the variables are available in Appendix A. The t-statistics disclosed in the parentheses are based on robust standard errors clustered at the firm-level and coefficients labeled with *, **, and *** are significant at 10%, 5%, and 1% level, respectively.

Table 6 Cultural tightness, corporate culture and workplace safety

	First-stage	Second-stage		
	(1) <i>Culture</i>	(2) <i>Fined</i>	(3) <i>LnFines</i>	(4) <i>LnNumb</i>
<i>TightnessIndex</i>	-0.01*** (-3.57)			
<i>Culture</i>		-0.07* (-1.70)	-0.74* (-1.72)	-0.11* (-1.81)
<i>LnAssets</i>	0.04 (1.25)	0.06*** (11.59)	0.65*** (11.44)	0.08*** (10.04)
<i>Cash/Assets</i>	1.86*** (6.74)	0.09 (1.03)	1.09 (1.18)	0.22* (1.75)
<i>CashFlow/Assets</i>	-1.53*** (-4.53)	-0.19** (-2.45)	-1.93** (-2.45)	-0.26** (-2.40)
<i>Dividends/Assets</i>	-1.30 (-0.78)	0.21 (0.87)	1.63 (0.67)	0.01 (0.04)
<i>Capex/Assets</i>	0.57 (0.80)	0.03 (0.23)	0.30 (0.27)	0.04 (0.31)
<i>Leverage</i>	-1.04*** (-5.07)	-0.07 (-1.23)	-0.70 (-1.28)	-0.10 (-1.34)
<i>Market/Book</i>	0.19*** (4.58)	0.01 (1.63)	0.15* (1.67)	0.02* (1.80)
<i>Sales/Assets</i>	0.08 (1.12)	0.06*** (5.25)	0.63*** (5.11)	0.07*** (4.33)
<i>PPE/Assets</i>	-1.40*** (-5.02)	-0.01 (-0.15)	-0.11 (-0.14)	-0.01 (-0.13)
<i>CEOage</i>	-1.84*** (-6.51)	-0.12 (-1.41)	-1.17 (-1.36)	-0.16 (-1.40)
<i>CEOgender</i>	-0.14 (-0.73)	-0.01 (-0.48)	-0.15 (-0.48)	-0.03 (-0.73)
<i>CEOduality</i>	-0.08 (-1.07)	0.00 (0.40)	0.03 (0.28)	-0.01 (-0.47)
<i>BoardInd</i>	0.70** (2.05)	0.07 (1.37)	0.75 (1.37)	0.11 (1.48)
<i>Constant</i>	10.93*** (9.18)	0.52 (1.10)	5.57 (1.16)	1.07 (1.56)
Fixed Effects	Industry, Year	Industry, Year	Industry, Year	Industry, Year
Kleibergen-Paap F-stat	12.72	-	-	-
R-squared	0.355	0.075	0.073	0.008
Observations	16242	16242	16242	16242

This table reports regression outputs where cultural tightness (*TightnessIndex*) is used as an instrument for *Culture* in a two-stage least squares regression (2SLS). Column (1) reports results from the first-stage regression with the dependent variable *Culture* and the instrument, *TightnessIndex*, and control variables as independent variables. Column (2) reports results for the second-stage regression with a dichotomous dependent variable *Fined*, taking the value 1 for years when the firm has been fined for violating their employees' rights, and 0 otherwise. In Columns (3) and (4), the natural logarithm of 1 + the size of the fine (*LnFines*) and the natural logarithm of 1 + number of fines (*LnNumb*) are used as dependent variables. The measure of corporate culture (*Culture*) is created following Li et al. (2021b) by summing the five numerical cultural values *Innovation*, *Integrity*, *Quality*, *Respect*, and *Teamwork*. The instrument, a measure of cultural tightness (*TightnessIndex*), is from Harrington and Gelfand (2014). Detailed descriptions of the variables are available in Appendix A. The t-statistics disclosed in the parentheses are based on robust standard errors clustered at the firm-level and coefficients labeled with *, **, and *** are significant at 10%, 5%, and 1% level, respectively.

Table 7 Matched sample of strong and weak corporate culture

Panel A: Comparison of treatment and control groups						
Variables	<i>StrongCulture</i> = 1		<i>StrongCulture</i> = 0		Difference	t-stat
	Observations	Mean	Observations	Mean		
<i>Fined</i>	3926	0.093	3926	0.122	-0.029	(-4.19)
<i>Fines</i>	3926	2858.956	3926	4881.655	-2022.699	(-2.10)
<i>Numb</i>	3926	0.212	3926	0.248	-0.036	(-1.64)
<i>LnAssets</i>	3926	7.256	3926	7.247	0.009	(0.23)
<i>Cash/Assets</i>	3926	0.236	3926	0.242	-0.006	(-1.30)
<i>CashFlow/Assets</i>	3926	0.095	3926	0.094	0.001	(0.27)
<i>Dividends/Assets</i>	3926	0.013	3926	0.013	0.000	(0.06)
<i>Capex/Assets</i>	3926	0.044	3926	0.043	0.000	(0.40)
<i>Leverage</i>	3926	0.170	3926	0.171	-0.001	(-0.20)
<i>Market/Book</i>	3926	2.122	3926	2.094	0.027	(0.79)
<i>Sales/Assets</i>	3926	1.198	3926	1.195	0.004	(0.21)
<i>PPE/Assets</i>	3926	0.169	3926	0.173	-0.004	(-0.99)
<i>CEOage</i>	3926	3.983	3926	3.983	0.000	(0.12)
<i>CEOgender</i>	3926	0.041	3926	0.043	-0.002	(-0.45)
<i>CEOduality</i>	3926	0.196	3926	0.199	-0.002	(-0.26)
<i>BoardInd</i>	3926	0.791	3926	0.789	0.002	(0.74)

Table 7 continued

Panel B: Regression results			
	(1)	(2)	(3)
	<i>Fined</i>	<i>Fines</i>	<i>Numb</i>
<i>StrongCulture</i>	-0.35*** (-3.01)	-0.69*** (-3.38)	-0.24** (-2.39)
<i>LnAssets</i>	0.57*** (11.13)	0.67*** (9.03)	0.58*** (13.34)
<i>Cash/Assets</i>	-4.26*** (-5.28)	-6.03*** (-5.83)	-4.48*** (-5.95)
<i>CashFlow/Assets</i>	0.74 (0.71)	4.35*** (2.76)	2.11* (1.79)
<i>Dividends/Assets</i>	5.40* (1.93)	-2.21 (-0.51)	2.98 (0.97)
<i>Capex/Assets</i>	1.98 (1.12)	2.99 (1.40)	2.64* (1.82)
<i>Leverage</i>	0.21 (0.50)	0.04 (0.07)	-0.01 (-0.02)
<i>Market/Book</i>	-0.04 (-0.45)	-0.07 (-0.77)	-0.07 (-0.93)
<i>Sales/Assets</i>	0.60*** (4.37)	0.45*** (3.00)	0.49*** (3.95)
<i>PPE/Assets</i>	1.58*** (2.87)	2.06* (1.94)	1.38** (2.44)
<i>CEOage</i>	-0.39 (-0.76)	0.13 (0.17)	-0.08 (-0.17)
<i>CEOgender</i>	-0.41 (-1.15)	-0.59* (-1.93)	-0.50* (-1.87)
<i>CEOduality</i>	0.20 (1.43)	0.06 (0.31)	-0.03 (-0.25)
<i>BoardInd</i>	0.72 (1.25)	-0.02 (-0.03)	0.35 (0.66)
<i>Constant</i>	-6.71*** (-3.06)	0.88 (0.26)	-5.95*** (-2.77)
Fixed effects	Industry, Year	Industry, Year	Industry, Year
Pseudo R-squared	0.316	-	-
Log pseudolikelihood	-	-4.8*10 ⁷	-3352.8
Observations	7852	7852	7852

This table reports results based on a matched sample. Panel A reports statistics for the the treatment group (*StrongCulture*=1) and the propensity-score matched control group (*StrongCulture*=0) separately, and differences in means and corresponding t-statistics. Panel B reports regression outputs for the propensity-score matched sample where measures of regulatory fines (*Fined*, *Fines* and *Numb*) are regressed on *StrongCulture* and control variables. Column (1) reports results from logit regressions with the dichotomous dependent variable *Fined*, taking the value 1 for years when the firm has been fined for violating their employees' rights, and 0 otherwise. Column (2) reports results from a Poisson regression with the dependent variable size of fines (*Fines*). Column (3) reports results from a Poisson regression with the dependent variable number of fines (*Numb*). The measure of corporate culture (*StrongCulture*) is a dichotomous variable taking the value 1 for observations when the *Culture* value is in the top quartile and otherwise 0. Detailed descriptions of the variables are available in Appendix A. The t-statistics disclosed in the parentheses are based on robust standard errors clustered at the firm-level and coefficients labeled with *, **, and *** are significant at 10%, 5%, and 1% level, respectively.

Table 8 Alternative corporate culture measures and workplace safety

	(1)	(2)	(3)
	<i>Fined</i>	<i>Fines</i>	<i>Numb</i>
<i>Collaborate</i>	-0.67*** (-4.06)	-0.44** (-1.99)	-0.22* (-1.67)
<i>Create</i>	-0.39** (-2.12)	-0.67** (-2.21)	-0.25 (-1.37)
<i>LnAssets</i>	0.63*** (14.91)	0.64*** (10.48)	0.60*** (14.05)
<i>Cash/Assets</i>	-3.90*** (-6.92)	-3.46*** (-4.92)	-2.97*** (-3.99)
<i>CashFlow/Assets</i>	0.84 (1.30)	3.55*** (2.93)	2.95** (2.14)
<i>Dividends/Assets</i>	2.47 (1.13)	-8.02 (-1.61)	-3.79 (-1.20)
<i>Capex/Assets</i>	0.07 (0.06)	3.18 (1.33)	0.92 (0.74)
<i>Leverage</i>	0.07 (0.24)	0.14 (0.33)	0.49 (1.19)
<i>Market/Book</i>	-0.03 (-0.46)	0.02 (0.26)	-0.06 (-0.81)
<i>Sales/Assets</i>	0.58*** (5.71)	0.36*** (2.64)	0.47*** (4.71)
<i>PPE/Assets</i>	0.80** (2.10)	0.32 (0.50)	0.71* (1.76)
<i>CEOage</i>	0.07 (0.20)	0.38 (0.64)	0.35 (0.99)
<i>CEOgender</i>	-0.14 (-0.54)	-0.44 (-1.47)	-0.43* (-1.78)
<i>CEOduality</i>	0.05 (0.51)	-0.15 (-1.02)	-0.14 (-1.36)
<i>BoardInd</i>	-0.15 (-0.36)	0.06 (0.10)	0.26 (0.55)
<i>Constant</i>	-5.42*** (-3.20)	3.65 (1.39)	-6.37*** (-3.94)
Fixed effects	Industry, Year	Industry, Year	Industry, Year
Pseudo R-squared	0.267	-	-
Log pseudolikelihood	-	-1.56*10 ⁸	-10111.5
Observations	15796	15796	15796

This table reports regression outputs where measures of regulatory fines (*Fined*, *Fines* and *Numb*) are regressed on *Collaborate*, *Create* and control variables. Column (1) reports results from logit regressions with the dichotomous dependent variable *Fined*, taking the value 1 for years when the firm has been fined for violating their employees' rights, and 0 otherwise. Column (2) reports results from a Poisson regression with the dependent variable size of fines (*Fines*). Column (3) reports results from a Poisson regression with the dependent variable number of fines (*Numb*). The measures of corporate culture (*Collaborate* and *Create*) are obtained from the 10-K document using textual analysis and keywords specified in Fiordelisi and Ricci (2014). Detailed descriptions of the variables are available in Appendix A. The t-statistics disclosed in the parentheses are based on robust standard errors clustered at the firm-level and coefficients labeled with *, **, and *** are significant at 10%, 5%, and 1% level, respectively.

Table 9 Corporate culture and alternative workplace safety measures

	(1)	(2)	(3)	(4)
	<i>TCR</i>	<i>DART</i>	<i>TCR</i>	<i>DART</i>
<i>Culture</i>	-0.39*** (-3.20)	-7.93*** (-3.46)	-0.14* (-1.88)	-1.93 (-0.79)
<i>Hours/Emp</i>	-0.00*** (-4.51)	-0.09*** (-2.71)	-0.00*** (-4.91)	-0.10*** (-3.88)
<i>LnAssets</i>	-0.00 (-0.02)	3.76 (0.90)	-0.26 (-0.98)	2.67 (0.49)
<i>Cash/Assets</i>	11.11*** (3.20)	235.24** (2.08)	3.79 (1.62)	28.99 (0.54)
<i>CashFlow/Assets</i>	-4.99* (-1.89)	-229.39** (-2.07)	-0.11 (-0.05)	-62.89 (-0.95)
<i>Dividends/Assets</i>	-4.70 (-0.35)	196.22 (0.55)	4.65 (0.40)	74.68 (0.23)
<i>Capex/Assets</i>	8.14 (0.86)	-220.17 (-0.94)	-9.52 (-1.65)	-279.71 (-1.55)
<i>Leverage</i>	1.22 (0.83)	-20.72 (-0.58)	2.61 (1.54)	80.45** (2.28)
<i>Market/Book</i>	0.19 (0.56)	6.54 (0.72)	-0.22 (-0.95)	0.46 (0.07)
<i>Sales/Assets</i>	-0.03 (-0.08)	2.21 (0.16)	0.78 (1.50)	25.77 (1.43)
<i>PPE/Assets</i>	2.94 (1.60)	212.26*** (3.92)	0.15 (0.09)	65.18 (1.36)
<i>CEOage</i>	-2.02 (-1.42)	-145.73** (-2.25)	-2.39** (-2.33)	-63.18** (-2.05)
<i>CEOgender</i>	0.19 (0.23)	-3.82 (-0.18)	-0.60 (-0.63)	1.68 (0.06)
<i>CEOduality</i>	-0.60* (-1.92)	-16.18 (-1.53)	-0.26 (-0.98)	0.31 (0.04)
<i>BoardInd</i>	-5.12*** (-2.79)	-128.31** (-2.09)	-3.00 (-1.61)	-46.28 (-0.88)
<i>EstablishmentSize</i>	0.09 (0.97)	10.34*** (2.92)		
<i>Strike</i>	3.49*** (2.75)	69.84 (1.45)		
<i>Shutdown</i>	0.21 (0.91)	14.16** (1.99)		
<i>Seasonal</i>	0.36 (0.53)	13.62 (1.37)		
<i>Disaster</i>	1.00 (1.46)	25.16 (1.25)		
<i>Constant</i>	26.56*** (4.35)	877.77*** (3.52)	26.69*** (5.79)	531.70*** (3.78)
Fixed effects	Industry, State, Year	Industry, State, Year	Industry, State, Year	Industry, State, Year
R-squared	0.324	0.252	0.495	0.432
Observations	39842	39842	1569	1569

This table reports regression outputs where workplace injuries and illnesses (*TCR*) and days away, restricted, or transferred (*DART*) are regressed on *Culture* and control variables. *TCR* is workplace injury and illness cases divided by the number of hours worked multiplied by 200,000. *DART* is the number of days away from work or days with job restrictions or transfers due to workplace injuries and illnesses divided by the number of hours worked multiplied by 200,000. The measure of corporate culture (*Culture*) is created following Li et al. (2021b) by summing the five numerical cultural values *Innovation*, *Integrity*, *Quality*, *Respect*, and *Teamwork*. In Columns (1) and (2), the regressions are estimated with establishment-year observations. Columns (3) and (4) report results for regressions estimated with firm-year observations, where establishment-year observations are transformed to firm-year observations. Detailed descriptions of the variables are available in Appendix A. The t-statistics disclosed in the parentheses are based on robust standard errors clustered at the firm-level and coefficients labeled with *, **, and *** are significant at 10%, 5%, and 1% level, respectively.