Review of Finance, 2024, **28**, 1833–1879
https://doi.org/10.1093/rof/rfae018
Advance Access Publication Date: 22 July 2024
Article

OXFORD

The power of the people: labor unions and corporate social responsibility

Amanda Heitz[1,*], Youan Wang[2], Zigan Wang[3]

[1]Department of Finance, Tulane University, New Orleans, LA, United States
[2]MOE Key Laboratory of Econometrics, Wang Yanan Institute for Studies in Economics, Xiamen University
[3]Shenzhen International Graduate School and School of Economics and Management, Tsinghua University, China

*Corresponding author: Department of Finance, Tulane University, New Orleans, LA, 70118, United States. E-mail: aheitz@tulane.edu

Abstract

Many policymakers and practitioners argue that corporations may become more stakeholder focused if employees are given more power. We study the causal impact of unionization on stakeholders by analyzing how close labor union elections affect environmental and social (E&S) scores. We find that unionization is associated with an increase in internal social scores that primarily benefit employees and a decrease in external E&S scores that primarily benefit non-employees. The negative effects on external E&S are amplified when firms have greater financial constraints. The effects on both internal and external E&S are magnified when labor unions have more bargaining power. Our results suggest that policymakers consider implications for all stakeholders before implementing policies that prioritize the corporate influence of one stakeholder group.

Keywords: labor union; elections; corporate social responsibility.
JEL classifications: J51, D73, M14.

1. Introduction

A growing number of politicians have suggested that society would benefit if corporations became more socially minded. Bills such as the Reward Work Act (Baldwin 2019) and the Accountable Capitalism Act (Warren 2018, 2019) advocate that one way to encourage corporations to make decisions that benefit society at large, as opposed to just shareholders, is to give employees greater control of corporate decision-making. In this article, we examine the impact of employee unionization on environmental and social (E&S) scores.

Labor unions have two primary tools at their disposal to directly influence management's decisions: collective bargaining and strikes. Employers usually cannot change working conditions independently because, under the National Labor Relations Act (NLRA), they have a duty to try to work out an agreement in good faith with the union within a reasonable amount of time.[1] For example, in 2018, 8,300 unionized Marriott housekeepers across nine cities went on strike after the hotel chain failed to make adequate progress renegotiating contracts that had expired over the previous several months. With the slogan

[1] See the NLRA Section 8(d) & 8(a)(5) Bargaining in good faith with employees' union representative: https://bit.ly/3l9w9Wg

Received: December 24, 2021. **Accepted:** July 18, 2024
Editor: Alex Edmans
© The Author(s) 2024. Published by Oxford University Press on behalf of the European Finance Association. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (https://creativecommons.org/licenses/by/4.0/), which permits unrestricted reuse, distribution, and reproduction in any medium, provided the original work is properly cited.

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

"One job should be enough," the unionized hotel workers demanded that Marriott provide greater job security to union members by discontinuing its Green Choice program. This program incentivized guests to opt out of daily housekeeping to help the environment, thereby dramatically cutting staff hours and ultimately reducing wages. The union also negotiated for Marriott to implement employee training programs if automation replaced jobs and demanded improved healthcare and parental leave policies. After two months of strikes, the local unions successfully bargained for improved training, healthcare, and parental leave policies. Marriott later discontinued the Green Choice program during the coronavirus disease 2019 (COVID-19) pandemic for reasons unrelated to union negotiations.

If unions cause firms to pursue socially responsible strategies that benefit society at large (i.e., external stakeholders), we would expect a positive relationship between unionization and E&S scores.[2] Alternatively, unionization may hinder firms' E&S efforts for two reasons. First, there may be direct conflicts between employees and external stakeholders, as in the Green Choice program. In this section, there may be indirect conflicts as investing in employees reduces the resources available to invest in external stakeholders. Indeed, several studies have shown that unions decrease shareholder value (Lee and Alexandre 2012; Knepper 2020). They may also decrease external stakeholder value.

In this article, we construct ten yearly, firm-level E&S scores using the Thomson Reuters ASSET4 environmental, social, and governance (ESG) database from 2002 to 2021, which contains seventy environmental and seventy-eight social indicators. These indicators include four internal social scores that predominately benefit employees (Employment Quality, Training and Development, Diversity and Opportunity, and Health and Safety) and six external scores that predominately benefit external stakeholders (Emissions Reductions, Resource Reductions, Product Innovation, Community Involvement, Human Rights, and Product Responsibility). Higher scores always indicate greater E&S policies and outcomes. We compute the year-over-year percentage changes of these scores to measure the magnitude of yearly increases or decreases. Edmans (2013) advocates that ESG should be disaggregated precisely because there may be differences between employee and external social scores. Therefore, we focus our analysis on the disaggregated scores.

In our initial analysis, our measure of union strength is the establishment's unionization rate, and we find that a higher unionization rate is associated with increased internal social and decreased external E&S score changes. We saturate the model with firm fixed effects to account for time-invariant, firm-level characteristics; industry–year fixed effects to adjust for the industry-level time trend of all variables, including industry-level differences in unionization rates; and a battery of time-varying firm-level controls. The findings from this initial analysis are consistent with Faleye Vikas, and Randall (2005), who show that when employees have more corporate decision-making power, they maximize their own value, rather than shareholder value.

A potential concern within our initial framework is that firm-level characteristics could drive changes in E&S scores and unionization rates simultaneously. To address endogeneity concerns within our initial setting, we bolster our identification by implementing a regression discontinuity design (RDD) framework using close union elections.

Within our RDD analysis, we limit our sample to firms that narrowly win (or lose) union elections by less than 20 percent. To establish the validity of our setting, we show that pre-election, unionized and non-unionized firms are similar in latent factors that may be correlated with unionization. We then show that there is no voter manipulation at the 50 percent voter threshold necessary for victory. By assuming a meaningful component of randomness in the outcome of these realized close elections, we can isolate the impact of firm unionization on our E&S variables of interest. Within the RDD framework, we

[2] Anecdotally, the United Auto Workers claim that they were major forces behind legislation that was considered progressive along both environmental and social dimensions, such as the Civil Rights Act of 1964, the Clean Air Act of 1970, and the Family and Medical Leave Act. For additional information on the United Auto Workers contribution to legislation, see https://uaw.org/about/

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

confirm our baseline results and find that unionization leads to increased internal and decreased external E&S score changes. Our most conservative (linear) RDD estimates suggest that union election victories are associated with a 16.7 percent increase in diversity score changes and a 5.7 percent reduction in emission score changes. These estimates grow in magnitude when we examine alternative internal or external E&S score changes or when we apply quadratic polynomial estimates.

We also show that the level of internal (external) E&S scores of the firms with winning union elections significantly increases (decreases) 1 year after the elections compared to the level one year prior to the elections. In contrast, the post-election E&S scores of the firms with losing union elections do not change significantly.

One potential reason for the reduction in external E&S scores is that firms may divert resources from external E&S investment toward other sectors, such as precautionary cash or firm investment. This is most likely to occur when firms face resource constraints since unconstrained firms should optimize over factors affecting employees and factors affecting stakeholders separately. We construct a measure widely used in the literature to proxy for firm financial constraints from Kaplan and Zingales (1997) and interact it with the main independent variable in the RDD regression. Our estimates show that when firms are more resource-constrained, this can amplify unions' positive (negative) impact on some elements of firms' internal (external) E&S metrics.

Furthermore, if unionization leads to changes in E&S scores, one might expect these effects to be more pronounced when the union has greater bargaining power. We empirically explore this conjecture and interact two different proxies for union strength with our main independent variables. We show that when unions have greater bargaining power, such as when firms are located in states without right-to-work laws or when local employment rates are high (low unemployment), our baseline results are amplified.

In supplemental analysis, we augment our E&S scores by analyzing the real effects of two additional outcome variables: worker injury rates and toxic gas emissions. If corporations are implementing internal safety policies, this would most directly benefit union members (i.e., by reducing worker injuries). While both union members and non-employees benefit from clean air, toxic gas emissions are closely related to external E&S categories. We find that unionization is associated with a decline in worker injuries and with an increase in certain types of toxic gas emissions. This finding complements our earlier results, which use E&S scores to show that unionization leads to increases in outcomes that benefit workers but decreases in outcomes that predominately benefit external stakeholders.

Our article contributes to both the unionization and corporate social responsibility (CSR) literature. The vast unionization literature has focused broadly on the effects of unionization on shareholders and union members. The theoretical literature tends to model negotiations between unions and firms using a two-party game in which the union's objective is to maximize member utility and the manager attempts to maximize shareholder value (McDonald and Solow 1981; Clark 1990). Effects on external stakeholders, such as community members, are overlooked within these models. Empirically, several papers have shown that unions meaningfully impact firm decision-making. These papers establish that while unions provide a number of benefits to employees, they can also impose costs on firms.[3]

We also contribute to the CSR literature by exploring unionization as a potential determinant of CSR. The bulk of the existing CSR literature debates whether CSR activities are indicative of agency problems within a firm or whether they can create shareholder value. Some studies argue that investment in CSR can be a manifestation of agency problems since

[3] Existing studies have shown that more unionization is associated with improved risk-sharing between employers and employees (Kim, Ernst, and Christoph 2018), higher wages (Freeman and James 1984; Knepper 2020), negative cumulative abnormal returns (Lee and Alexandre 2012), increases in the cost of debt (Campello et al. 2018), reduced innovation (Bradley, Incheol, and Xuan, 2017), more expensive bank loans (Qiu and Shen 2017), lower valuations (Agrawal Ashwini 2012), reduced product quality (Krueger and Alexandre 2004; Mas 2008; Kini et al. 2022), and higher costs of equity (Chen, Marcin, and Hernán 2011).

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

CSR may not be in the best interest of shareholders (Tirole 2001; Di Giuli and Leonard 2014; Masulis and Syed Walid 2015). A growing number of studies have found that CSR is a unique resource that can generate benefits or reduce costs (Dowell, Stuart, and Bernard 2000; Edmans, 2011; Flammer 2013; Dimson, Oğuzhan, and Xi 2015; Flammer 2015; Flammer and Jiao 2017; Flammer, Bryan, and Dylan 2019; Flammer and Aleksandra 2019; Edmans 2020). Although unions are not necessarily shareholders, they are still powerful internal stakeholders with the ability to influence corporate policies. Our framework allows us to infer causality and explore unionization as one of the determinants of CSR. In a paper publicly released at the same time, Ertugrul and Marciukaityte (2021) examine the impact of labor unions on aggregate CSR scores using data from the MSCI rating agency. They conclude that unionization rates lead to a decrease in aggregate CSR as well as the disaggregated categories that benefit communities, customers, and employees. In contrast, we implement a close election setting and more granular data, and we show that unionization leads to increases in E&S categories that predominately benefit employees. This suggests that unionization is an important way for employees to gain non-pecuniary benefits. To add credibility to our findings, we further our analysis by showing consistent findings when real outcomes not driven by rating agency methodology are examined.

Our article has significant policy implications and highlights the importance of recognizing the heterogeneity among stakeholders. Similar to shareholders who seek to maximize firm value, each stakeholder group also aims to maximize its own interests. Our findings indicate that empowering a specific stakeholder group, such as employees through unionization, does not necessarily lead to benefits for all stakeholders. Therefore, when policymakers advocate for strengthening the power of one stakeholder group, they must carefully consider the implications for all diverse stakeholders.

2. Data

2.1 Corporate social responsibility data

Our measures of CSR come from the commercially available Thomson Reuters ASSET4 ESG database. Starting from 2002, Thomson Reuters has annually compiled information from annual reports, nongovernmental organizations, and news sources for large publicly traded companies to determine seventy environmental and seventy-eight social indicators of corporate policies. We focus our analysis on the E&S indicators that span 2002–2021.

Thomson Reuters constructs these indicators by compiling information pertaining to standardized questions such as, "Does the company show an initiative to reduce, reuse, recycle, substitute, phase, or compensate CO_2 equivalents in the production process?." Questions can also have numerical answers, such as the total amount of waste produced in tons divided by net sales or revenue in US dollars. The seventy environmental indicators span three categories: Emissions Reduction (twenty-eight indicators), Product Innovation (twenty-five indicators), and Resource Reduction (seventeen indicators). The seventy-eight social indicators are broken down into seven categories: Diversity and Opportunity (ten indicators), Employment Quality (seventeen indicators), Health and Safety (nine indicators), Training and Development (ten indicators), Product Responsibility (ten indicators), Community (fourteen indicators), and Human Rights (eight indicators). Appendix B contains further details on all indicators within each category.

We apply an equal weighting scheme to arrive at measures of a company's E&S policies and outcomes by quantifying each of the provided indicators. Following Dyck et al. (2019), we translate each question into an indicator variable. Questions answered in a yes-or-no fashion receive a value of one if the firm's answer has a positive effect on society or the environment and zero otherwise. For questions with numeric answers, such as the ratio of waste produced to net sales, we assign the firm a value of one (zero) if its policies are more positive (negative) compared to other firms in the database. For example, the indicator variable related

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

to CO_2 emissions takes one when its value is below the sample median and zero when above the sample median; the indicator variable for environmental regulation violation takes one when the number of violations is zero and zero when it is positive.

After classifying all categories from the database, we employ an equal-weighting scheme to determine E&S scores. For each of the three environmental area categories and the seven social area categories, we compute an equal-weighted average of indicator variables associated with the area's corresponding items. The values for these averages are between zero and one, like the indicator scores. To investigate changes in E&S scores, we compute the percentage changes for each category's average. Table 2 shows the summary statistics for the percentage changes associated with each of the three environmental categories (*E_Emission*, *E_Product*, and *E_Resource*) and the seven social categories *(S_Diversity*, *S_Employment*, *S_Health*, *S_Training*, *S_Product*, *S_Community*, and *S_Human*).

2.2 Union data

To measure firm unionization, we rely on two primary data sources. Unionization rate data are from the Federal Mediation and Conciliation Service (FMCS) database, and union election data are from the National Labor Relations Board (NLRB).

Following previous literature, we proxy for union strength and bargaining power by examining firm–year unionization rates (Connolly Robert, Barry and Mark 1986; Bronars and Deere 1991; Matsa 2010; Chyz et al. 2013). Firms with labor union contracts are required to file notices of contract expiration with the agency under the NLRA. The FMCS database spans 2002–2021 and provides the start and expiration dates of the contract, the name of the employer, the size of the bargaining unit (i.e., the number of employees in the union), and the size of the business (i.e., the total number of employees). We use the employer's name to match the FMCS data to Compustat. Then, following the literature, we calculate the firm–year unionization rate as the total size of the bargaining unit (number of union employees) as a fraction of the total number of firm employees for the 865 unionized firms in our sample. These firms represent 2,120 firm–year observations with E&S percentage change measures.

From there, we use a type of nearest neighbor matching algorithm to match each unionized firm with a nonunionized firm. For each unionized firm f with k nonmissing control variables between the starting and ending years (years t_s and t_e) in our treatment sample, we compute the average of each control variable between years t_s and t_e and construct a k-element vector $v_u = (u_1, u_2, \ldots, u_k)$. The control variables include the long-term debt scaled by lagged assets (*LEVERAGE*), the natural logarithm of total assets (*SIZE*), the net operating loss carryforward scaled by lagged assets (*NOLCF*), the change in net operating loss carryforward scaled by lagged assets (*CHG_NOLCF*), an indicator of whether the firm reports a loss in any of the last three fiscal years (*LOSS*), sales growth scaled by lagged assets (*SGA*), capital expenditures scaled by lagged assets (*CAPEX*), and Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) scaled by lagged total assets (*EBITDA*). All variables are defined in Table 1.

From the full sample of Compustat firms, we select a subsample of nonunionized firms in the same industry, defined as the two-digit SIC code, of firm f, compute each firm i's averages for the k control variables between years t_s and t_e, and construct a k-element vector $v_{ni} = (n_{i1}, n_{i2}, \ldots, n_{ik})$. For each firm i, we calculate the standardized vector $sv_{ni} = \left(\frac{n_{i1}}{u_1}, \frac{n_{i2}}{u_2}, \ldots, \frac{n_{ik}}{u_k}\right)$ and compute the Euclidean distance between the identity vector (or all-ones vector) and sv_{ni}. The Euclidean distance between two vectors can be calculated by taking the difference between each corresponding element of the vectors, squaring them, summing up all the squared differences, and finally taking the square root of the sum. The distance between vectors X and Y can be mathematically expressed as $|X - Y| = \sqrt{\sum_{i=1}^{n} (x_i - y_i)^2}$.

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Table 1. Variable definition.

Variable name	Definition	Source
Dependent variables		
EW_E	The percentage change of E_Level. E_Level is the equal-weighted average of the variables from all three environmental areas expressed as a percentage of 100. The three environmental areas have seventy indicators in total (detailed in Appendix B), and the range of E_Level is from 0 to 100. We discard observations where E_Level takes a value of zero in the previous year.	ASSET4 ESG
E_Emission	The percentage change of E_Emission_Level. E_Emission_Level is the equal-weighted average of the variables from the Emission Reduction area expressed as a percentage of 100. The Emission Reduction area has twenty-eight indicators in total (detailed in Appendix B), and the range of E_Emission_Level is from 0 to 100. We discard observations where E_Emission_Level takes a value of zero in the previous year.	ASSET4 ESG
E_Product	The percentage change of E_Product_Level. E_Product_Level is the equal-weighted average of the variables from the Environmental Product Innovation area expressed as a percentage of 100. The Environmental Product Innovation area has twenty-five indicators in total (detailed in Appendix B), and the range of E_Product_Level is from 0 to 100. We discard observations where E_Product_Level takes a value of zero in the previous year.	ASSET4 ESG
E_Resource	The percentage change of E_Resource_Level. E_Resource_Level is the equal-weighted average of the variables from the Resource Reduction area expressed as a percentage of 100. The Resource Reduction area has seventeen indicators in total (detailed in Appendix B), and the range of E_Resource_Level is from 0 to 100. We discard observations where E_Resource_Level takes a value of zero in the previous year.	ASSET4 ESG
EW_S	The percentage change of S_Level. S_Level is the equal-weighted average of the variables from all seven social areas expressed as a percentage of 100. The seven social areas have seventy-eight indicators in total (detailed in Appendix B), and the range of S_Level is from 0 to 100. We discard observations where S_Level takes a value of zero in the previous year.	ASSET4 ESG
S_Diversity	The percentage change of S_Diversity_Level. S_Diversity_Level is the equal-weighted average of the variables from the Diversity and Opportunity area expressed as a percentage of 100. The Diversity and Opportunity area has ten indicators in total (detailed in Appendix B), and the range of S_Diversity_Level is from 0 to 100. We discard observations where S_Diversity_Level takes a value of zero in the previous year.	ASSET4 ESG
S_Employment	The percentage change of S_Employment_Level. S_Employment_Level is the equal-weighted average of the variables from the Employment Quality area expressed as a percentage of 100. The Employment Quality area has seventeen indicators in total (detailed in Appendix B), and the range of S_Employment_Level is	ASSET4 ESG

(continued)

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Table 1. (continued)

Variable name	Definition	Source
	from 0 to 100. We discard observations where S_Employment_Level takes a value of zero in the previous year.	
S_Health	The percentage change of S_Health_Level. S_Health_Level is the equal-weighted average of the variables from the Health and Safety area expressed as a percentage of 100. The Health and Safety area has nine indicators in total (detailed in Appendix B), and the range of S_Health_Level is from 0 to 100. We discard observations where S_Health_Level takes a value of zero in the previous year.	ASSET4 ESG
S_Training	The percentage change of S_Training_Level. S_Training_Level is the equal-weighted average of the variables from the Training & Development area expressed as a percentage of 100. The Training & Development area has ten indicators in total (detailed in Appendix B), and the range of S_Training_Level is from 0 to 100. We discard observations where S_Training_Level takes a value of zero in the previous year.	ASSET4 ESG
S_Product	The percentage change of S_Product_Level. S_Product_Level is the equal-weighted average of the variables the Product Responsibility area expressed as a percentage of 100. The Product Responsibility area has ten indicators in total (detailed in Appendix B), and the range of S_Product_Level is from 0 to 100. We discard observations where S_Product_Level takes a value of zero in the previous year.	ASSET4 ESG
S_Community	The percentage change of S_Community_Level. S_Community_Level is the equal-weighted average of the variables from the Community area expressed as a percentage of 100. The Community area has fourteen indicators in total (detailed in Appendix B), and the range of S_Community_Level is from 0 to 100. We discard observations where S_Community_Level takes a value of zero in the previous year.	ASSET4 ESG
S_Human	The percentage change of S_Human_Level. S_Human_Level is the equal-weighted average of the variables from the Human Rights area expressed as a percentage of 100. The Human Rights area has eight indicators in total (detailed in Appendix B), and the range of S_Human_Level is from 0 to 100. We discard observations where S_Human_Level takes a value of zero in the previous year.	ASSET4 ESG
WORK_INJURY_RATE	The percentage change of the incidence rate of work-related injuries and illnesses. We discard observations with a zero value in the previous year to prevent the occurrence of an infinite percentage change.	ASSET4 ESG
CO_2	The percentage change of total CO_2 emissions. We discard observations with a zero value in the previous year.	ASSET4 ESG
NO_x	The percentage change of total NO_x emissions. We discard observations with a zero value in the previous year.	ASSET4 ESG
SO_x	The percentage change of total SO_x emissions. We discard observations with a zero value in the previous year.	ASSET4 ESG

(continued)

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Table 1. (continued)

Variable name	Definition	Source
Independent variables		
UNIONIZATION	The bargaining unit size (number of unionized employees) divided by the total number of firm employees.	FMCS
WIN	An indicator variable that equals one if the union won a close election and zero otherwise.	NLRB
Interaction variables		
KZ_INDEX	Kaplan and Zingales (1997) financial constraint index, calculated as −1.00 * (IB + DP)/lag(PPENT) + 0.28 * (AT + PRCC_F * CSHO—CEQ—TXDB)/AT + 3.13 * (DLTT + DLC)/(DLTT + DLC + SEQ)—39.36 * (DVC + DVP)/lag(PPENT)—1.31 * CHE/lag(PPENT). We winsorized KZ_INDEX at the 1st and 99th percentile to curtail the influence of outliers.	Compustat
EMPLOYMENT	An indicator that equals one if the unemployment rate in the firm-headquarter-located county is below the sample median and zero otherwise.	BLS
NON_RIGHT2WORK	An indicator that equals one if the firm's headquarter state does not have right-to-work laws and zero otherwise.	Feigenbaum, Alexander, and Vanessa (2018)
Control variables		
CAPEX	Capital expenditures scaled by lagged total assets.	Compustat
CHG_NOLCF	Change in net operating loss carryforward (TLCF) scaled by lagged total assets (AT). NOLCF is set equal to zero if TLCF is missing.	Compustat
EBITDA	EBITDA scaled by lagged total assets.	Compustat
LOSS	An indicator that equals one if the firm reports a loss (IB < 0) in any of the last three fiscal years and zero otherwise.	Compustat
LEVERAGE	Long-term debt (DLTT) scaled by lagged total assets.	Compustat
NOLCF	Net operating loss carryforward (TLCF) scaled by lagged total assets (AT). NOLCF is set equal to zero if TLCF is missing.	Compustat
SGA	Sales growth, calculated as changes in sales scaled by lagged total assets.	Compustat
SIZE	Natural log of total assets (AT).	Compustat

We then match firm *f* with the nonunionized firm *j* that has the smallest Euclidean distance and has not been matched with another unionized firm. Each year's observation of firm *f* is matched with the corresponding year's observation of firm *j*.

Using this matching algorithm, we match every treated firm's firm–year observation with a nonunionized firm's corresponding firm–year observation. Each treated firm is only matched with one nonunionized firm. Over the subsequent year, we examine the unionized and non-unionized firms for differences after the treated firm becomes unionized. In total, our sample has 4,240 firm–year observations.

To bolster our identification, we conduct an RDD analysis on close union elections that occur between 2002 and 2021. Our dataset originates in 2002, coinciding with the availability of the ASSET4 ESG data. Within this dataset, each record includes information such as the employer's name, election date, election result, and petition type. There are three primary types of petitions: Proof of Representative, Revocation of Representatives, and Employer Application. The Revocation of Representatives and Employer Applications are used to decertify unions, while a Proof of Representative petition is filed when a union seeks to represent employees. Following the submission of a petition to the NLRB, a union

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

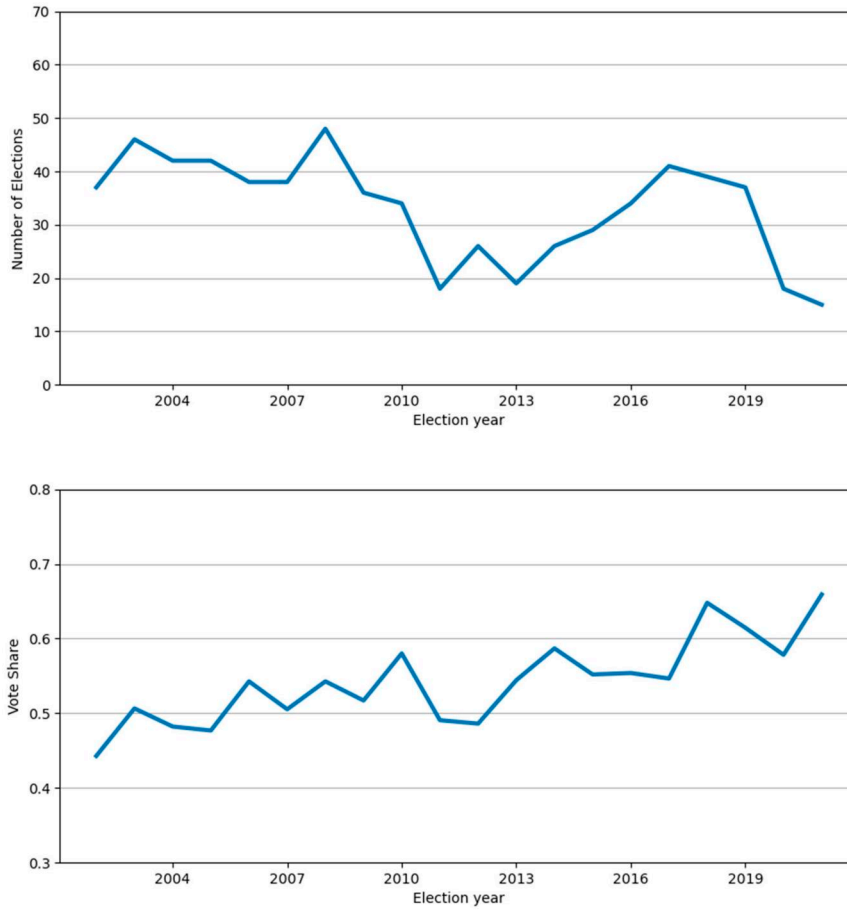

Figure 1. Union elections and passage rates by year. This figure plots the number of union elections by year (top) and the average passage rates by year (bottom). Union election results are from the NLRB and span 2002–2021. We show the elections where our E&S measures are available and there are at least ten voters.

can proceed with an election. For our union election analysis, we exclusively consider Proof of Representative petitions. Election data predating 2010 are sourced from Knepper (2020),[4] and from 2010 onwards, we obtain our data directly from the NLRB website.[5]

After consolidating these two election datasets, we meticulously conduct data collection, processing, and manual matching of unionization records with the National Establishment Time-Series (NETS) database. Leveraging the corporate affiliation information for each establishment provided by NETS, we subsequently establish manual links between our union election sample and Compustat. Figure 1 shows the number of union elections per year as well as the average passage rate of unionization elections each year for firms with available ESG data. The sample used in the top figure has 663 elections obtained after step six in Panel B of Appendix Table A1. As the bottom figure shows, the average union passage rate is primarily between 40 percent and 60 percent each year.

[4] Data are available from: https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi : 10.7910/DVN/RUQQYM

[5] Post-2010 union election data are available from the NLRB: https://www.nlrb.gov/reports-guidance/reports/election-reports

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

2.3 Sample construction and summary statistics

We conduct our analysis using two separate datasets. The first sample, focused on unionization rates as a proxy for union bargaining power, combines data from the Thomson Reuters ASSET4 database, FMCS, and Compustat. After manually matching the FMCS data to Compustat, we have 15,650 firm–year observations from 1,893 firms from 2002 to 2021. Firms with missing controls (described in the following paragraphs) are dropped, leaving us with 5,934 records. After merging in the Thomson Reuters ASSET4 database, we have 2,120 firm–year observations. We augment our unionized sample with 2,120 matched non-unionized firm–year observations that contain ESG measures of equally weighted scores. Our merged dataset contains 4,240 firm–year observations.

Our second dataset combines the union election data from NLRB with the Thomson Reuters ASSET4 database and Compustat. We merge the NLRB data to Compustat to obtain a sample of 4,123 observations from 2002 to 2021 that spans 2,289 firm–years. Following Bradley, Incheol, and Xuan (2017), we keep only the first election if multiple elections occur in one firm within a given year. From there, we limit our sample to close elections where unions won or lost by less than 20 percent of votes. While this dramatically decreases our sample size, it is necessary for the RDD analysis. After matching the close election NLRB data to the Thomson Reuters ASSET4 database, we have 312 firm–year observations from 189 firms. Unions win 34.29 percent of the elections in our sample, which is comparable to the 36 percent victory rate reported in Bradley, Incheol, and Xuan (2017).

From Compustat, we include the control variables defined earlier, and all control variables are winsorized at the 1st and 99th percentile to curtail the influence of outliers.[6] Table 1 provides a detailed description of each variable. Appendix Table A1 presents the step-by-step process of the data matching and sample construction.

Table 2 presents the summary statistics for each variable of interest for each of our two synthesized datasets. Columns 1–6 show the observations, average, standard deviation, median, minimum, and maximum for the sample focusing on the unionization rate, while Columns 7–12 present summary statistics for the union election sample. In Panel A, we present the summary statistics for all dependent variables of interest quantifying a company's E&S components. In Panel B, we present the summary statistics for our unionization rate (UNIONIZATION), which has a mean of 33.92 percent. For our sample of unionized firms, the mean is 67.8 percent. Chyz et al. (2013), who also use the FMCS data, have an average unionization rate of 73.35 percent, indicating that our sample is comparable. In Panels C and D, we show summary statistics for the variables that we use as interactions as well as for the control variables. To curtail the influence of outliers, all continuous variables are winsorized at the 1 percent and 99 percent levels.

3. Empirical strategy and results

We conduct two separate sets of analyses that provide consistent conclusions. We first present the main results using an ordinary least squares (OLS) approach with unionization rates as our independent variable of interest. This setting is advantageous because it includes more observations but suffers from the disadvantage of endogeneity. Subsequently, we also use a close election RDD setting, which allows us to compare the outcomes of firms that narrowly unionized to those that remained non-unionized. If the setting meets the criteria discussed in Section 3.2, it enables us to identify the causal impact of unionization on E&S score changes. By implementing these two settings and empirical strategies, we show that our results are consistent across both the larger sample provided

[6] The baseline results using unwinsorized control variables are reported in the Supplementary Appendix Table OA7.

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Table 2. Summary statistics.

Panel A: Dependent Variables

	Unionization rate sample						Union election sample					
	Obs	Mean	Std Dev	Median	Min	Max	Obs	Mean	Std Dev	Median	Min	Max
EW_E	4,240	0.0699	0.1448	0.0194	−0.5281	1.3096	312	0.0470	0.1234	0.0140	−0.3195	0.5548
E_Emission	4,240	0.0305	0.1037	0.0090	−0.4694	1.3316	312	0.0301	0.1234	0.0107	−0.3141	0.6923
E_Product	4,240	0.1375	0.2877	0.0080	−0.4502	1.8360	312	0.0520	0.2208	0.0015	−0.4464	1.1945
E_Resource	4,240	0.0887	0.2525	0.0052	−0.7162	2.5568	312	0.0589	0.1891	0.0026	−0.5081	1.1720
EW_S	4,240	−0.0476	0.1076	−0.0284	−0.8962	0.3465	312	0.0651	0.1246	0.0292	−0.1571	0.6594
S_Diversity	4,240	0.0575	0.1951	0.0070	−0.5550	1.5722	312	0.0438	0.1714	0.0037	−0.2927	1.1694
S_Employment	4,240	0.0790	0.2294	0.0222	−0.5640	1.6599	312	0.0519	0.2447	0.0109	−0.5187	1.4041
S_Health	4,240	−0.0245	0.2840	0.0004	−0.6939	2.7592	312	0.0822	0.3108	0.0008	−0.6939	1.5812
S_Training	4,240	0.2161	0.5391	0.0117	−0.8155	3.5313	312	0.1000	0.3856	0.0049	−0.7075	2.8424
S_Product	4,240	0.0071	0.1293	0.0009	−0.5168	1.2466	312	0.0428	0.1563	0.0014	−0.3806	1.0125
S_Community	4,240	0.0359	0.1598	0.0060	−0.5506	1.4269	312	0.0462	0.1688	0.0101	−0.3868	0.8328
S_Human	4,240	0.1286	0.3561	−0.0004	−0.6556	2.1665	312	0.0892	0.3059	−0.0019	−0.3641	1.7608
WORK_INJURY_RATE	985	−0.0263	0.3422	−0.0328	−1.0000	3.0000	76	−0.0569	0.1511	−0.0673	−0.5294	0.4839
CO2	1,395	0.0310	0.4821	−0.0101	−0.8230	4.7454	111	0.1062	0.6869	0.0000	−0.6535	4.7454
NOx	462	0.0191	0.6312	0.0000	−0.8797	6.7241	32	−0.0314	0.1008	−0.0239	−0.2984	0.1904
SOx	419	0.0667	1.4507	−0.0230	−0.9850	16.0000	36	0.0390	0.4454	0.0000	−0.8553	1.6277

(continued)

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Table 2. Continued

Panel B: Independent Variables	Unionization rate sample						Union election sample					
	Obs	Mean	Std Dev	Median	Min	Max	Obs	Mean	Std Dev	Median	Min	Max
UNIONIZATION	4,240	0.3392	0.3937	0.0008	0.0000	1.0000						
WIN							312	0.3429	0.4755	0.0000	0.0000	1.0000
Panel C: Interaction Variables												
EMPLOYMENT	4,240	0.4585	0.4983	0.0000	0.0000	1.0000	312	0.6026	0.4902	1.0000	0.0000	1.0000
KZ_INDEX	4,215	−3.3672	5.4631	−1.3706	−26.4240	12.6409	277	−0.8579	3.6558	−0.2490	−18.0242	30.1454
NON_RIGHT2WORK	4,240	0.4861	0.4999	0.0000	0.0000	1.0000	312	0.6955	0.4609	1.0000	0.0000	1.0000
Panel D: Control Variables												
CAPEX	4,240	0.0477	0.0553	0.0319	0.0000	0.7611	312	0.0500	0.0290	0.0460	0.0085	0.1606
EBITDA	4,240	0.1235	0.1406	0.1216	−1.7728	0.6918	312	0.1514	0.0718	0.1486	−0.0104	0.4963
SGA	4,240	0.0451	0.1714	0.0232	−0.5839	2.9547	312	0.0898	0.3443	0.0547	−1.1699	2.9558
CHG_NOLCF	4,240	0.0216	0.1978	0.0000	−0.9473	4.5742	312	0.0038	0.0350	0.0000	−0.2702	0.2461
LEVERAGE	4,240	0.3342	0.2734	0.3014	0.0000	6.4554	312	0.3492	0.2262	0.3131	0.0000	1.5697
NOLCF	4,240	0.1589	0.8639	0.0056	0.0000	25.1515	312	0.0436	0.0922	0.0010	0.0000	0.7819
SIZE	4,240	8.5320	1.6221	8.5009	2.3385	11.7933	312	9.1962	1.3232	9.0834	5.6372	11.7853
LOSS	4,240	0.2972	0.4571	0.0000	0.0000	1.0000	312	0.2179	0.4135	0.0000	0.0000	1.0000

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

by our examination of unionization rates and the cleaner setting provided by the close election setting.

3.1 Unionization rate and E&S score changes

To test whether unions affect firms' social and environmental policies and outcomes, we first examine the relationship between a firm's E&S score changes and the fraction of unionized employees using the matched sample. In Appendix Table A2, we present the means and standard deviations for all outcome and control variables. Our analysis reveals that there are no statistically significant differences between the unionized (treated) and matched nonunionized (control) samples in year t. We formally test the relationship between unionization and a firm's E&S score changes in year $t+1$ by implementing the framework in Equation (1):

$$Dep_{ft+1} = \alpha + \beta UNIONIZATION_{ft} + \chi_{ft} + \Phi_f + \Phi_{it} + \varepsilon_{ft} \quad (1)$$

For a given firm f and year t, the dependent variable Dep_{ft+1} measures the E&S score change over the next year. The variable $UNIONIZATION_{ft}$ is the total size of the union bargaining unit (number of unionized employees) as a fraction of the total number of firm employees. All regressions include firm fixed effects, Φ_f, industry × year fixed effects, Φ_{it}, and the eight firm–year financial controls described in Table 1 and designated by χ_{ft}. We define an industry using the two-digit SIC code. Firm fixed effects account for time-invariant, firm-level characteristics and effectively allow us to compare the firm to itself. Industry × year fixed effects adjust for the industry-level time trend of all variables, including industry-level differences in unionization rates. We cluster standard errors at the firm level, and we present the results in Table 3.

As shown in Table 3, when firms have greater levels of unionized employees, there are statistically significant increases in four internal social score changes and decreases in three external environmental and three external social score changes. For example, a one standard deviation increase in the unionization rate leads to an increase in *S_Health* of 4.417 percent (=0.3937*0.1122) and a decrease in *S_Human* of 4.291 percent (=0.3937*0.1090) for the average sample firm. As shown later, within the RDD framework, these score changes grow in magnitude.

A primary concern among unions is improving internal working conditions for their members, which can be monetary or nonmonetary. Therefore, a union may value investment in E&S categories that more directly benefit its members more highly. This is consistent with the heterogeneous relationships between unionization rate and different types of E&S score changes. As shown in Table 3, the relationship is positive for the four internal social scores that predominately benefit employees, including Employment Quality, Training and Development, Diversity and Opportunity, and Health and Safety. The relationship is negative for the three environmental and three external social score categories that predominately benefit external stakeholders, including Emissions Reductions, Resource Reductions, Product Innovation, Community Involvement, Human Rights, and Product Responsibility.

The four internal E&S components all quantify the extent to which corporations have policies that directly benefit their employees. For example, the Health and Safety component quantifies the degree to which working conditions are safe for employees, such as the frequency and severity of workplace injuries as well as the existence of health and wellness plans. The Diversity and Opportunity category quantifies workplace employee diversity and opportunities, such as policies that value families, females, minorities, and work–life balance. The Training and Development category consists of various employee career development and training opportunities, such as policies favoring promotions from within, cooperation with schools, and programs to support employees in learning new skills.

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Table 3. Unionization rate and E&S score changes.

This table presents the OLS regression results with fixed effects. The dependent variables are the percentage change of equal-weighted E&S indicators in the next year (year $t+1$) and are defined in Table 1. The independent variable of interest is the firm–year unionization rate. Industry × Year fixed effects, firm fixed effects, and firm–year controls, including *LEVERAGE, SIZE, CHG_NOLCF, NOLCF, LOSS, SGA, CAPEX, and EBITDA*, are included in all regressions. Standard errors are clustered by firm. Robust *t*-statistics are in parentheses. ***, **, and * indicate significance at 1 percent, 5 percent, and 10 percent.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Internal metrics				External metrics					
	S_Employment	*S_Training*	*S_Diversity*	*S_Health*	*E_Emission*	*E_Resource*	*E_Product*	*S_Community*	*S_Human*	*S_Product*
UNIONIZATION	0.0539**	0.1269**	0.0481**	0.1122***	−0.0331**	−0.0569**	−0.0731**	−0.0522**	−0.1090***	−0.0302**
	(2.1402)	(2.2241)	(2.5002)	(3.7973)	(−2.4914)	(−2.2271)	(−2.2856)	(−2.1714)	(−2.6902)	(−2.3565)
CAPEX	−0.0414	−0.0293	0.2270**	0.0896	0.0639	−0.4177**	−0.3322**	0.0426	−0.0317	0.0660
	(−0.2670)	(−0.0588)	(2.2188)	(0.5518)	(0.8641)	(−2.0320)	(−1.9957)	(0.3761)	(−0.0920)	(0.7946)
EBITDA	0.0257	−0.1872	0.0024	0.0623	0.0234	0.1197	−0.0324	−0.0224	−0.0308	−0.0550
	(0.2647)	(−0.8250)	(0.0336)	(0.7001)	(0.5675)	(1.2075)	(−0.2906)	(−0.3465)	(−0.2211)	(−1.0464)
SGA	−0.0960***	−0.0511	−0.0435	−0.0121	−0.0298*	0.0008	−0.0047	−0.0158	0.0159	−0.0071
	(−2.7832)	(−0.4603)	(−1.4700)	(−0.2943)	(−1.7182)	(0.0212)	(−0.1140)	(−0.5798)	(0.2739)	(−0.3585)
CHG_NOLCF	−0.1425	0.0555	−0.0616	0.0808	−0.0068	0.1773	−0.1731*	0.0159	0.1029	−0.0138
	(−1.5441)	(0.2724)	(−0.9039)	(0.9518)	(−0.1671)	(1.1989)	(−1.8523)	(0.2729)	(0.6864)	(−0.3453)
LEVERAGE	0.0127	0.1670	0.0738**	−0.0545	−0.0151	−0.0728	0.0048	0.0160	−0.0580	−0.0079
	(0.2997)	(1.3601)	(2.1907)	(−1.2145)	(−0.7993)	(−1.4668)	(0.1015)	(0.4294)	(−0.8304)	(−0.3674)
NOLCF	0.0288*	−0.0584	0.0101	−0.0126	0.0001	−0.0238	0.0382**	−0.0026	−0.0340	0.0083
	(1.6492)	(−1.5155)	(0.7328)	(−0.7278)	(0.0107)	(−0.9396)	(2.1670)	(−0.2316)	(−1.2431)	(1.1152)
SIZE	−0.0268*	−0.0450	−0.0043	−0.0104	0.0126*	0.0257*	0.0408**	0.0189	0.0332	−0.0144*
	(−1.7261)	(−1.3142)	(−0.3242)	(−0.6391)	(1.8243)	(1.6898)	(2.5539)	(1.6016)	(1.3226)	(−1.7517)
LOSS	0.0188	−0.0350	0.0068	−0.0018	−0.0011	−0.0142	−0.0083	0.0037	−0.0408	0.0032
	(1.0944)	(−0.9122)	(0.5179)	(−0.0969)	(−0.1354)	(−0.8692)	(−0.5170)	(0.3059)	(−1.6182)	(0.4184)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,240	4,240	4,240	4,240	4,240	4,240	4,240	4,240	4,240	4,240
R^2	0.69	0.68	0.73	0.75	0.66	0.73	0.80	0.66	0.70	0.73

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Employment quality consists of metrics that quantify whether firms have policies implementing fair employee compensation and working conditions. While there may be positive community spillovers from implementing these policies, we believe that employees most directly benefit from these policies. As such, we may expect unions, advocating for their members employed at the firm, to advocate for investment in such categories.

The remaining six external E&S scores provide benefits to a broader group of stakeholders who are not necessarily employees. For example, firm reductions in emissions and the use of natural resources benefit society at large. Similarly, actively donating to and participating in community events, implementing human rights policies, and creating high-quality products benefit all stakeholders, regardless of whether they work for the firm. While union members still benefit from these external categories, we believe that the benefits derived from internal corporate policies provide more direct benefits.

For all internal E&S score changes (Columns 1–4), higher levels of unionization are associated with higher levels of E&S categories that benefit members. In contrast, the effect is negative for all external E&S measures (Columns 5–10). These results suggest that unions maximize member value and that increasing internal E&S is an additional channel through which unions derive value for their members. However, this increase in firm internal E&S may come at the expense of stakeholders external to the firm and union.

The NLRA mandates that employers must negotiate with unions before changing *any* working conditions within a reasonable amount of time, even working conditions that may ultimately benefit employees.[7] Thus, we may expect management and unions to quickly initiate a round of negotiations following unionization, focusing on issues of primary importance, which is why we focus our analysis on year $t+1$. However, there may be subsequent rounds of negotiations between unions and managers over time. Thus, it is possible that the effects of unionizations may manifest over longer horizons. As shown in Supplementary Appendix Table OA2, the positive (negative) relationship between unionization and internal (external) E&S score changes persist in years $t+2$ and $t+3$ for all E&S metrics reported in Table 3.

3.2 Union election and E&S score changes

One concern with our empirical strategy presented in Section 3.1 is endogeneity. While we have included time-varying controls and fixed effects, there may be unobservable time-varying factors correlated with unionization and E&S score changes. To address this identification concern, we substantiate our findings by using a cleaner RDD framework within a close union election setting. By employing this framework and setting, we can establish causality and compare E&S score changes of firms that narrowly passed unionization to those that narrowly failed to do so.

While there is no single path for an establishment to become unionized, as discussed in DiNardo and Lee (2004), a common route is through a secret ballot NLRB election. Once a group of workers decides to form a union, they contact a labor union and ask for assistance in organizing a "card drive." In this drive, the union collects "authorization cards" from workers petitioning the NLRB to hold an election within a given time frame, typically six months. If enough cards are collected (a minimum of 30 percent) and the NLRB rules that the workers seeking union representation have a "community of interest," the NLRB will facilitate a secret ballot election. If a simple majority of voters casts their votes in favor of the union, the NLRB certifies the union as the sole authorized representative of the workers in the bargaining unit.

[7] For example, despite many unions showing support for COVID-19 vaccinations, there are many examples of unions opposing vaccine mandates because they feared these mandates impacted their collective bargaining rights. NEA President Pecky Pringle expressed the importance of union participation in planning and participation, saying, "Employee input, including collective bargaining where applicable, is critical," as cited by Gerstein (2021).

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

As a requirement for RDD analysis, we first limit our sample to close election settings where the union won or lost by a narrow margin; this restriction yields a very small sample size. In the following subsection, we present compelling evidence supporting the efficacy of the close election framework employed in previous literature (DiNardo and Lee 2004; Lee and Alexandre 2012; Bradley, Incheol, and Xuan 2017; Huang et al. 2017; Qiu and Shen 2017; Campello et al. 2018; Knepper 2020; Kini et al. 2022).

3.2.1 RDD framework validation

To implement an RDD framework, we need to show "local" exogenous variation in unionization that is generated by union elections that pass or fail by a small margin of votes around the 50 percent threshold. To the extent that there is some randomness in the outcome of elections, we can establish a causal relationship between firms that barely became unionized and those that did not. An additional advantage of this RDD setting is that we do not have to include observable firm covariates in our analysis to obtain identification (Lee and Thomas 2010).

Another requirement for implementing the RDD framework is showing that both employers and voters cannot perfectly manipulate the outcome variable near the known cutoff (Lee and Thomas 2010). If we can satisfy this assumption, the variation in firms that unionize is as good as in those from a randomized experiment. Figure 1 shows the passage rate of unionization elections each year for firms with available E&S scores; the passage rate is primarily between 40 percent and 60 percent in our sample period.

Following Bradley, Incheol, and Xuan (2017), we further test this assumption in Figure 2, which plots the distribution of pro-union vote shares, shown on the *x*-axis, into forty equally spaced vote share bins. Figure 2 indicates that the distribution of vote shares is relatively smooth and, importantly, that there is no sharp discontinuity around the 50 percent vote threshold. This distribution suggests that voters and employers are not able to self-sort and manipulate voting outcomes.

Additionally, we follow the two-step procedure outlined in McCrary (2008) and provide a formal test for discontinuity of the density in Figure 3. The *x*-axis plots the percentage of pro-unionization votes, and the *y*-axis shows the density estimates. The dots depict the density, and the lines represent the fitted density function of the number of votes with a 95 percent confidence interval. The density plot is generally smooth and does not show evidence of a discontinuity around the 50 percent cutoff, providing corroborating evidence that there is no precise manipulation by voters at the indicated threshold. Furthermore, in the Frandsen Brigham (2017) test for valid RDD design for discrete running variables, the *P*-value is zero, suggesting that there is a random assignment of firms to the close-win and close-loss groups and reveals no evidence of voter manipulation around the majority threshold. These tests indicate that *ex-ante*, the outcomes of these elections are not predictable based on E&S scores.

Another key assumption of the RDD is that there should not be a discontinuity in other covariates correlated with firm E&S outcomes at the cut-off point. Table 4 compares the covariates of firms that unions won or lost by a margin of less than 20 percent in year *t*, the year of the union elections.[8] In Section 3.2.3, we use the methodology of Calonico, Matias, and Titiunik (2014) to justify the bandwidth choice. We examine the same eight observable covariates that have been used as previous controls and show that all covariates are similar between firms that barely unionize and those that do not unionize. More importantly,

[8] Please note that for a subset of 43 elections, E&S data were unavailable the year before the election. Therefore, we condition the analysis in Table 4 on firms that have unionization data available both one year before and after the election.

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

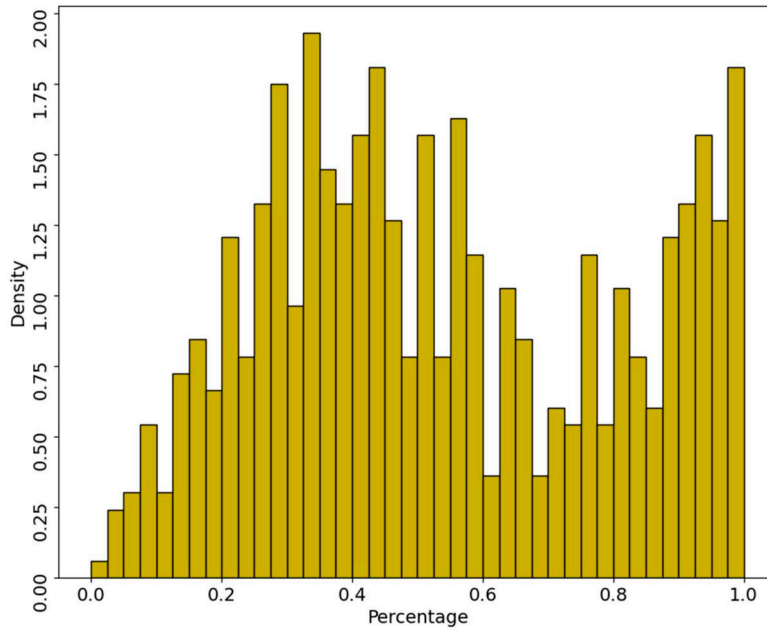

Figure 2. Distribution of votes. This figure plots the histogram of the distribution of the number of elections with the percentage of votes in favor of unionizing in our sample across forty equally spaced bins with a width of 2.5 percent. Union election results are from the NLRB from 2002 to 2021. We show the elections where our E&S measures are available and there are at least ten voters.

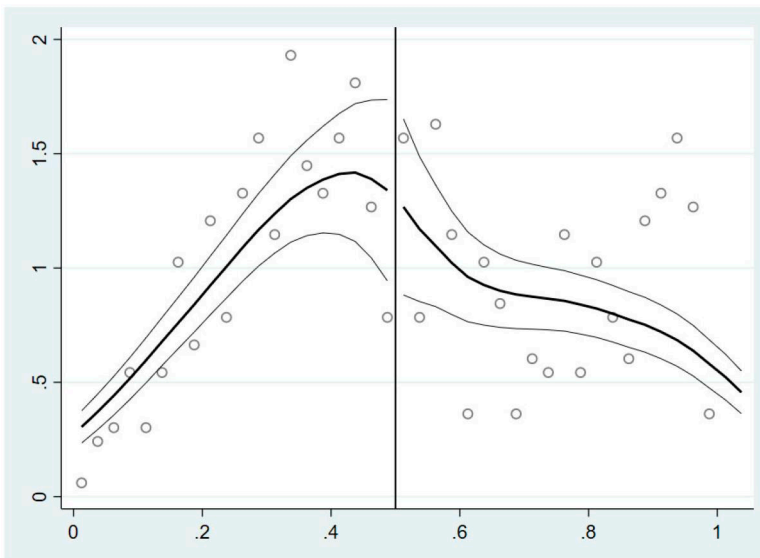

Figure 3. Density of union vote shares. This figure plots the density of union vote shares following the procedure in McCrary (2008). The *x*-axis is the percentage of votes favoring unionization. The solid line represents the fitted density function of the forcing variable (number of votes) with a 95 percent confidence interval around the fitted line. Union election results are from the NLRB from 2002 to 2021. We show the elections where our E&S measures are available and there are at least ten voters.

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Table 4. Difference in observable characteristics between unionized and non-unionized firms.

This table shows differences in observable characteristics between firms that participate in union elections and win versus those that lose by a small margin (a maximum margin of 20 percent) in year *t*, the year of the union elections. Union election results are from the NLRB. The E&S indicator variables are collected from the Thomson Reuters ASSET4 ESG database, and firm characteristics are from Compustat. All variables are defined in Table 1.

Maximum 20 percent Winning Margin							
	Win			Lose			Lose–Win
	Obs	Mean	Std Dev	Obs	Mean	Std Dev	Mean difference (*P*-value)
E_Emission	181	−0.0119	0.1467	88	−0.0404	0.1070	−0.0285 (.1057)
E_Product	181	−0.0089	0.2020	88	−0.0467	0.2020	−0.0378 (.1515)
E_Resource	181	−0.0088	0.1771	88	−0.0343	0.2095	−0.0255 (.2980)
S_Diversity	181	0.0437	0.2242	88	0.0541	0.2214	0.0104 (.7211)
S_Employment	181	0.0569	0.2605	88	0.0547	0.2526	−0.0022 (.9483)
S_Health	181	0.0512	0.3490	88	0.0474	0.2254	−0.0038 (.9264)
S_Training	181	0.1388	0.5618	88	0.0967	0.2890	−0.0421 (.5089)
S_Product	181	−0.0259	0.1535	88	−0.0263	0.1368	−0.0004 (.9823)
S_Community	181	−0.0163	0.1724	88	−0.0156	0.1356	0.0007 (.9720)
S_Human	181	0.0238	0.3408	88	−0.0113	0.2023	−0.0351 (.3733)
CAPEX	205	0.0515	0.0277	107	0.0470	0.0313	−0.0045 (.1968)
EBITDA	205	0.1535	0.0724	107	0.1473	0.0706	−0.0062 (.4673)
SGA	205	0.1021	0.3516	107	0.0661	0.3303	−0.0360 (.3815)
CHG_NOLCF	205	0.0027	0.0392	107	0.0058	0.0251	0.0031 (.4634)
LEVERAGE	205	0.3413	0.2058	107	0.3643	0.2612	0.0230 (.3939)
NOLCF	205	0.0443	0.0803	107	0.0422	0.1119	−0.0020 (.8543)
SIZE	205	9.2079	1.2917	107	9.1737	1.3876	−0.0341 (.8291)
LOSS	205	0.2049	0.4046	107	0.2430	0.4309	0.0381 (.4405)

we do not observe that the ten E&S score changes are significantly different across these two groups of firms in the union election year.

3.2.2 RDD results

Our RDD results confirm that unionized firms exhibit lower E&S score changes. First, we visually check our relations around the cutoff in Figure 4. Similar to Figures 2 and 3, our

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

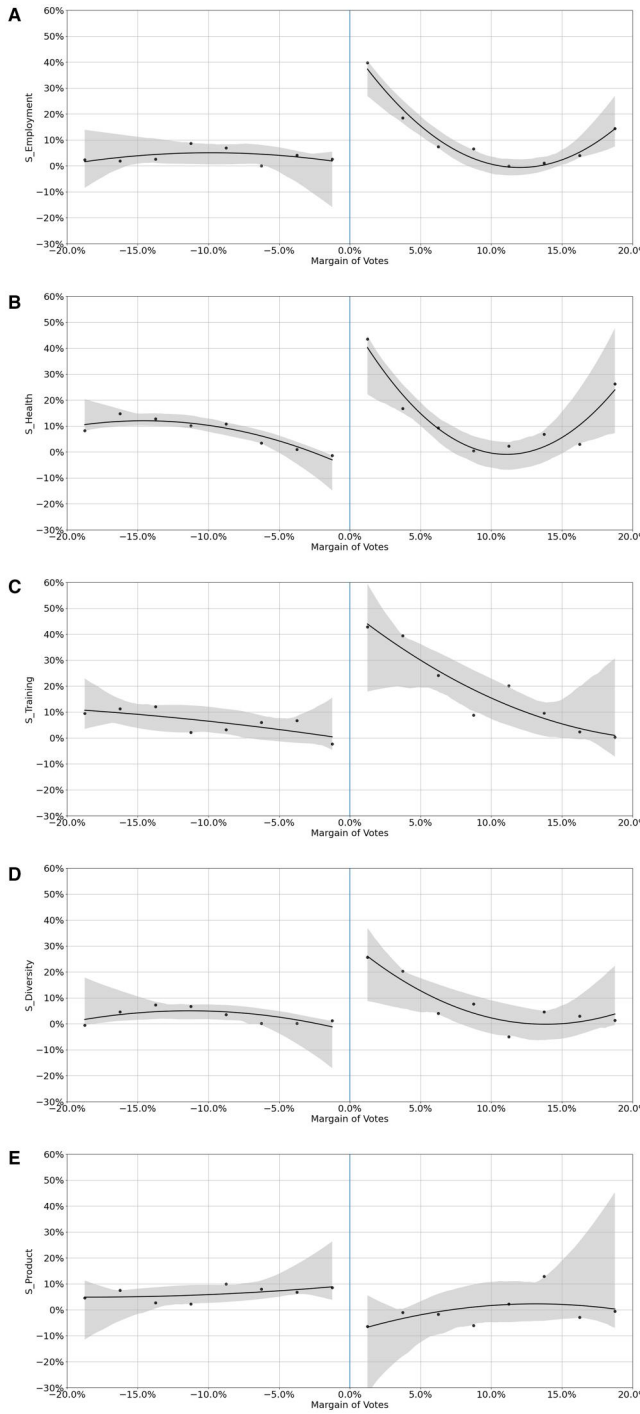

Figure 4. Continued

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

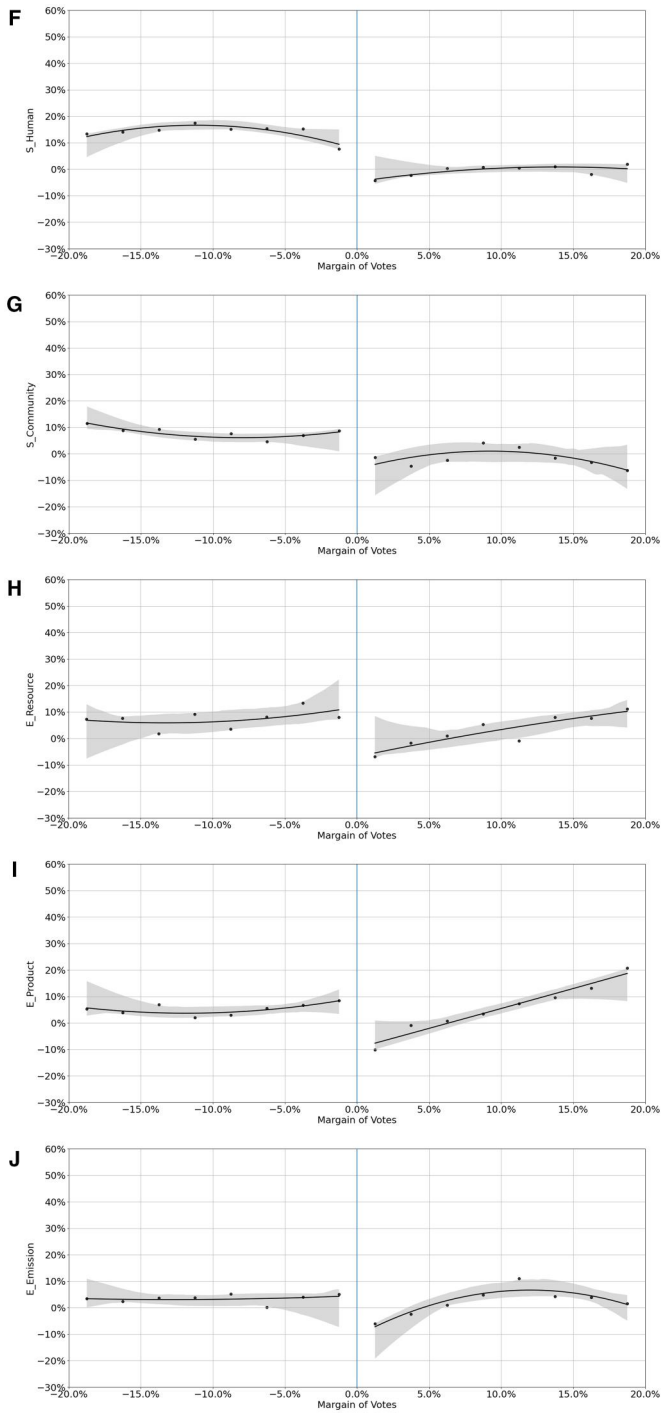

Figure 4. Unionization regression discontinuity plots. This figure plots the fitted quadratic polynomial estimate with a 95 percent confidence interval around the fitted value. The *x*-axis is the percentage of votes favoring unionization; the next year's percentage change of equal-weighted E&S indicators is on the *y*-axis, as *S_Employment* (Panel A), *S_Health* (Panel B), *S_Training* (Panel C), *S_Diversity* (Panel D), *S_Product* (Panel E), *S_Human* (Panel F), *S_Community* (Panel G), *E_Resource* (Panel H), *E_Product* (Panel I), or *E_Emission* (Panel J). The dots depict the average score in each of sixteen equally spaced bins with a width of 2.5 percent. Union election results are from the NLRB from 2002 to 2021, and E&S scores are from the Thomson Reuters ASSET4 ESG database.

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

x-axis represents the share of pro-union votes, and the y-axis is our dependent variable of interest, which is each of the ten E&S score changes. We distribute vote shares into equally spaced bins, each with a width of 2.5 percent. The zero percent on the horizontal axis indicates a zero-winning margin, which is equivalent to the threshold of 50 percent pro-union votes. The dots depict the average score examined, and the solid line represents the fitted quadratic polynomial estimate with a 95 percent confidence interval around the fitted value. There is a sharp discontinuity around the 50 percent threshold: once pro-union votes cross the 50 percent threshold, the internal social categories rise substantially, and the external E&S categories drop substantially. For eight of the ten figures, including all six figures for the external sub-scores, the confidence intervals between the left and right side of the 50 percent threshold do not overlap. However, the confidence intervals slightly overlap in two of the ten figures, *S_Community* and *E_Emission*. Taken together, the graphs in Figure 4 suggest that unionization leads to higher internal and lower external E&S score changes.

To conduct the RDD analysis, we constrain our sample to firms that just narrowly won or lost union elections by a margin of 20 percent. This sample allows us to compare firms that just barely unionized and those that did not. Formally, we test the effect of unionization on E&S score changes by estimating the model in Equation (2):

$$Dep_{ft+1} = \alpha + \beta WIN_{ft} + P(Vote\_Share_{ft}) + \varepsilon_{ft} \quad (2)$$

where Dep_{ft+1} is the same as in Equation (1), and the dummy variable WIN_{ft} takes a value of one if the share of pro-union votes is greater than 50 percent and if the unions in firm f won a close election by a margin of less than 20 percent in year t; WIN_{ft} takes a value of zero otherwise. $P(Vote\_Share_{ft})$ is a flexible polynomial function of the forcing variable, $Vote\_Share_{ft}$, which is the percentage of votes in favor of the union. For example, in Table 5, the polynomial function takes a linear form (polynomial = 1) in Panel A regressions, meaning that only $Vote\_Share_{ft}$ is included as a control variable in Equation (2). The polynomial function takes a quadratic form (polynomial = 2) in Panel B regressions, meaning that both $Vote\_Share_{ft}$ and the square of $Vote\_Share_{ft}$ are included as control variables in Equation (2).

In line with the results presented in Table 3, we find that when examining internal social score changes (external E&S score changes), the coefficient on *WIN* is positive (negative) and statistically significant. These results indicate that, compared to firms that narrowly failed to win union elections, firms that narrowly won experienced an increase in E&S scores in subcategories for internal metrics, yet a decrease in external metrics. For example, in Table 5 Panel B's RDD sample, the passage of a union proposal (an increase in WIN from zero to one) leads to a 33.17 percent increase in *S_Diversity*, a 15.2 percent drop in *E_Emission*, and a 13.73 percent drop in *S_Human*.

3.2.3 Robustness tests

In Supplementary Appendix Tables OA3 and OA4, we present robustness tests using the full sample and a 10 percent margin, rather than the 20 percent margin, to construct the regression samples. Table OA3 presents the estimates of Equation (2) with the linear polynomial function, and Table OA4 presents regressions using the quadratic polynomial function. The bulk of these results is consistent with Table 5 in both direction and statistical significance.

To add credibility to the margin of victory that we implement within our RDD analysis, we use the method of Calonico, Matias, and Titiunik (2014), which estimates an "optimal bandwidth" of the margin selection. We present the estimated optimal bandwidths for different dependent variables in Appendix Table A3. These bandwidths range from 16 percent to 21.4 percent. The median of the optimal bandwidths for the ten E&S categories is 17.95

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Table 5. Union election and E&S score changes.

This table presents RDD results from estimating a polynomial model specified in Equation (2). The sample consists of union elections won or lost by a maximum margin of 20 percent. The dependent variables are the percentage change of equal-weighted E&S indicators in the year $t+1$ and are defined in Table 1. The independent variable of interest is the firm–year-level union election winning dummy. Standard errors are clustered by firm. Robust t-statistics are in parentheses. ***, **, and * indicate significance at 1 percent, 5 percent, and 10 percent.

Panel A: Linear

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Internal metrics				External metrics					
	S_Employment	*S_Training*	*S_Diversity*	*S_Health*	*E_Emission*	*E_Resource*	*E_Product*	*S_Community*	*S_Human*	*S_Product*
WIN	0.1726**	0.4103***	0.1670***	0.1852**	−0.0570**	−0.1374***	−0.1517***	−0.0764**	−0.1292***	−0.1262***
	(2.4942)	(3.1227)	(2.8309)	(2.2747)	(−2.4068)	(−4.2849)	(−3.5640)	(−2.3431)	(−3.0289)	(−4.1293)
Observations	312	312	312	312	312	312	312	312	312	312

Panel B: Quadratic

WIN	0.4404***	0.5725**	0.3317**	0.5113***	−0.1520***	−0.2274***	−0.1574**	−0.1542**	−0.1373***	−0.1768***
	(2.8461)	(1.9772)	(2.5111)	(3.0912)	(−3.5346)	(−3.4967)	(−2.0607)	(−2.4633)	(−2.8193)	(−3.3323)
Observations	312	312	312	312	312	312	312	312	312	312

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Table 6. E&S scores comparison before and after union elections.

This table compares firm internal and external E&S score levels before and after union elections. The sample consists of union elections won or lost by a maximum margin of 20 percent. *P*-values are in parentheses. ***, **, and * indicate significance at 1 percent, 5 percent, and 10 percent.

Winning elections	One year before election			One year after election			After–before
	Obs	Mean	Median	Obs	Mean	Median	Mean difference (*P*-value)
S_Employment_Level	88	40.3467	40.3720	88	43.7388	40.7163	3.3921*** (.0056)
S_Training_Level	88	41.1267	44.5224	88	48.5039	48.6767	7.3772*** (.0001)
S_Diversity_Level	88	39.9621	38.7945	88	43.7130	40.3763	3.7509*** (.0005)
S_Health_Level	88	49.1457	53.5501	88	52.7453	55.5535	3.5996* (.0572)
E_Emission_Level	88	47.1804	42.1847	88	45.2102	39.6587	−1.9702* (.0935)
E_Resource_Level	88	53.0679	47.9761	88	51.0519	43.9282	−2.0160* (.0944)
E_Product_Level	88	37.3870	32.6553	88	35.6269	31.0690	−1.7601 (.1246)
S_Community_Level	88	44.1210	42.9231	88	41.8765	37.4178	−2.2445*** (.0043)
S_Human_Level	88	37.7124	25.0540	88	36.8403	22.9927	−0.8721 (.2553)
S_Product_Level	88	41.4976	40.4672	88	39.5144	39.4937	−1.9832** (.0469)
Losing elections	**One year before election**			**One year after election**			**After–before**
	Obs	**Mean**	**Median**	**Obs**	**Mean**	**Median**	**Mean difference (*P*-value)**
S_Employment_Level	181	40.7337	38.5807	181	41.0768	39.5891	0.3431 (.7252)
S_Training_Level	181	42.0345	39.9049	181	43.8149	46.6982	1.7805 (.2562)
S_Diversity_Level	181	39.1245	35.9184	181	39.8892	36.4215	0.7648 (.3488)
S_Health_Level	181	49.4549	52.9956	181	50.3023	52.9992	0.8474 (.4877)
E_Emission_Level	181	47.7972	45.6413	181	48.2031	43.8490	0.4059 (.5741)
E_Resource_Level	181	54.9478	54.2834	181	56.1528	54.4655	1.2050 (.2058)
E_Product_Level	181	35.2285	29.9056	181	36.1853	30.1115	0.9568 (.2476)
S_Community_Level	181	43.8104	42.9688	181	44.7948	42.6164	0.9844 (.1407)
S_Human_Level	181	40.9814	23.1836	181	42.3616	41.7596	1.3802 (.3252)
S_Product_Level	181	41.3958	40.4987	181	41.9777	40.4368	0.5820 (.3581)

percent, and the average is 18.37 percent. This evidence helps justify our implementation of the 20 percent winning margin for all RDD analyses.

We also validate our results with a placebo test. We construct the RDD figures analogous to those in Figure 4, but for each firm, we use the change in E&S scores between years

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

t and $t-1$, rather than between years $t+1$ and t as in our primary analysis. As shown in Supplementary Appendix Figure OA1, for each E&S metric, the confidence intervals around the 50 percent threshold overlap, indicating that there is no discontinuity when pro-union votes cross the 50 percent threshold.

In Appendix Table A4, we examine the relationship between unionization and internal (external) E&S score changes in years $t+2$ and $t+3$ for the majority of the E&S metrics using the RDD setting. The majority of these results confirm that unionization has a persistently positive (negative) effect on internal (external) E&S score changes in years $t+2$ and $t+3$.

Because four internal social scores change positively and three external social scores change negatively after the winning elections, we investigate the aggregate impact on the changes of equal-weighted E&S scores. We construct *EW_E* (*EW_S*) as the percentage change of the average of the three environmental scores (seven social scores). In Supplementary Appendix Table OA5, we present the RDD regression results with *EW_E* and *EW_S* as dependent variables, and we show that union election victories are associated with negative (positive) values of aggregate equally weighted environmental (social) score changes for 10 percent and 20 percent bandwidths. These results are statistically significant at the 1 percent level. For the full union election sample, the negative relationship between union election victories and aggregate equally weighted environmental score changes is significant at the 10 percent level, and the positive relationship between union election victories and equally weighted social score changes is not statistically significant.

In Table 6, we conduct a subsample analysis that compares differences across the level of E&S scores one year before and after union elections for the RDD sample firms with winning and losing elections separately. This subsample analysis is different from the balance test in Table 4 because it compares the sub-scores in the one year surrounding the election, while Table 4 shows the summary statistics for all firm–year observations in the election year.

As presented in Table 6, our comparison shows that one year after winning union elections, internal scores significantly increase, and most of the external E&S scores significantly decrease. After losing union elections, there is little evidence of score changes. Finally, in the Supplementary Appendix, we show that our baseline results hold for the unionization rate setting.

3.3 Cross-sectional analyses

3.3.1 Financial constraints

Our previous analysis indicates that unionization is associated with a negative effect on external E&S scores. One potential reason for the decline in E&S scores is that firms may divert resources from external E&S investment, such as pollution abatement, toward other sectors, such as precautionary cash or firm investment. This is most likely to occur when firms face resource constraints since unconstrained firms should optimize over factors affecting employees and factors affecting stakeholders separately.

Using the financial constraints index from Kaplan and Zingales (1997), KZ_INDEX, we empirically test whether the negative effect of unionization on external E&S score changes is amplified for firms that are more resource-constrained. To provide additional identification, we use the framework presented in Equation (3):

$$Dep_{ft+1} = \alpha + \beta_1 WIN_{ft} \times KZ_{ft} + \beta_2 WIN_{ft} + \beta_3 KZ_{ft} + P\left(Vote\_Share_{ft}\right) + \varepsilon_{ft} \qquad (3)$$

where Dep_{ft+1}, WIN_{ft}, and $P\left(Vote\_Share_{ft}\right)$ are the same as in Equation (2), and KZ_{ft} is a time-varying, firm–year measure of the firm's financial constraint.

We present the results of this analysis in Table 7. Across all regression specifications examining external E&S metrics in Columns 5–10, the negative effect of unionization is always stronger for constrained firms, as indicated by the negative coefficient on WIN * KZ_INDEX. With the exception of *S_Product*, the coefficient also demonstrates statistical

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Table 7. Financial constraint.

This table presents RDD results from estimating a quadratic model. The sample consists of union elections won or lost by a maximum margin of 20 percent. The dependent variables are the percentage change of equal-weighted E&S indicators in the year $t+1$ and are defined in Table 1. The independent variables of interest are the firm–year level union election winning dummy and its interaction with the financial constraint measure KZ_INDEX. Standard errors are clustered by firm. Robust *t*-statistics are in parentheses. ***, **, and * indicate significance at 1 percent, 5 percent, and 10 percent.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Internal metrics				External metrics					
	S_Employment	*S_Training*	*S_Diversity*	*S_Health*	*E_Emission*	*E_Resource*	*E_Product*	*S_Community*	*S_Human*	*S_Product*
*WIN * KZ_INDEX*	0.0083*	0.0043	0.0064	0.0110*	−0.0049*	−0.0166***	−0.0095**	−0.0076*	−0.0119*	−0.0069
	(1.7121)	(0.6765)	(1.5583)	(1.6717)	(−1.7058)	(−2.9199)	(−1.9852)	(−1.6643)	(−1.7323)	(−1.6211)
WIN	0.4279***	0.6053*	0.4825***	0.6265***	−0.1966***	−0.3196***	−0.1126	−0.1782**	−0.2300***	−0.1761***
	(4.2681)	(1.8828)	(2.7261)	(4.1326)	(−3.8565)	(−3.2634)	(−1.2152)	(−2.0008)	(−3.5304)	(−2.9306)
KZ_INDEX	0.0015	−0.0044	−0.0045	−0.0097	0.0036	0.0095*	0.0075**	0.0094**	0.0088	0.0057
	(0.3565)	(−1.0465)	(−1.3300)	(−1.5051)	(1.5779)	(1.7994)	(2.0634)	(2.1594)	(1.3656)	(1.6497)
Observations	277	277	277	277	277	277	277	277	277	277

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

significance. When examining internal score changes in Columns 1–4, the coefficient on WIN * KZ_INDEX is always positive, though it is only statistically significant for *S_Employment* and *S_Health* at the 10 percent level. Taken together, we find some evidence that when firms are more resource-constrained, this can amplify unions' positive (negative) impact on certain elements of firms' internal (external) E&S score changes.

3.3.2 Bargaining power

To explore the relative bargaining power between unionization and management in greater detail, we examine cross-sectional variation in union bargaining power. If unionization leads to significant changes in E&S scores, it should be more pronounced when the union has greater bargaining power. To provide additional identification, we use the framework presented in Equation (4):

$$Dep_{ft+1} = \alpha + \beta_1 WIN_{ft} \times Bargain_{ft} + \beta_2 WIN_{ft} + \beta_3 Bargain_{ft} + P\left(Vote\_Share_{ft}\right) + \varepsilon_{ft} \quad (4)$$

where Dep_{ft+1}, WIN_{ft}, and $P\left(Vote\_Share_{ft}\right)$ are the same as in Equation (2), and $Bargain_{ft}$ is a time-varying, firm–year measure of the union's relative bargaining power. Following the literature, we use two proxies for union bargaining position: state right-to-work laws (Huang et al. 2017) and local unemployment (Cramton and Joseph 1992).

Right-to-work laws ensure that workers are not obligated to join or support a union as a necessary condition for employment, which weakens union bargaining power. In line with Feigenbaum, Alexander, and Vanessa (2018), we collect information on right-to-work laws from the U.S. Department of Labor and construct an indicator variable, *NON_RIGHT2WORK*, if the state in which the firm operates does not contain right-to-work laws. Furthermore, Cramton and Joseph (1992) show that higher local unemployment reduces union bargaining power. If a union member is discontented with his labor contract, he may seek outside employment opportunities. Therefore, high unemployment rates suggest a lack of outside job opportunities. We collect state-level unemployment rates from the Bureau of Labor Statistics (BLS) and construct an indicator variable, *EMPLOYMENT*, which takes a value of one if the firm's state unemployment is below the sample median, indicating a high level of employment.

All else being equal, if unionization leads to higher (lower) internal (external) E&S scores, we expect this effect to be magnified when union bargaining power is relatively high. As shown in Panels A and B of Table 8, the coefficients on the interaction terms, *UNIONIZATION* × *NON_RIGHT2WORK* and *UNIONIZATION* × *EMPLOYMENT*, are predominantly positive and statistically significant for internal social score changes in Columns 1–4, and they are predominantly negative and statistically significant for the external E&S score changes in Columns 5–10. The economic magnitude of these results is also large. As shown in Panel A of Table 8, if *NON_RIGHT2WORK* equals zero, the passage of a union proposal (*WIN* from zero to one) marginally leads to a 37.31 percent increase in *S_Employment* and a 16.85 percent decrease in *E_Resource*. For firms located in non-right-to-work states (*NON_RIGHT2WORK* = 1), a zero-to-one increase in *WIN* marginally changes the *S_Employment* by 48.03 percent (=0.1072 + 0.3731) and changes the *E_Resource* by –26.19 percent (=–0.1685–0.0934). The results in Table 8 indicate that when unions have more bargaining power, their effect on E&S score changes is amplified.

3.4 Additional measures of E&S outcomes

One concern with analyzing ASSET4 E&S scores is that ratings depend on the methodology of the rating agency, though real E&S outcomes are not dependent on any rating agency's evaluation. In this section, we augment our previous analysis on internal and external E&S scores with two additional measures of outcomes. Personal injury rates are a type of internal score since worker safety is of primary importance to employees.

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Table 8. Bargaining power.

This table presents RDD results from estimating a quadratic model. The sample consists of union elections won or lost by a maximum margin of 20 percent. The dependent variables are the percentage change of equal-weighted E&S indicators in the year $t+1$ and are defined in Table 1. The independent variables of interest are the firm–year-level union election winning dummy and its interaction with *NON_RIGHT2WORK* (Panel A) and *EMPLOYMENT* (Panel B). Standard errors are clustered by firm. Robust *t*-statistics are in parentheses. ***, **, and * indicate significance at 1 percent, 5 percent, and 10 percent.

Panel A: Non-right-to-work States

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Internal metrics				External metrics					
	S_Employment	*S_Training*	*S_Diversity*	*S_Health*	*E_Emission*	*E_Resource*	*E_Product*	*S_Community*	*S_Human*	*S_Product*
*WIN * NON_RIGHT2WORK*	0.1072*	0.2932***	0.0821*	0.1743**	−0.0526**	−0.0934*	−0.0888*	−0.0797**	−0.1018*	−0.0809**
	(1.9257)	(3.3840)	(1.9451)	(2.5420)	(−2.1778)	(−1.8365)	(−1.8863)	(−2.1694)	(−1.8989)	(−2.2367)
WIN	0.3731***	0.3983	0.2837**	0.4010**	−0.1188***	−0.1685***	−0.1002	−0.1068*	−0.0663	−0.1217**
	(2.6041)	(1.5062)	(2.2811)	(2.4202)	(−2.6343)	(−2.7686)	(−1.1828)	(−1.7245)	(−1.3288)	(−2.1412)
NON_RIGHT2WORK	−0.0488	−0.0744	−0.0162	−0.0837	0.0251	0.0443*	0.0487*	0.0206	0.0883*	0.0620***
	(−1.3718)	(−1.1886)	(−0.6395)	(−1.6462)	(1.4623)	(1.8494)	(1.7151)	(0.7452)	(1.7375)	(2.9728)
Observations	312	312	312	312	312	312	312	312	312	312

Panel B: Employment Rate

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Internal metrics				External metrics					
	S_Employment	*S_Training*	*S_Diversity*	*S_Health*	*E_Emission*	*E_Resource*	*E_Product*	*S_Community*	*S_Human*	*S_Product*
*WIN * EMPLOYMENT*	0.0938*	0.2637***	0.1074**	0.1011	−0.0505*	−0.0952**	−0.1575***	−0.0582	−0.1087*	−0.0766**
	(1.7259)	(2.8242)	(2.5160)	(1.4025)	(−1.7362)	(−2.2669)	(−3.2700)	(−1.6016)	(−1.9532)	(−2.2766)
WIN	0.3744***	0.3823	0.2501**	0.4260**	−0.1165**	−0.1618**	−0.0380	−0.1096*	−0.0431	−0.1169**
	(2.6055)	(1.4717)	(2.0911)	(2.4627)	(−2.5568)	(−2.4089)	(−0.4603)	(−1.7854)	(−0.7398)	(−2.3876)
EMPLOYMENT	−0.0137	−0.0658	−0.0505*	−0.0973*	0.0074	0.0058	0.0734***	0.0299	0.1196**	0.0462**
	(−0.3767)	(−1.3484)	(−1.9673)	(−1.7620)	(0.3611)	(0.2042)	(2.6872)	(1.0391)	(2.2656)	(2.0615)
Observations	312	312	312	312	312	312	312	312	312	312

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Table 9. Work injury rate and pollution emission.

This table presents RDD results from estimating a quadratic model specified in Equation (2). The sample consists of union elections won or lost by a maximum margin of 20 percent. The dependent variables are the percentage changes of work injury rates (Column 1) and pollution emissions (Columns 2–4) in the year $t+1$ and are defined in Table 1. The independent variable of interest is the firm–year-level union election winning dummy. Standard errors are clustered by firm. Robust *t*-statistics are in parentheses. ***, **, and * indicate significance at 1 percent, 5 percent, and 10 percent.

	(1) *WORK_INJURY_RATE*	(2) CO_2	(3) NO_x	(4) SO_x
WIN	−0.2453*	0.5936**	0.1392*	1.2386**
	(−1.7707)	(2.0090)	(1.7484)	(2.5306)
Observations	76	111	32	36

Therefore, we collect data on workers' personal injury rates from the Thomson Reuters ASSET4 ESG database. Additionally, since firm shareholders and stakeholders benefit from clean air, we consider toxic gas emissions to be external categories. We collect data on pollution from the Thomson Reuters ASSET4 ESG database and obtain information on carbon dioxide (CO_2), nitrous oxides (NO_x), and sulfur oxides (SO_x) for each firm–year. For each firm–year, we compute the percentage changes for worker injury rates and emissions, and we construct four dependent variables of interest, *WORK_INJURY_RATE*, CO_2, NO_x, and SO_x. Then, we merge all additional measures of E&S outcomes with the union election sample and obtain a sample of 76 firm years for the worker injury analysis, 111 firm years for CO_2, 32 firm years for NOx, and 36 firm years for SOx. The results are presented in Table 9. In line with the main analysis, we find that unionization leads to significant decreases in worker injury rates and significant increases in emissions.

4. Conclusion

In this article, we examine the impact of firm unionization on E&S outcomes to test whether granting more power to workers benefits external stakeholders. We find that greater levels of unionization are associated with an increase in E&S categories that primarily benefit the employees and a decrease in categories that predominantly benefit non-employee stakeholders.

To corroborate our findings and bolster identification, we subsequently conduct our analysis within a close election setting and implement an RDD framework. We verify our baseline results and show that the bulk of these results are amplified when firms are more financially constrained and when unions have stronger bargaining positions.

Many policymakers and practitioners argue that one way to encourage corporations to become more mindful of stakeholders is to give employees more control over corporate decision-making. However, our findings suggest that empowerment of a particular stakeholder faction, for instance, employees through unionization, does not inevitably result in universal benefits for all stakeholders. Consequently, when policymakers and practitioners advocate for empowering one stakeholder group, they must carefully consider the potential consequences for the wide array of stakeholders.

Acknowledgments

We are thankful for comments from Anat Admanti, Vikas Agarwal, Hadiye Aslan, Shaun Bond, Mark Chen, Stephanie Curcuru, Alex Edmans, Kangkang Fu, Stephen Gray, Ping He, Joel Houston, Lixin Huang, Jacquelyn Humphrey, Chris James, Dalida

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Kadyrzhanova, Omesh Kini, Yao Lu, Scott Murray, Gans Narayanamoorthy, Harley E. Ryan, Alessio Saretto, Zhen Shi, Venkat Subramaniam, Kelvin Tan, Weiqiang Tan, Baozhong Yang, Jason L. Yi, Ellie Qie Yin, Jian Zhang, and Shirley Zou. Additionally, we are thankful to seminar participants at the CeMENT Workshop, Financial Management Association Conference, Georgia State University, Renmin University, Central University of Finance and Economics, Peking University HSBC Business School, Institute of Financial Studies at SUFE, Tsinghua University, University of Queensland, and Hong Kong Baptist University. We thank Yan Li for excellent research assistance.

Supplementary material

Supplementary material is available at *Review of Finance* online.

Conflicts of interest: None declared.

Data availability

The data underlying this article are available in the article and in its online supplementary material.

References

Agrawal, A. K. 2012. "Corporate Governance Objectives of Labor Union Shareholders: evidence from Proxy Voting." *The Review of Financial Studies* 25: 187–226.

Baldwin, T. 2019. Reward Work Act. S.2605, 116th Congress. Retrieved from https://www.congress.gov/bill/116th-congress/senatebill/2605

Bradley, D., K. Incheol, and T. Xuan. 2017. "Do Unions Affect Innovation." *Management Science* 63: 2251–71.

Bronars, S. G., and D. R. Deere. 1991. "The Threat of Unionization, the Use of Debt, and the Preservation of Shareholder Wealth." *The Quarterly Journal of Economics* 106: 231–54.

Calonico, S., M. D. Cattaneo, and R. Titiunik. 2014. "Robust Nonparametric Confidence Intervals for Regression-Discontinuity Designs." *Econometrica* 82: 2295–326.

Campello, M., J. Gao, J. Qiu, and Y. Zhang. 2018. "Bankruptcy and the Cost of Organized Labor: evidence from Union Elections." *The Review of Financial Studies* 31: 980–1013.

Chen, H. J., K. Marcin, and O. M. Hernán. 2011. "Labor Unions, Operating Flexibility, and the Cost of Equity." *Journal of Financial and Quantitative Analysis* 46: 25–58.

Chyz, J. A., C. L. Winnie Siu, L. Oliver Zhen, and M. R. Oliver. 2013. "Labor Unions and Tax Aggressiveness." *Journal of Financial Economics* 108: 675–98.

Clark, A. 1990. "Efficient Bargains and the Mcdonald-Solow Conjecture." *Journal of Labor Economics* 8, 502–28.

Connolly, R. A., T. H. Barry, and H. Mark. 1986. "Union Rent Seeking, Intangible Capital, and Market Value of the Firm." *The Review of Economics and Statistics* 68: 567–77.

Cramton, P. C., and S. T. Joseph. 1992. "Strikes and Holdouts in Wage Bargaining: Theory and Data." *The American Economic Review* 82: 100–121.

Di Giuli, A., and K. Leonard. 2014. "Are Red or Blue Companies More Likely to Go Green? Politics and Corporate Social Responsibility." *Journal of Financial Economics* 111: 158–80.

Dimson, E., K. Oğuzhan, and L. Xi. 2015. "Active Ownership." *The Review of Financial Studies* 28: 3225–68.

DiNardo, J., and D. S. Lee. 2004. "Economic Impacts of New Unionization on Private Sector Employers: 1984–2001." *The Quarterly Journal of Economics* 119: 1383–441.

Dowell, G., H. Stuart, and Y. Bernard. 2000. "Do Corporate Global Environmental Standards Create or Destroy Market Value." *Management Science* 46: 1059–74.

Dyck, A., V. L. Karl, R. Lukas, and F. W. Hannes. 2019. "Do Institutional Investors Drive Corporate Social Responsibility? International Evidence." *Journal of Financial Economics* 131: 693–714.

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Edmans, A. 2011. "Does the Stock Market Fully Value Intangibles? Employee Satisfaction and Equity Prices." *Journal of Financial Economics* 101: 621–40.
Edmans, A. 2020. *Grow the Pie: How Great Companies Deliver Both Purpose and Profit*. Cambridge: Cambridge University Press.
Edmans, A. 2013. "The End of ESG." *Financial Management* 52: 3–17.
Ertugrul, M., and D. Marciukaityte. 2021. "Labor Unions and Corporate Social Responsibility." *Journal of Banking & Finance* 125: 106061.
Faleye, O., M. Vikas, and M. Randall. 2005. "When Labor Has a Voice in Corporate Governance." *Journal of Financial and Quantitative Analysis* 41: 489–510.
Feigenbaum, J., H. F. Alexander, and W. Vanessa. 2018. "From the Bargaining Table to the Ballot Box: Political Effects of Right to Work Laws." NBER Working Paper No. 24259, National Bureau of Economic Research, Cambridge, MA. http://www.nber.org/papers/w24259
Flammer, C. 2013. "Corporate Social Responsibility and Shareholder Reaction: the Environmental Awareness of Investors." *Academy of Management Journal* 56: 758–81.
Flammer, C. 2015. "Does Corporate Social Responsibility Lead to Superior Financial Performance? A Regression Discontinuity Approach." *Management Science* 61: 2549–68.
Flammer, C., H. Bryan, and M. Dylan. 2019. "Corporate Governance and the Rise of Integrating Corporate Social Responsibility Criteria in Executive Compensation: Effectiveness and Implications for Firm Outcomes." *Strategic Management Journal* 40: 1097–122.
Flammer, C., and K. Aleksandra. 2019. "Corporate Social Responsibility as a Defense against Knowledge Spillovers: Evidence from the Inevitable Disclosure Doctrine." *Strategic Management Journal* 40: 1243–67.
Flammer, C., and L. Jiao. 2017. "Corporate Social Responsibility as an Employee Governance Tool: Evidence from a Quasi-Experiment." *Strategic Management Journal* 38: 163–83.
Frandsen, B. R. 2017. "Party Bias in Union Representation Elections: Testing for Manipulation in the Regression Discontinuity Design When the Running Variable Is Discrete." *Advances in Econometrics* 38: 281–315.
Freeman, R. B., and L. M. James. 1984. *What Do Unions Do*. New York, NY: Basic Books.
Gerstein, T. 2021. "Unions Aren't Against Vaccines. They Just Want a Say. *The Washington Post*. https://wapo.st/3lee757
Huang, Q., J. Feng, L. Erik, and Q. Tingting. 2017. "The Effect of Labor Unions on CEO Compensation." *Journal of Financial and Quantitative Analysis* 52: 553–82.
Kaplan, S. N., and L. Zingales. 1997. "Do Investment-Cash Flow Sensitivities Provide Useful Measure of Financing Constraints." *The Quarterly Journal of Economics* 112: 169–215.
Kim, E. H., M. Ernst, and S. Christoph. 2018. "Labor Representation in Governance as an Insurance Mechanism." *Review of Finance* 22: 1251–89.
Kini, O., S. Mo, S. Jaideep, and S. Venkat. 2022. "Labor Unions and Product Quality Failures." *Management Science* 68: 5403–40.
Knepper, M. 2020. "From the Fringe to the Fore: Labor Unions and Employee Compensation." *The Review of Economics and Statistics* 102: 98–112.
Krueger, A. B., and M. Alexandre. 2004. "Strikes, Scabs, and Tread Separations: Labor Strife and the Production of Defective Bridgestone/Firestone Tires." *Journal of Political Economy* 112: 253–89.
Lee, D. S., and L. Thomas. 2010. "Regression Discontinuity Designs in Economics." *Journal of Economic Literature* 48: 281–355.
Lee, D. S., and M. Alexandre. 2012. "Long-Run Impacts of Unions on Firms: New Evidence from Financial Markets, 1961–1999." *The Quarterly Journal of Economics* 127: 333–78.
Mas, A. 2008. "Labour Unrest and the Quality of Production: Evidence from the Construction Equipment Resale Market." *The Review of Economic Studies* 75: 229–58.
Masulis, R. W., and R. Syed Walid. 2015. "Agency Problems of Corporate Philanthropy." *The Review of Financial Studies* 28: 592–636.
Matsa, D. A. 2010. "Capital Structure as a Strategic Variable: Evidence from Collective Bargaining." *The Journal of Finance* 65: 1197–232.
McCrary, J. 2008. "Manipulation of the Running Variable in the Regression Discontinuity Design: A Density Test." *Journal of Econometrics* 142: 698–714.
McDonald, I. M., and R. M. Solow. 1981. "Wage Bargaining and Employment." *The American Economic Review* 71: 896–908.

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Qiu, Y., and T. Shen. 2017. "Organized Labor and Loan Pricing: A Regression Discontinuity Design Analysis." *Journal of Corporate Finance* 43: 407–28.
Tirole, J. 2001. "Corporate Governance." *Econometrica* 69: 1–35.
Warren, E. 2018. Accountable Capitalism Act. S.3348, 115th Congress. Retrieved from https://www.congress.gov/bill/115thcongress/senatebill/3348
Warren, E. 2019. Accountable Capitalism Act. S.3215, 116th Congress. Retrieved from https://www.congress.gov/bill/116th-congress/senatebill/3215

Appendix A: Additional tables

Table A1. Matching process.

This table presents the matching process employed to arrive at our final sample.

Panel A: Matching Process for the Unionization Sample

Operation	Observations
Compile union contract information from 2002 to 2021 (because ASSET4 data are available after 2002)	352,750
Manually match union contract records to Compustat	38,122
Aggregate establishment-year level observations to firm–year sample	15,650
Only keep firm–year observations with non-missing control variables	5,934
Match unionization sample to the Thomson Reuters ASSET4 ESG database	2,120
Add control sample through propensity score matching	4,240

Panel B: Matching Process for the Union Election Sample

Operation	Observations
Compile union election records from 2002 to 2021 (because ASSET4 data are available after 2002)	34,883
Drop elections not used to certify unions (only keep Proof of Representative petitions)	29,190
Manually match remaining union election records to NETS	17,581
Use parent company information in NETS to link union election records to Compustat	4,123
Only keep the first union election if a firm has multiple union elections in one year	2,289
Match firms' union election records to the Thomson Reuters ASSET4 ESG database	663
Limit sample to close elections where unions won or lost by a less than 20 percent margin of victory	312

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Table A2. Difference in observable characteristics between unionized and non-unionized firms.

This table shows differences in observable characteristics between unionized firms and non-unionized firms in year *t*, the year of the union elections. Union contract information is from the FMCS. The E&S measures are collected from the Thomson Reuters ASSET4 ESG database and are defined in Table 1. Firm characteristics are from Compustat.

	Unionized			Non-unionized			Non-unionized–unionized
	Obs	Mean	Std	Obs	Mean	Std	Mean difference (*P*-value)
E_Emission	1,919	0.0251	0.1540	1,925	0.0189	0.1454	−0.0063 (.1955)
E_Product	1,919	0.0494	0.1879	1,925	0.0488	0.2007	−0.0006 (.9278)
E_Resource	1,919	0.0617	0.2629	1,925	0.0559	0.2530	−0.0058 (.4839)
S_Diversity	1,919	0.0169	0.1900	1,925	0.0086	0.1738	−0.0083 (.1568)
S_Employment	1,919	0.0323	0.2102	1,925	0.0345	0.2242	0.0022 (.7505)
S_Health	1,919	0.0261	0.2551	1,925	0.0215	0.2536	−0.0046 (.5758)
S_Training	1,919	0.1329	0.4101	1,925	0.1188	0.4324	−0.0141 (.2997)
S_Product	1,919	0.0055	0.1672	1,925	−0.0008	0.1531	−0.0062 (.2298)
S_Community	1,919	0.0133	0.1725	1,925	0.0136	0.1680	0.0003 (.9611)
S_Human	1,919	0.0805	0.3186	1,925	0.0818	0.3171	0.0013 (.9006)
CAPEX	2,120	0.0467	0.0576	2,120	0.0487	0.0529	0.0019 (.2619)
EBITDA	2,120	0.1225	0.1411	2,120	0.1245	0.1402	0.0020 (.6482)
SGA	2,120	0.0460	0.1502	2,120	0.0443	0.1903	−0.0017 (.7418)
CHG_NOLCF	2,120	0.0175	0.1615	2,120	0.0256	0.2284	0.0081 (.1812)
LEVERAGE	2,120	0.3287	0.3107	2,120	0.3397	0.2300	0.0110 (.1905)
NOLCF	2,120	0.1582	0.7394	2,120	0.1596	0.9727	0.0014 (.9587)
SIZE	2,120	8.5056	1.6052	2,120	8.5583	1.6388	0.0527 (.2901)
LOSS	2,120	0.2896	0.4537	2,120	0.3047	0.4604	0.0151 (.2823)

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Table A3. Union election and E&S scores changes (optimal bandwidths).

This table presents local linear regression results using the optimal bandwidth following Calonico, Matias and Titiunik (2014). The dependent variables are the percentage change of equal-weighted E&S indicators in the year $t+1$ and are defined in Table 1. The independent variable of interest is the firm–year-level union election winning dummy. Standard errors are clustered by firm. Robust *t*-statistics are in parentheses. ***, **, and * indicate significance at 1 percent, 5 percent, and 10 percent.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Internal metrics				External metrics					
	S_Employment	*S_Training*	*S_Diversity*	*S_Health*	*E_Emission*	*E_Resource*	*E_Product*	*S_Community*	*S_Human*	*S_Product*
RD_Estimate	0.462**	0.627**	0.378**	0.596***	−0.143***	−0.194***	−0.173**	−0.139*	−0.117*	−0.143***
	(0.194)	(0.315)	(0.153)	(0.210)	(0.0462)	(0.0740)	(0.0775)	(0.0778)	(0.0598)	(0.0534)
Observations	663	663	663	663	663	663	663	663	663	663
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Bandwidth	0.198	0.214	0.202	0.184	0.167	0.16	0.175	0.169	0.163	0.205
Order polyn.	2	2	2	2	2	2	2	2	2	2
Effective Obs.	311	334	317	300	273	262	290	288	262	322

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Table A4. Union election and E&S scores changes in years t + 2 and t + 3.

This table presents RDD results from estimating a quadratic model specified in Equation (2). The sample consists of union elections won or lost by a maximum margin of 20 percent. The dependent variables are the percentage change of equal-weighted E&S indicators in the years t + 2 (Panel A) and t + 3 (Panel B), and they are defined in Table 1. The independent variable of interest is the firm–year level union election winning dummy. Standard errors are clustered by firm. Robust *t*-statistics are in parentheses. ***, **, and * indicate significance at 1 percent, 5 percent, and 10 percent.

Panel A: Time $t+2$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Internal metrics				External metrics					
	S_Employment	*S_Training*	*S_Diversity*	*S_Health*	*E_Emission*	*E_Resource*	*E_Product*	*S_Community*	*S_Human*	*S_Product*
WIN	0.3712*	0.5801*	0.4953**	0.8560*	−0.1145**	−0.1296*	−0.0933*	−−0.1201	−0.4559***	0.0359
	(1.7688)	(1.6987)	(2.1800)	(1.8180)	(−2.1512)	(−1.6612)	(−1.6588)	(−1.4500)	(−3.0253)	(0.6150)
Observations	295	295	295	295	295	295	295	295	295	295

Panel B: Time $t+3$

WIN	0.3682*	−0.1000	0.3132*	0.7565*	−0.0927**	−0.1428**	−0.0910	−0.2060**	0.0907	−0.1400*
	(1.9102)	(−0.6187)	(1.9014)	(1.9731)	(−2.2096)	(−1.9834)	(−0.7921)	(−2.4925)	(0.9266)	(−1.8445)
Observations	286	286	286	286	286	286	286	286	286	286

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

		Description	Direction	Question type	Translation numeric values
Panel A: Environmental Indicator Variables					
A.	Emission Reduction				
1	Biodiversity Controversies	Is the company under the spotlight of the media because of a controversy linked to biodiversity?	Negative	Y/N	
2	Biodiversity Impact	Does the company report on initiatives to protect, restore, or reduce its impact on native ecosystems and species, biodiversity, protected and sensitive areas?	Positive	Y/N	
3	Cement CO_2 Emissions	Total CO_2 and CO_2 equivalents emission in kilograms per tonne of cement produced.	Negative	Number	Median
4	Climate Change Risk/ Opportunity	Is the company aware that climate change can represent commercial risks and/or opportunities?	Positive	Y/N	
5	CO_2 Reduction	Does the company show an initiative to reduce, reuse, recycle, substitute, phased out or compensate CO_2 equivalents in the production process?	Positive	Y/N	
6	Discharge into Water System	Total weight of water pollutant emissions in tonnes divided by net sales or revenue in US dollars.	Negative	Number	Median
7	Environmental Compliance	All real or estimated penalties, fines from lost court cases, settlements, or cases not yet settled regarding environmental controversies in US dollars.	Negative	Number	Zero
8	Environmental Expenditures	Does the company report on its environmental expenditures or does the company report to make proactive environmental investments to reduce future risks or increase future opportunities?	Positive	Y/N	
9	Environmental Management Systems	The percentage of company sites or subsidiaries that are certified with any environmental management system.	Positive	Number	Median
10	Environmental Partnerships	Does the company report on partnerships or initiatives with specialized NGOs, industry organizations, governmental or supragovernmental organizations that focus on improving environmental issues?	Positive	Y/N	

(continued)

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

(continued)

		Description	Direction	Question type	Translation numeric values
11	Environment Restore Initiative	Does the company report or provide information on company-generated initiatives to restore the environment?	Positive	Y/N	
12	F-Gases Emissions	Does the company report on initiatives to recycle, reduce, reuse, or phase out fluorinated gases such as HFCs (hydrofluorocarbons), PFCs (perfluorocarbons), or SF6 (sulfur hexafluoride)?	Positive	Y/N	
13	Greenhouse Gas Emissions	Total CO_2 and CO_2 equivalents emission in tonnes divided by net sales or revenue in US dollars.	Negative	Number	Median
14	Hazardous Waste	Total amount of hazardous waste produced in tonnes divided by net sales or revenue in US dollars.	Negative	Number	Median
15	Implementation	Does the company describe the implementation of its emission reduction policy through a public commitment from a senior management or board member? AND Does the company describe the implementation of its emission reduction policy through the processes in place?	Positive	Double Y/N	
16	Improvements	Does the company set specific objectives to be achieved on emission reduction?	Positive	Y/N	
17	Innovative Production	Does the company report on the concentration of production locations in order to limit the environmental impact during the production process? OR Does the company report on its participation in any emissions trading initiative? OR Does the company report on new production techniques to improve the global environmental impact (all emissions) during the production process?	Positive	Y/N	
18	Monitoring	Does the company monitor its emission reduction performance?	Positive	Y/N	
19	NO_x and SO_x Emissions Reduction	Does the company report on initiatives to reduce, reuse, recycle, substitute, or phase out SO_x or NO_x emissions?	Positive	Y/N	
20	Ozone-Depleting Substances Reduction	Does the company report on initiatives to recycle, reduce, reuse, or substitute ozone-depleting (CFC-11 equivalents, chlorofluorocarbon) substances?	Positive	Y/N	
21	Policy	Does the company have a policy for reducing environmental emissions or its impacts on biodiversity? AND Does the company have a policy for maintaining an environmental management system?	Positive	Double Y/N	

(continued)

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

(continued)

		Description	Direction	Question type	Translation numeric values
22	Spill Impact Reduction	Does the company report on initiatives to reduce, avoid or minimize the effects of spills or other polluting events (crisis management system)?	Positive	Y/N	
23	Spill and Pollution Controversies	Is the company directly or indirectly (through a supplier) under the spotlight of the media because of a controversy linked to the spill of chemicals, oils, and fuels, gases (flaring) or controversy relating to the overall impacts of the company on the environment?	Negative	Y/N	
24	Transportation Impact Reduction	Does the company report on initiatives to reduce the environmental impact of transportation of its products or its staff?	Positive	Y/N	
25	VOC Emissions Reduction	Does the company report on initiatives to reduce, substitute, or phase out volatile organic compounds (VOC) or particulate matter less than ten microns in diameter (PM10)?	Positive	Y/N	
26	Waste	Total amount of waste produced in tonnes divided by net sales or revenue in US dollars.	Negative	Number	Median
27	Waste Recycling Ratio	Total recycled and reused waste produced in tonnes divided by total waste produced in tonnes.	Positive	Number	Median
28	Waste Reduction	Does the company report on initiatives to recycle, reduce, reuse, substitute, treat, or phase out total waste, hazardous waste, or wastewater?	Positive	Y/N	
B. Product Innovation					
1	Animal Testing	Is the company endorsing guidelines on animal testing (e.g., the EU guideline on animal experiments)? OR Has the company established a program or an initiative to reduce, phase out or substitute for animal testing?	Positive	Y/N	
2	Eco-Design Products	Does the company report on specific products which are designed for reuse, recycling or the reduction of environmental impacts?	Positive	Y/N	
3	Energy Footprint Reduction	Does the company describe initiatives in place to reduce the energy footprint of its products during their use?	Positive	Y/N	
4	Environmental Asset Management	Does the company report on assets under management which employ environmental screening criteria or environmental factors in the investment selection process?	Positive	Y/N	
5	Environmental Labels and Awards	Has the company received product awards with respect to environmental responsibility? OR Does the company use product labels (e.g., FSC, Energy Star, MSC) indicating the environmental responsibility of its products?	Positive	Y/N	

(continued)

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

(continued)

		Description	Direction	Question type	Translation numeric values
6	Environmental Products	Does the company report on at least one product line or service that is designed to have positive effects on the environment or which is environmentally labeled and marketed?	Positive	Y/N	
7	Environmental Project Financing	Is the company a signatory of the Equator Principles (commitment to manage environmental issues in project financing)? OR Does the company claim to evaluate projects on the basis of environmental or biodiversity risks as well?	Positive	Y/N	
8	Environmental R&D	Does the company invest in R&D on new environmentally friendly products or services that will limit the amount of emissions and resources needed during product use?	Positive	Y/N	
9	Environmental R&D Expenditures	Total amount of environmental R&D costs (without clean up and remediation costs) divided by net sales or revenue in US dollars.	Positive	Number	Median
10	GMO Free Products	Does the company make a commitment to exclude GMO ingredients from its products or retail offerings?	Positive	Y/N	
11	Hybrid Vehicles	Is the company developing hybrid vehicles?	Positive	Y/N	
12	Implementation	Does the company describe the implementation of its environmental product innovation policy?	Positive	Y/N	
13	Improvements	Does the company set specific objectives to be achieved on environmental product innovation?	Positive	Y/N	
14	Labeled Wood Percentage	The percentage of labeled wood or forest products (e.g., Forest Stewardship Council (FSC)) from total wood or forest products.	Positive	Number	Median
15	Liquefied Natural Gas	Does the company develop new products and services linked to liquefied natural gas?	Positive	Y/N	
16	Monitoring	Does the company describe, claim to have or mention the processes it uses to accomplish environmental product innovation?	Positive	Y/N	
17	Noise Reduction	Does the company develop new products that are marketed as reducing noise emissions?	Positive	Y/N	
18	Organic Products	Does the company report or show initiatives to produce or promote organic food or other products?	Positive	Y/N	
19	Policy	Does the company have an environmental product innovation policy (eco-design, life cycle assessment, dematerialization)?	Positive	Y/N	

(continued)

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

(continued)

		Description	Direction	Question type	Translation numeric values
20	Product Impact Controversies	Is the company under the spotlight of the media because of a controversy linked to the environmental impact of its products or services?	Negative	Y/N	
21	Product Impact Minimization	Does the company report about take-back procedures and recycling programs to reduce the potential risks of products entering the environment? OR Does the company report about product features and applications or services that will promote responsible, efficient, cost-effective, and environmentally preferable use?	Positive	Y/N	
22	Renewable Energy Supply	Total energy distributed or produced from renewable energy sources divided by the total energy distributed or produced.	Positive	Number	Median
23	Renewable/Clean Energy Products	Does the company develop products or technologies for use in the clean, renewable energy (such as wind, solar, hydro and geo-thermal, and biomass power)?	Positive	Y/N	
24	Sustainable Building Products	Does the company develop products and services that improve the energy efficiency of buildings?	Positive	Y/N	
25	Water Technologies	Does the company develop products or technologies that are used for water treatment, purification or that improve water use efficiency?	Positive	Y/N	
C.	Resource Reduction				
1	Cement Energy Use	Total energy use in gigajoules per tonne of clinker produced.	Negative	Number	Median
2	Energy Efficiency Initiatives	Does the company report on initiatives to use renewable energy sources? AND Does the company report on initiatives to increase its energy efficiency overall?	Positive	Double Y/N	
3	Energy Use	Total direct and indirect energy consumption in gigajoules divided by net sales or revenue in US dollars.	Negative	Number	Median
4	Environmental Resource Impact Controversies	Is the company under the spotlight of the media because of a controversy linked to the environmental impact of its operations on natural resources or local communities?	Negative	Y/N	
5	Environment Supply Chain Mgmt	Does the company use environmental criteria (ISO 14000, energy consumption, etc.) in the selection process of its suppliers or sourcing partners? AND Does the company report or show to be ready to end a partnership with a sourcing partner, if environmental criteria are not met?	Positive	Double Y/N	

(continued)

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

(continued)

		Description	Direction	Question type	Translation numeric values
6	Green Buildings	Does the company have environmentally friendly or green sites or offices?	Positive	Y/N	
7	Implementation	Does the company describe the implementation of its resource efficiency policy through a public commitment from a senior management or board member? AND Does the company describe the implementation of its resource efficiency policy through the processes in place?	Positive	Double Y/N	
8	Improvements	Does the company set specific objectives to be achieved on resource efficiency? AND Does the company comment on the results of previously set objectives?	Positive	Double Y/N	
9	Land Use	Does the company report on initiatives to reduce the environmental impact on land owned, leased or managed for production activities or extractive use?	Positive	Y/N	
10	Materials	Total amount of materials used in tonnes divided by net sales or revenue in US dollars.	Negative	Number	Median
11	Material Recycled and Reused Ratio	The percentage of recycled materials of the total materials used.	Positive	Number	Median
12	Monitoring	Does the company monitor its resource efficiency performance?	Positive	Y/N	
13	Policy	Does the company have a policy for reducing the use of natural resources? AND Does the company have a policy to lessen the environmental impact of its supply chain?	Positive	Double Y/N	
14	Renewable Energy Use	Total energy generated from primary renewable energy sources divided by total energy.	Positive	Number	Median
15	Toxic Chemicals	Does the company report on initiatives to reduce, reuse, substitute or phase out toxic chemicals or substances?	Positive	Y/N	
16	Water Efficiency Initiatives	Does the company report on initiatives to reuse or recycle water? OR Does the company report on initiatives to reduce the amount of water used?	Positive	Y/N	
17	Water Use	Total water withdrawal in cubic meters divided by net sales or revenue in US dollars.	Negative	Number	Median

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

Panel B: Social Indicator Variables

		Description	Direction	Question type	Translation numeric values
A.	Community Category				
1	Bribery Corruption and Fraud Controversies	Is the company under the spotlight of the media because of a controversy linked to bribery and corruption, political contributions, improper lobbying, money laundering, parallel imports, or any tax fraud?	Negative	Y/N	
2	Business Ethics Compliance	All real or estimated penalties, fines from lost court cases, settlements or cases not yet settled regarding controversies linked to business ethics in general, political contributions or bribery and corruption, price-fixing or anti-competitive behavior, tax fraud, parallel imports or money laundering in US dollars.	Negative	Number	Zero
3	Corporate Responsibility Awards	Has the company received an award for its social, ethical, community, or environmental activities or performance?	Positive	Y/N	
4	Crisis Management	Does the company report on crisis management systems or reputation disaster recovery plans to reduce or minimize the effects of reputation disasters?	Positive	Y/N	
5	Critical Countries-Indigenous Controversy	Is the company under the spotlight of the media because of a controversy linked to activities in critical, undemocratic countries that do not respect fundamental human rights or to disrespecting the rights of indigenous people?	Negative	Y/N	
6	Donations in General	Does the company make cash donations? AND Does the company make in-kind donations, foster employee engagement in voluntary work or provide funding of community-related projects through a corporate foundation?	Positive	Double Y/N	
7	Implementation	Does the company describe the implementation of its community policy through a public commitment from a senior management or board member? AND Does the company describe the implementation of its community policy through the processes in place?	Positive	Double Y/N	
8	Improvements	Does the company set specific objectives to be achieved on its reputation or its relations with communities?	Positive	Y/N	
9	Effective Tax Rate	Total amount of income taxes divided by net income.	Positive	Number	Median

(continued)

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

(continued)

Panel B: Social Indicator Variables

		Description	Direction	Question type	Translation numeric values
10	Monitoring	Does the company monitor its reputation or its relations with communities?	Positive	Y/N	
11	Patent Infringement	All real or estimated penalties, fines from lost court cases, settlements or cases not yet settled regarding controversies linked to patents and intellectual property infringement in US dollars.	Negative	Number	Zero
12	Policy	Does the company have a policy to strive to be a good corporate citizen or endorse the Global Sullivan Principles? AND Does the company have a policy to respect business ethics or has the company signed the UN Global Compact or follow the OECD guidelines?	Positive	Double Y/N	
13	Public Health Controversies	Is the company under the spotlight of the media because of a controversy linked to public health or industrial accidents harming the health & safety of third parties (non-employees and non-customers)?	Negative	Y/N	
14	Total Donations	Total amount of all donations divided by net sales or revenue.	Positive	Number	Zero
B.	Diversity and Opportunity				
1	Diversity Compliance	All real or estimated penalties, fines from lost court cases, settlements, or cases not yet settled regarding controversies linked to workforce diversity and opportunity in US dollars.	Negative	Number	Zero
2	Diversity Controversies	Is the company under the spotlight of the media because of a controversy linked to workforce diversity and opportunity?	Negative	Y/N	
3	Family Friendly	Does the company claim to provide day care services for its employees? OR Does the company claim to provide generous maternity leave benefits? OR Has the company won a family-friendly prize like a "Working Mother Award"?	Positive	Y/N	
4	Implementation	Does the company describe the implementation of its diversity and opportunity policy?	Positive	Y/N	
5	Improvements	Does the company set specific objectives to be achieved on diversity and equal opportunity?	Positive	Y/N	

(continued)

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

(continued)

Panel B: Social Indicator Variables

		Description	Direction	Question type	Translation numeric values
6	Management Equal Opportunity	Does the company promote positive discrimination? OR Has the company won any prize or award relating to diversity or opportunity?	Positive	Y/N	
7	Manager Female Male Ratio	Percentage of women managers.	Positive	Number	Median
8	Monitoring	Does the company monitor the diversity and equal opportunities in its workforce?	Positive	Y/N	
9	Policy	Does the company have a work–life balance policy? AND Does the company have a diversity and equal opportunity policy?	Positive	Double Y/N	
10	Work–Life Balance	Does the company claim to provide generous vacations, career breaks, or sabbaticals? OR Does the company claim to provide flexible working hours or working hours that promote a work–life balance?	Positive	Y/N	
C.	Employment Quality				
1	Announced Lay-offs	Total number of announced lay-offs by the company divided by the total number of employees.	Negative	Number	Median
2	Bonus Plan	Does the company claim to provide a bonus plan to at least the middle management level? AND Is the employees' compensation based on personal or company-wide targets?	Positive	Double Y/N	
3	Employment Awards	Has the company won an award or any prize-related to general employment quality or "Best Company to Work For"?	Positive	Y/N	
4	Generous Fringe Benefits	Does the company claim to provide its employees with a pension fund, health care, or other insurances?	Positive	Y/N	
5	Implementation	Does the company describe the implementation of its employment quality policy?	Positive	Y/N	
6	Improvements	Does the company set specific objectives to be achieved on employment quality?	Positive	Y/N	
7	Key Management Departures	Has an important executive management team member or a key team member announced a voluntary departure (other than for retirement) or has been ousted?	Negative	Y/N	

(continued)

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

(continued)

Panel B: Social Indicator Variables

		Description	Direction	Question type	Translation numeric values
8	Monitoring	Does the company monitor or measure its performance on employment quality?	Positive	Y/N	
9	Net Employment Creation	Employment growth over the last year.	Positive	Number	Median
10	Personnel Turnover	Percentage of employee turnover.	Negative	Number	Median
11	Policy	Does the company have a competitive employee benefits policy or ensuring good employee relations within its supply chain? AND Does the company have a policy for maintaining long term employment growth and stability?	Positive	Double Y/N	
12	Salaries	Average salaries and benefit in US dollars (Salaries and Benefits (US dollars)/Total Number of Employees).	Positive	Number	Median
13	Salaries Distribution	Total salaries and benefits divided by net sales or revenue.	Positive	Number	Median
14	Salary Gap	CEO's total salary (or other highest salary) divided by average wage (Highest Salary (US dollars)/Average Salaries and Benefits in (US dollars)).	Negative	Number	Median
15	Strikes	Has there has been a strike or an industrial dispute that led to lost working days?	Negative	Y/N	
16	Trade Union Representation	Percentage of employees represented by independent trade union organizations or covered by collective bargaining agreements.	Positive	Number	Median
17	Wages or Working Condition Controversies	Is the company under the spotlight of the media because of a controversy linked to the company's employees, contractors or suppliers due to wage, layoff disputes, or working conditions?	Negative	Y/N	
D.	Health and Safety				
1	Health & Safety Compliance	All real or estimated penalties, fines from lost court cases, settlements or cases not yet settled regarding controversies linked to workforce or contractor health and safety in US dollars.	Negative	Number	Zero
2	Health & Safety Controversies	Is the company under the spotlight of the media because of a controversy linked to workforce health and safety?	Negative	Y/N	
3	HIV-AIDS Program	Does the company report on policies or programs on HIV/AIDS for the workplace or beyond?	Positive	Y/N	

(continued)

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

(continued)

Panel B: Social Indicator Variables

		Description	Direction	Question type	Translation numeric values
4	Implementation	Does the company describe the implementation of its employee health & safety policy through a public commitment from a senior management or board member or the establishment of an employee health & safety team? AND Does the company describe the implementation of its employee health & safety policy through the processes in place?	Positive	Double Y/N	
5	Improvements	Does the company set specific objectives to be achieved on employee health & safety? AND Does the company comment on the results of previously set objectives?	Positive	Double Y/N	
6	Injuries	Total number of injuries and fatalities including no-lost-time injuries relative to one million hours worked.	Negative	Number	Median
7	Lost Days	Total lost days at work divided by total working days (Refers to an employee absent from work because of incapacity of any kind, not just as the result of occupational injury or disease)	Negative	Number	Median
8	Monitoring	Does the company monitor or measure its performance on employee health & safety?	Positive	Y/N	
9	Policy	Does the company have a policy to improve employee health & safety within the company and its supply chain?	Positive	Y/N	
E.	Human Rights				
1	Child Labor Controversies	Is the company under the direct or indirect (through suppliers) spotlight of the media because of a controversy linked to child labor?	Negative	Y/N	
2	Freedom of Association Controversies	Is the company under the direct or indirect (through suppliers) spotlight of the media because of a controversy linked to freedom of association?	Negative	Y/N	
3	Human Rights Controversies	Is the company under the direct or indirect (through suppliers) spotlight of the media because of a controversy linked to general human rights issues?	Negative	Y/N	
4	Implementation	Does the company describe the implementation of its human rights policy?	Positive	Y/N	
5	Improvements	Does the company set specific objectives to be achieved on its human rights policy?	Positive	Y/N	

(continued)

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

(continued)

Panel B: Social Indicator Variables

		Description	Direction	Question type	Translation numeric values
6	Monitoring	Does the company monitor human rights in its or its suppliers' facilities?	Positive	Y/N	
7	Policy	Does the company have a policy to guarantee the freedom of association universally applied independent of local laws? AND Does the company have a policy for the exclusion of child, forced or compulsory labor?	Positive	Double Y/N	
8	Suppliers Social Impact	Does the company report or show to use human rights criteria in the selection or monitoring process of its suppliers or sourcing partners? AND Does the company report or show to be ready to end a partnership with a sourcing partner if human rights criteria are not met?	Positive	Double Y/N	
F.	Product Responsibility				
1	Customer Controversies	Is the company under the spotlight of the media because of a controversy linked to its products or services quality and responsibility?	Negative	Y/N	
2	Implementation	Does the company describe the implementation of its product responsibility policy?	Positive	Y/N	
3	Improvements	Does the company set specific objectives to be achieved on its products or services quality and responsibility?	Positive	Y/N	
4	Monitoring	Does the company monitor the impact of its products or services on consumers or the community more generally?	Positive	Y/N	
5	Policy	Does the company have a policy to protect customer health & safety? AND Does the company have a products and services quality policy?	Positive	Double Y/N	
6	Product Access	Does the company distribute any low-priced products or services specifically designed for lower income categories (e.g., bridging the digital divide, telecommunications, low cost cars, and microfinancing services)?	Positive	Y/N	
7	Product Compliance	All real or estimated penalties, fines from lost court cases, settlements, or cases not yet settled regarding controversies linked its products or services quality and responsibility in US dollars.	Negative	Number	Zero

(continued)

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

(continued)

Panel B: Social Indicator Variables

		Description	Direction	Question type	Translation numeric values
8	Quality Management	Does the company claim to apply quality management systems, such as ISO 9000, Six Sigma, Lean Manufacturing, Lean Sigma, TQM or any other similar quality principles?	Positive	Y/N	
9	Social Exclusion Controversy	Is the company under the spotlight of the media because of a controversy linked to market withdrawal (closing of branches), retreating, or failing to serve specific markets or customers?	Negative	Y/N	
10	Technology Know-How Sharing	Does the company voluntarily share licenses, patents, intellectual property, or useful technology with developing countries, or allow generics under specific conditions?	Positive	Y/N	
G.	Training and Development				
1	Implementation	Does the company describe the implementation of its training and development policy?	Positive	Y/N	
2	Improvements	Does the company set specific objectives to be achieved on the employee training and career development?	Positive	Y/N	
3	Internal Promotion	Does the company claim to favor promotion from within?	Positive	Y/N	
4	Management Training	Does the company claim to provide regular staff and business management training for its managers?	Positive	Y/N	
5	Monitoring	Does the company monitor its training and development programs?	Positive	Y/N	
6	Policy	Does the company have a policy to support the skills training or career development of its employees?	Positive	Y/N	
7	Supplier ESG Training	Does the company provide training on environmental, social, or governance factors for its suppliers?	Positive	Y/N	
8	Training Costs	Training costs per employee in US dollars.	Positive	Number	Median
9	Training Hours	Average hours of training per year per employee.	Positive	Number	Median
10	University Partnerships	Does the company claim to cooperate with schools or universities?	Positive	Y/N	

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024

© The Author(s) 2024. Published by Oxford University Press on behalf of the European Finance Association.
This is an Open Access article distributed under the terms of the Creative Commons Attribution License (https://creativecommons.org/licenses/by/4.0/), which permits unrestricted reuse, distribution, and reproduction in any medium, provided the original work is properly cited.
Review of Finance, 2024, 28, 1833–1970
https://doi.org/10.1093/rof/rfae018
Article

Downloaded from https://academic.oup.com/rof/article/28/6/1833/7717974 by IULM - Libera Università Lingue e Comunicazione user on 10 December 2024