ESG and CEO turnover

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Abstract

We investigate how negative media attention to stakeholder issues ("ESG risk") affects CEO turnover in different countries. The likelihood of turnover increases significantly when a firm's ESG risk reaches extreme levels. Results from a kink regression discontinuity design support the interpretation that the effect is causal. Using an international sample allows us to consider covariates not only at the individual, firm, and industry levels, but also at the country level. In civil-law countries or in firms with more stakeholder-oriented boards, negative media coverage (shaming effect) is enough to trigger a CEO turnover regardless of whether it is accompanied by a stock price decline (materiality effect).

Keywords: CEO Turnover, Environmental, Social, and Governance (ESG), Firm Misbehavior, Legal Origin, Shareholder Value Maximization, Stakeholder Society Approach

JEL classifications: G34, M12, M14, G15

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1 Introduction

When corporate misbehavior has a direct impact on shareholders, it has a well-documented effect on Chief Executive Officer (CEO) turnover (Desai, Hogan, and Wilkins (2006), Hazarika, Karpoff, and Nahata (2012), Karpoff, Lee, and Martin (2008a)). Following financial misrepresentation, for instance, most CEOs are fired and some are even sent to jail (Karpoff, Lee, and Martin (2008a)). This is consistent with the traditional shareholder governance model of the firm (Friedman (1970)) in which managers are held accountable to shareholders. However, much less is known about how corporate misbehavior harming firm's nonfinancial stakeholders (employees, customers, environment, society) affects managerial turnover. On August 19th, 2019, the U.S. Business Roundtable, which is made up of the CEOs of large corporations in the U.S., announced its support for a stakeholder-oriented governance model to replace the traditional shareholder governance model of the firm.[1] Although the real consequences of this statement remain under debate (Bebchuk and Tallarita (2020), Edmans (2020), Bebchuk and Edmans (2020)), its content implies that CEOs see themselves as accountable also to their companies' stakeholders. We contribute to this debate by testing whether, in practice, CEOs are indeed held responsible for such issues. We essentially examine the relationship between negative media coverage of a firm's Environmental, Social, and Governance (ESG) issues[2] and the likelihood of a CEO turnover using data from 18 different countries with different sensitivities to stakeholder issues.

Among a few studies investigating the connection between corporate social irresponsibility and shareholder wealth, Krüger (2015) provides evidence that investors do react to negative news about certain issues related to a firm's corporate social responsibility (CSR). Following such ESG incidences, there should be little divergence between the interests of stakeholders and shareholders (Karpoff (2021)), and consequently, one would expect CEOs to be replaced like they are after shareholder-related corporate misconduct. Indeed, anecdotal evidence such as Volkswagen's *emission scandal* in 2015 and British Petroleum's (BP) *Deepwater Horizon oil spill* in 2010 suggest that boards hold CEOs accountable for ESG-related misbehavior. Both scandals lead to a widespread negative media coverage, which hurt

[1] Business Roundtable, *Statement on the Purpose of Corporation*, https://www.businessroundtable.org/business-roundtable-redefines-the-purpose-of-a-corporation-to-promote-an-economy-that-serves-all-americans.

[2] With "ESG issues", "ESG risk", "ESG incidences", "ESG failures", "ESG event", and "ESG-related misbehavior", we refer to corporate misbehavior or misconduct which negatively impacts a firm's stakeholder relations, such as employee relations issues, environmental pollution, customer fraud, child labor, bribery, anti-competition, etc. When referring to "economic" or "shareholder-related" misconduct, we follow Karpoff (2012) and refer to this type of event as misbehavior relating to a firm's financial statement (e.g., earnings restatements, financial misrepresentation, etc.).

stakeholders as well as shareholders, and ultimately resulted in the resignations of the firms' CEOs. Thus, such heavy media coverage of an ESG-related misbehavior can taint a firm's reputation (Baloria and Heese (2018)) and harm the prestige of its managers and directors (Dyck and Zingales (2002)).[3] Such spikes in reputation risk could then trigger boards to act decisively.

CEO turnover events involve a cost-benefit analysis, however. The board of directors tend to weigh retention costs against replacement costs when deciding on whether to replace a CEO of a misbehaving firm (Beneish, Marshall, and Yang (2017)). That is, CEOs are likely to lose their job when retention costs are high relative to replacement costs. Furthermore, Agrawal, Jaffe, and Karpoff (1999) note that firms replace CEOs following misconduct in order to improve their financial performance, regain reputation among customers, and limit exposure to future liabilities. We argue that when the pecuniary costs[4] of keeping the current CEO increases following a barrage of negative media coverage of an ESG issue related to the firm, the board of directors will act and replace the existing CEO to reduce the damage to the firm. Thus, we hypothesize that negative media attention about a firm's ESG issues should increase the CEO turnover likelihood.

An alternative hypothesis is that CEO job security is not affected significantly by the ESG risk. The board of directors are elected by the shareholders, and a negative ESG issue impacting primarily nonfinancial stakeholders may not be a sufficient catalyst for the board to fire the CEO, especially when the replacement costs are high. This could be the case especially in common-law countries (e.g., U.S.), where directors are elected solely by shareholders. Nonetheless, there are reasons to expect that some stakeholder-sensitive boards can discipline their CEO also when ESG incidences hurt merely stakeholders. That is, when there are non-pecuniary implications[5] for, but no pecuniary costs to, a misbehaving firm. In civil-law

[3] Some studies attribute corporate misbehavior to managerial ethics (Benmelech and Frydman (2015), Biggerstaff, Cicero, and Puckett (2015), Davidson, Dey, and Smith (2015), Cline, Walkling, and Yore (2018)). According to Dyck and Zingales (2002), negative media attention can harm the reputations of executives not only "in the eyes of shareholders and future employers" but also "in the eyes of society at large."

[4] Karpoff and Lott (1993) partition pecuniary costs into two parts: direct and indirect. The direct costs are comprised of legal costs, compliance costs, clean-up costs, etc. The indirect costs are interpreted as "reputational" penalties on the firm, which is proxied by the loss in the market value of the firm in excess of what would be expected by the sizes of the direct costs. These reputational penalties reflect investors' expectations of future drops in, for example, sales caused by a firm's misbehaving actions. Both types of pecuniary costs are expected to negatively affect shareholder wealth.

[5] Non-pecuniary implications are defined by Dupont and Karpoff (2020) broadly as non-quantifiable benefits of continued social status and self-esteem. According to the authors, the non-pecuniary benefits are part of the corporate culture, and are comprised of "the combination of personal and societal values, morals, ethics, and social norms that encourage honest dealing even in the absence of legal penalties or the risk of lost capital." The non-pecuniary costs are expected to affect only the self-esteem and self-image of the corporate managers and

countries, for instance, stakeholder representatives often serve on the corporate boards (Adams and Ferreira (2007)), the local media exerts strong pressure on firms to behave in a socially responsible manner (Bénabou and Tirole (2010)), and the firms in these countries pay more attention to ESG-related practices (Liang and Renneboog (2017)). Therefore, we conjecture that, following ESG incidences which did not particularly harm the shareholders, CEO turnover odds increase only in some countries while not in other. Our international sample of CEO turnovers in large U.S. and European firms provides us with an ideal setting to test such a conjecture, as it allows us to include various country-level covariates —legal tradition and cultural factors among them— in our analysis.

We also explore an additional channel through which CEO turnover could be sensitive to ESG risk, namely, the degree to which a board is oriented towards protecting stakeholders' interests (inspired by Adams and Licht (2019) and Bebchuk and Tallarita (2020), we name this effect "board stakeholderism"). Stakeholder-oriented boards may interpret the intense media coverage of an ESG issue (even if it does not lead to stock price decline) as a breakdown in the ethical conduct and integrity of a company; that is, the company is not adhering to social norms and expectations in situations where there is little risk of misbehaving resulting in losses to shareholders. Also, as Dyck and Zingales (2002) point out, negative media attention could harm the reputations of firms and executives "in the eyes of society at large". In such cases, the shaming by the media can be sufficient for the stakeholder-oriented boards to act.

To test the above conjectures about CEO turnovers in 18 different countries, we rely on a manual data collection process that utilizes annual company reports from company websites; several datasets such as ExecuComp, Orbis, and CapitalIQ; and various biographical online sites for a total of 2,254 CEOs. The data on ESG-related news coverage is compiled by RepRisk company. Each day, RepRisk screens more than 80,000 media and stakeholder sources for ESG-related news in 15 different languages. Based on the severity, the scope, and the expected impact of the news, RepRisk quantifies a firm's risk exposure ("the ESG risk") to stakeholder issues with their Reputational Risk Index (RRI), which varies between -1 and 100. We obtain the monthly RRI for the constituents of the S&P 500 and the Stoxx Europe 600 indexes and extract the peak RRI for each firm in each calendar year. Following RepRisk's methodology, we divide firms into three categories based on their peak RRI in a year: (1) normal, (2) high, and (3) extreme levels ($60 \leq$ RRI ≤ 100). We then contrast the CEO turnover rates in the

employees, which is a difficult measure to quantify. We proxy for these non-pecuniary costs by the portion of the negative media coverage of an ESG incidence that is not explainable by the stock price drop of a company. We refer to this effect as "pure shaming" by the media (Section 5.2).

extreme risk category (i.e., the most intense media coverage) to the rest of the sample. By using an objective news-related metric on negative ESG-performance, we alleviate the common concern that ESG metrics are affected by "greenwashing," whereby firms are exaggerating their corporate citizenship virtues in order to manipulate their CSR-ratings.

Our results can be summarized as follows. Our univariate analysis indicates that the unconditional probability of a CEO turnover within the same or the subsequent year of an extreme RRI observation (RRI $\geq$ 60) is significantly higher at 23.7%, compared to 18.6% for firm-years in the other ESG risk categories (this effect is visually depicted in Figure 1). Multivariate logistic regression models estimate that, ceteris paribus, the probability of a CEO losing his or her job is roughly 7 percentage points higher (average marginal effect) when a firm has extreme risk exposure in a year. These results are robust to the inclusion of CEO-specific, firm-level, and country-level control variables; year, industry, and country fixed effects; country-year and industry-year interacted fixed effects; using a conditional (firm fixed effects) logistic regression model; as well as using a linear probability model with firm (and year) fixed effects. Moreover, employing a kink regression discontinuity design (Card et al. (2015), Hartzmark and Sussman (2019)), we find evidence consistent with the interpretation that negative media attention to ESG issues has a causal effect on CEO turnover probability. Also, when we consider the types of ESG issues separately, we find that both nonfinancial stakeholder issues (Environmental and Social) and the more shareholder-related Governance issues (corruption, bribery, tax evasion, etc.) increase the likelihood of CEO turnover in our multinational sample. We thus provide novel evidence that ESG risk increases the likelihood of CEO turnover in both U.S. and Europe, who have diverse underlying institutional and cultural norms towards ESG practices.

In addition, we investigate two potential channels through which CEO turnover could be sensitive to ESG risk even when shareholders are not harmed; namely, the stakeholder-friendliness of a firm's home country (Liang and Renneboog (2017)) and the stakeholder-orientation of a firm's board. First, we test the hypothesis that in more shareholder-oriented countries, CEO turnover odds increase only if shareholders are also harmed by an ESG incidence, while in more stakeholder-oriented countries, the media pressure alone could trigger a CEO dismissal. Indeed, our event study results point towards such differences between common- and civil-law countries: in the former, CEO turnover odds increase when an ESG incidence triggers a negative stock market reaction (market discipline, "materiality"), while in stakeholder-oriented civil-law countries, both market discipline and media attention ("pure shaming") have distinct impacts of their own. Thus, in common-law countries only the materiality of the ESG incidence (the stock reaction reflecting the expected pecuniary costs) matters, but in the civil-law countries both materiality and the non-pecuniary effects (pure shaming) are significant drivers of the CEO turnover.

Similarly, we hypothesize that only the firms with more stakeholder-oriented boards ("board stakeholderism") would react to the ESG failures that do not harm shareholders. To measure the board's stakeholder-orientation, we construct a *board stakeholderism index*[6] by employing a similar procedure as in Ferrell et al. (2016) and Cline et al. (2018). In addition, following Jenter and Lewellen (2021), we partition our dependent variable (CEO turnover) into turnovers caused by poor financial performance (i.e., the ESG incidence leads to pecuniary costs), and turnovers which occur when stock performance is strong. We find that when an ESG incidence negatively affects performance, it increases the likelihood of CEO turnover in all firms. In contrast, when performance remains strong, CEOs are replaced only in firms with more stakeholder-oriented boards. Put differently, the stakeholder-oriented boards appear willing to replace even well-performing CEOs following an ESG failure.

The above findings provide unique insights into three different strands of the literature. First, by showing that ESG risk increases the probability of CEO replacement in a cross-country sample of firms, we contribute to the vast literature examining ex-post disciplining of managers following various types of misconduct (Karpoff, Lee, and Martin (2008b), and others). Second, our paper relates to the literature on the deemed importance of ESG/CSR in different countries (Liang and Renneboog (2017), Cai, Pan, and Statman (2016)) by investigating how firms located in different countries, and depending on their boards' stakeholderism, react differently to ESG risk. Third, we add to the literature on the media's role in corporate governance (Dyck and Zingales (2002), Miller (2006), Dyck, Volchkova, and Zingales (2008), Baloria and Heese (2018)) by showing how media pressure alone can have a distinct impact on CEO turnover of its own beyond the stock market reaction it causes. The disciplining role of media can vary cross-sectionally across firms depending on the sensitivity of boards or countries to stakeholder issues.

2 Literature review and hypothesis development

Next, we review the papers that are closely related to ours and we develop three hypotheses.

[6] There are two versions of this index and they capture nine different characteristics of the board that are expected to affect its sensitivity to stakeholder issues. Some notable characteristics include a dummy whether an employee representative sits on the board, whether at least one of the directors serves in the board of a non-profit charity institution (e.g., World Wildlife Fund (WWF)), female ratio of the board, board independence, etc. See Section 5.3 for further details.

2.1 Executive turnovers following shareholder-related corporate misconduct

Legal penalties and market-based disciplining (stock price drop, shareholder activism, reputational penalties, etc.) applied on managers and firms for misconduct can reduce the ex-ante likelihood of corporate misbehavior. Ex-post, firms discipline CEOs mainly by replacing them (Agrawal, Jaffe, and Karpoff (1999), Karpoff, Lee, and Martin (2008a), among others)); the CEO labor market punishes them by reducing their career opportunities (Desai, Hogan, and Wilkins (2006)); and the state penalizes them with fines or imprisonment. Karpoff, Lee, and Martin (2008a) note that such disciplinary measures targeted at culpable individuals, combined with monitoring effects arising from strong corporate governance (Fama and Jensen (1983), Levit and Malenko (2016), Nguyen, Hagendorff, and Eshraghi (2016)) and a stern legal system with firm-level penalties, help to deter misbehavior. Also, corporate accountability reporting (Christensen (2016)), corporate culture (Liu (2016)), the existence of whistleblowers (Dyck, Morse, and Zingales (2010)), and even demographics such as greater female representation in management (Liu (2018)) can be effective in detecting and curbing corporate misbehavior. Additionally, Dyck and Zingales (2002), Miller (2006), and Dyck, Volchkova, and Zingales (2008) highlight the importance of the media in effective corporate governance. On the other hand, unethical managers (Cline, Walkling, and Yore (2018)), CEO connectedness (Khanna, Kim, and Lu (2015)), and greater competitive incentives within the management team (Haß, Müller, and Vergauwe (2015)) can make things worse.

Corporate misbehavior related to a firm's financial statement (earnings restatements, financial misrepresentation, etc.) tend to create pecuniary losses for shareholders over and beyond the sizes of the direct costs ((Karpoff, Lee, and Martin (2008b), Karpoff and Lott (1993)), which suggests that a large portion of this shareholder wealth loss can be interpreted as "reputational" penalties on the firm. Furthermore, legal penalties and investor reactions to misbehavior vary by the type of economic misconduct (Bizjak and Jeffrey (1995), Dyck, Morse, and Zingales (2010), Dyck, Morse, and Zingales (2013), Fich and Shivdasani (2007), Gande and Lewis (2009), Haslem, Hutton, and Smith (2017), Jarrell and Peltzman (1985), Karpoff, Lee, and Martin (2008b), Karpoff, Lott, and Wehrly (2005), Karpoff and Lott (1993), Mitchell and Maloney (1989)). Nonetheless, the common feature of such misconduct is that shareholders are impacted by them, and as a result the corporate boards tend to replace the top executives.

According to Arthaud-Day et al. (2006), CEOs and CFOs are more than twice as likely to leave their job following financial restatements compared to matched counterparts. Desai et al.

(2006) and Collins, Reitenga, and Sanchez (2008) examine accounting restatements and the related class-action lawsuits. They estimate that more than 60% of the firms involved in such type of misreporting in the U.S. replaced a top manager within a few years of the restatement. Karpoff, Lee, and Martin (2008a) examine all 788 financial misrepresentation cases that lead to SEC or DOJ enforcement actions between 1978 and 2006 and report that 93% of the managers identified as responsible for the misconduct lost their job within the end of the violation period. In addition, a large portion of the managers were fined with significant penalties or sent to jail. Similarly, Haslem, Hutton, and Smith (2017) also report far-reaching penalties for CEOs following securities fraud: top executives lose both their jobs and their outside directorships.

Other studies refine and qualify these findings further. Hazarika, Karpoff, and Nahata (2012), for instance, report that forced CEO turnover, but not voluntary CEO turnover, increases following earnings restatements. While shareholder class actions lead to increased CEO turnover in general (Humphery-Jenner (2012)), founder-CEOs are less likely to be replaced than non-founder CEOs following accounting irregularities (Leone and Liu (2010)). Similarly, Beneish, Marshall, and Yang (2017) study CEO turnover in a sample of 427 U.S. firms caught for misreporting and document that CEOs are less likely to be fired when replacement costs are high firm (i.e., firm is performing well or when the CEO is the founder). This suggests that boards consider firm performance[7] and replacement costs when deciding on whether to replace a CEO following a misconduct.

2.2 Executive turnovers following other types of misconduct

The ESG issues that we study are not limited to economic-related misconduct. It is still an open question whether other (non-economic) type of misconduct triggers CEO replacement. Socially questionable managerial indiscretions (sex scandals, etc.) increase the likelihood of forced CEO turnover, but only when an indiscretion leads to reputational penalties for the firm

[7] Overall, firm performance significantly affects the probability of CEO replacement regardless of whether the firm is involved in a misconduct (Weisbach (1988), Warner, Watts, and Wruck (1988), Barro and Barro (1990), Bushman, Dai, and Wang (2010), Eisfeldt and Kuhnen (2013)). Interestingly, factors outside of a CEO's control, such as industry- or market-wide negative performance shocks, also increase the likelihood of CEO turnover (Kaplan and Minton (2006), Jenter and Kanaan (2015)). Huson, Parrino, and Starks (2001) examine whether the nature of CEO turnover has changed over time, as firm's monitoring mechanisms have improved, and report that forced CEO turnover has become more common while the relationship between poor firm performance and CEO turnover remains the same. Poor corporate governance weakens the inverse relation between performance and CEO turnover (Fich and Shivdasani (2006)). Jenter and Lewellen (2021) devise a systematic method of disentangling which CEO turnovers are convoluted by firm performance and which ones are truly forced resignations. We adopt their technique and focus on CEO departures that can be clearly identified as forced resignations or firings by the corporate board.

(Cline, Walkling, and Yore (2018)). Environmental violations typically lead to large legal penalties but minor reputational penalties for the firm (Jones and Rubin (2001), Brady, Evans, and Wehrly (2019), Karpoff, Lott, and Wehrly (2005)). Cai et al. (2020) report that CEOs of firms with CSR concerns are more likely to lose board seats at other firms. Furthermore, Aharony, Liu, and Yawson (2015) study a sample of contractual, antitrust, intellectual property (IP), and environmental lawsuits filed against S&P 1500 firms in the United States Federal Courts between 2000 and 2007. They find that CEO turnover is positively correlated with contractual lawsuits; not correlated at all with antitrust lawsuits; and negatively correlated with IP and environmental lawsuits.

Although, both economic and other types of corporate misbehavior often receive substantial attention from media and non-governmental organizations (NGOs), many ESG issues may not necessarily lead to lawsuits as there could be lack of effective regulation addressing the particular issue (Bénabou and Tirole (2010)). Nonetheless, the negative media attention following socially questionable corporate actions (or inactions) can lead to negative investor reactions (Krüger (2015)); losses in firm value (Fatemi, Glaum, and Kaiser (2018)); higher interest rates on bank loans (Chava (2014)); higher demanded returns (Hong and Kacperczyk (2009)); negative screening or activism by SRI, pension funds, and institutional investors (Hong and Kacperczyk (2009), El Ghoul et al. (2011), Goss and Roberts (2011), Krüger, Sautner, and Starks (2020)); and higher investor activism[8] (Bénabou and Tirole (2010)). Therefore, we hypothesize that CEO turnover rates would be sensitive to high ESG risk, whereby the firm receives intense negative media coverage of an ESG issue.

Hypothesis 1. CEO turnover odds increase after an intense negative media coverage of an ESG issue associated with a firm.

Note that, this hypothesis does not distinguish whether negative media coverage leads to shareholder losses or not. It simply states that intense negative media coverage of stakeholder-related issue is associated with higher CEO turnover odds regardless of the country of the firm or the board stakeholderism of the firm. Media coverage acts as a disciplining mechanism to a corporate governance issue related to stakeholders (a la Dyck and Zingales (2002), Miller (2006)).

[8] For instance, Hartzmark and Sussman (2019) show that, following the publication of the Morningstar Sustainability ratings for funds, low-ESG funds experienced significant outflows, suggesting that investors collectively consider and value sustainability.

2.3 Executive turnovers – International evidence

Only a few prior studies investigate CEO turnovers in an international setting. Defond and Hung (2004) use a sample from 33 countries, and report that CEOs are more likely to be fired following poor performance in countries with strong law enforcement institutions (such as in the Nordic countries and in Netherlands) than in countries with weak law enforcement institutions (Turkey, Greece, etc.). Interestingly, they find that CEO turnover following poor performance does not vary between strong investor protection countries (such as US and UK) and countries with weak investor protection (Mexico, Belgium, Italy, etc.). In a working paper by Burns, Minnick, and Starks (2019), the authors examine CEO turnover across many countries and report that turnover rates vary by a country's investor protection, cultural values, and legal regimes. They also report that poor performance is a significant determinant of CEO turnover in their international sample. Finally, You, Zhang, and Zhang (2018) report that negative news by market-oriented media increases the likelihood of forced CEO turnover in China.

Our second hypothesis focuses on the inherent differences between civil- and common-law countries in terms of their sensitivity to ESG problems. We build on the notion that civil-law countries are more sensitive to stakeholder issues (La Porta et al. (2000), La Porta, Lopez-de-Silanes, and Shleifer (2008)) and firms in these countries score higher on ESG ratings (Liang and Renneboog (2017)). Similarly, Cai, Pan, and Statman (2016) assert that variation in firm-level ESG ratings is explained to a greater extent by country-level factors than by firm characteristics. Liang and Renneboog (2017) provide further evidence that the firms in Scandinavian civil-law countries score the highest on ESG ratings, followed by firms in French civil-law countries, firms in German civil-law countries, and finally, firms in common-law countries score the lowest.

Thus, we conjecture that firms headquartered in civil-law countries would more readily fire their CEOs for ESG failures than firms headquartered in common-law countries. In addition, as stakeholder orientation is viewed more favorably in civil-law countries, we expect that if the media coverage of an ESG issue is intense enough to "shame" the corporate board in front of the public (*shaming* effect), this would have consequences for CEOs in these countries regardless of whether the shareholders suffer a wealth loss. On the other hand, as firms located in common-law countries prioritize shareholder wealth creation as their main focus, we expect boards in these countries to react to ESG incidences by firing the CEO only if the misbehavior translates into a substantial stock price decline (*materiality* effect).

Hypothesis 2A. In common-law countries, negative media coverage (shaming effect) does not lead to CEO turnovers unless it is accompanied by a stock price decline (materiality effect).

Hypothesis 2B. In civil-law countries, negative media coverage (shaming effect) is enough to trigger a CEO turnover regardless of whether it is accompanied by a stock price decline (materiality effect).

2.4 Shareholder- versus stakeholder-orientation of the board

According to traditional economics and the shareholder value approach, firms should focus on maximizing shareholder value (Berle and Means (1932), Friedman (1970)). In contrast, the stakeholder society context holds that firms should internalize also the welfare of their stakeholders (Macintosh (1999), Tirole (2001)). La Porta et al. (2000) argue that the degree to which shareholders' rights are protected depends on the legal origin of a country. In common-law countries, shareholder rights protection is broad, whereas in civil-law countries (e.g., Germany and France), society places higher demands on firms to be stakeholder-oriented (Bénabou and Tirole (2010)). This is mirrored in the construction of firms' governance systems. For instance, German firms follow a two-tier board system, in which stakeholders serve on the supervisory board (Adams and Ferreira (2007)). This provides stakeholders with power to influence corporate actions, which contrasts with the single boards in common-law countries elected solely by shareholders.

Why firms choose to invest in ESG practices is under an ongoing debate. Some papers show that ESG/CSR has a positive impact on firm value (Deng, Kang, and Low (2013), Edmans (2011), Ferrell, Liang, and Renneboog (2016), Servaes and Tamayo (2013), among others) while other papers report contrasting results (Masulis and Reza, 2015; and others). A possible reason is that ESG works as an insurance during economic downturns, as high-ESG firms enjoy higher trust between stakeholders and the firm, and investors and the firm (Lins, Servaes, and Tamayo (2017)). Also, institutional investors, and especially European institutional investors, can drive firms to invest more in ESG practices (Dyck et al. (2019)).

Thus, our third hypothesis relates to the characteristics of the board members and the board's overall predisposition to stakeholder-related issue. In particular, the stakeholder-orientation of a corporate board (regardless of the firm's country), is expected to affect CEO turnover decision. When an ESG incidence hurts only the stakeholders, CEO turnover odds increase disproportionately more in firms with stakeholder-oriented boards:

Hypothesis 3. Stakeholder-oriented boards are more likely to replace a CEO due to the non-pecuniary implications of an ESG incidence (i.e., due to negative media coverage of an ESG issue that is not accompanied by a decline in market value or firm performance).

3 Data sources, samples, and variables

Our analysis focuses on firms which were part of either the S&P 500 or the Stoxx Europe 600 stock index at some point in time during our sampling period (2007-2017) (a total of 1,747 firms). We include also firms delisted from the indexes to avoid survivorship bias. This is especially important for our study as our focus is on negative media events, which could instigate a significant loss of market value, leading to the exclusion of the firm from the index. We use RepRisk for information on firms' risk exposures to ESG issues (see Section 3.2). CEO turnover data are gathered from ExecuComp (US firms) and from CapitalIQ and Orbis (European firms), as well as manually verified using several sources (annual reports, online biographies of executives, etc.) (see Section 3.1). Accounting variables are from COMPUSTAT. Data on total stock returns are from COMPUSTAT (for European firms) and from the Center for Research in Security Prices (CRSP) (for US firms). Data on returns (dividends included) for the S&P 500 are from CRSP, and data on total returns for the country-specific market indexes for European countries are from the WRDS World Indices database. Furthermore, data on institutional ownership are from Factset, and data on board characteristics are from BoardEx. Country-level variables are similar to those used in Liang and Renneboog (2017) and they are attained from sources including World Bank Database, Polity IV, etc. Detailed descriptions of the variables, and their data sources, are presented in Appendix Table A.1.

3.1 CEO turnover

We attain data on CEO turnover in S&P 500 firms from ExecuComp, and manually check and verify the timing of each turnover event. For Stoxx Europe 600 firms, we hand-collect information on CEOs' names and appointment dates using various databases (such as CapitalIQ and Orbis) and various online sources. Whenever a CEO change occurs in a (calendar) year *t*, we keep information for the CEO who is being replaced. If a firm has multiple CEO changes in a year, we remove observations for newly assigned CEOs as we view these CEOs as less likely to be held culpable for the misconduct due to their shorter tenures. We also manually gather information on CEOs' nationality, age, tenure, gender, chairman status, founder status, etc. In addition, for all CEO turnover events in US and Europe, we follow

Hazarika et al. (2012) and go through each turnover and remove those cases in which the company was acquired, merged, or there was a spinoff.[9] The average CEO turnover rate in our cross-country sample in a year is 9.5%. In comparison, Burns, Minnick, and Starks (2019) report an average turnover rate of 11%, and Defond and Hung (2004) report a rate of 15%, for their international samples. The lower turnover rates reported in our and Burns, Minnick, and Starks' (2019) studies are most likely due to the manual screening of CEO turnovers implemented in these studies. Also, the CEO turnover rate in our study is similar to other studies based on US data, such as Jenter and Kanaan (2015).

In addition, in Table 9, we follow the methodology in Jenter and Lewellen (2021) and classify turnovers into turnovers caused by poor performance ("performance-induced" turnover) and turnovers which occur when performance is strong ("other" turnover) and employ these as our dependent variables in multinomial logistic regressions.

In all tests, we gather data on CEOs between 2007 and 2018 (inclusive), as the period for observing risk exposure is between 2007 and 2017 (inclusive) and we track CEO turnover a maximum of $t + 1$ years (or 12 months in the event study) following the peak in RRI in (calendar) year t.[10]

3.2 RepRisk

To measure the intensity of media coverage of an ESG-related issue, we rely on the RepRisk database, which is often used by major banks, financial institutions, and corporations around the world as a due diligence, research, and monitoring tool in their businesses.[11] This database covers risk exposure for more than 120,000 public and private companies in 15 different languages each day. To construct this database, RepRisk screens ESG/stakeholder news reported in the media each day. When a new risk incident occurs, it analyzes the novelty and severity of the incident to estimate the impact it is expected to have on a firm's risk exposure. This process is quantified in the form of a reputational risk index (RRI), and it is

[9] As Burns, Minnick, and Starks (2019) argue, it is difficult to distinguish between voluntary and forced CEO turnover in an international study as cultural differences across countries could affect the willingness of firms to communicate the real reasons behind a CEO replacement. However, in the Internet Appendix Table 8, we classify turnovers as forced versus voluntary turnovers following Peters and Wagner (2014) (we include only the subsample of US firms for which the authors provide data via Wharton Research Data Services), and as "performance-induced" versus "other" turnovers following Jenter and Lewellen (2021).

[10] We measure CEO turnovers in the same year as the RRI peaks as it is possible that boards react quickly to ESG issues by firing the CEO – as illustrated by the anecdotal examples of Volkswagen and BP. In addition, we follow Hazarika, Karpoff, and Nahata (2012) and track CEO turnovers also in the subsequent year following a peak in RRI in year *t*, as there could be some lag between an ESG incidence occurring and the replacement of a CEO.

[11] RepRisk is a Swiss-based company which uses machine learning algorithms to screen the media for stakeholder-related ESG-issues (www.reprisk.com). RepRisk is available via Wharton Research Data Services (WRDS).

mostly based on non-subjective measures such as number of news articles covering a certain ESG issue, the numbers of persons affected by the incident, the statuses and circulations of the newspapers reporting on the incident, etc. The database also includes information on a firm's top five ESG issues and their types, as well as the news counts for the top issues, the news counts for top issues by country, by severity, by reach, etc.

As such, the RRI index captures the negative media attention to ESG issues and hence differs conceptually from traditional measures of ESG and CSR performance metrics (e.g., Thomson Reuters Asset4 ESG scores, MSCI ESG (KLD) index, etc.) in several ways. For instance, ESG and CSR measures typically rely to some degree on self-reported content (such as "sustainability reports", or "sustainability sections" in annual reports). A common critique of such measures is that a firm may be able to influence its ESG score by overstating its ESG/CSR activities (so called greenwashing). In addition, low rankings for a firm on ESG/CSR performance metrics do not necessarily mean that these firms have negative ESG issues (which is the focus of this study), they may simply invest less, or report less, on ESG activities than similar firms. We avoid such problems by relying instead on an objective measure of negative media attention to ESG, a variable which a company does not control directly.[12]

The variable RRI is an integer variable that ranges from -1 to 100. According to RepRisk's classification, values equal to -1 indicate that a firm has no reported issues, values between 0 and 24 indicate low risk exposure, 25 – 49 indicate medium risk exposure, 50 – 59 high risk exposure, 60 – 74 very high risk exposure, and 75 – 100 extremely high risk exposure. If a firm in any given month has new risk incidents, the RRI can go up, depending on the impact (severity, novelty, reach, etc.) of the news. If there are no incidents, the RRI decays at a rate of 25 every two months if the index value is 25 – 100 and at a rate of 25 every eighteen months if the value is -1 – 24. RepRisk notes that larger firms are expected to have values between 25 and 49, even if they have no major issues, due to their larger media coverage compared to smaller firms. However, according to RepRisk's methodology, values of 50 or above indicate that a firm has elevated levels of risk exposure to ESG issues, while values under 50 indicate "normal" levels of risk exposure. We group firm-year observations into three groups depending on the level of risk exposure: (1) normal levels ($-1 \geq RRI \leq 49$), (2) high levels ($50 \geq RRI \leq 59$), and (3) extreme levels ($60 \geq RRI \leq 100$). This procedure follows the RepRisk methodology—except that we include firms with very high and extremely high risk exposure

[12] In fact, in our sample, the correlation between the yearly RepRisk measure (peak RRI in a year) and Thomson Reuters ESG *Total Score* is 0.43, which indicates that firms with higher ESG scores also tend to have higher RRI values.

into the same group (which we name *Extreme risk exposure*) as there are only 13 firm-year observations with extremely high risk exposure in our sample.[13] Our RepRisk data set covers 1,568 of the 1,747 firms listed for at least one year on either the S&P 500 index or the Stoxx Europe 600 index between 2007-2017, which yields a raw sample of 1,568 (firms) · 11 (years) · 12 (months) = 206,976 firm-month-year observations.

To illustrate how the RRI index moves over time, Figure 2 shows the progression of the RRI by month for Volkswagen for year 2015 and portrays how the firm's RRI jumped and reached extreme risk exposure levels in response to the outbreak of the *emission scandal* in late September.

3.3 Methodological issues and variables

We use two separate samples to investigate the relationship between ESG risk and CEO turnover. First, to test the hypothesis on the effects of ESG risk on CEO turnover, as well as to test whether CEO turnover odds following ESG incidences vary by country-specific, or board-specific, factors, we employ a panel data sample (see Section 3.4 for details on the construction of this sample). Second, to test the hypothesis on the effects of market discipline versus shaming by media on CEO turnover, we employ an event study sample (see Section 3.5).

In both approaches, we include as control variables several known determinants of CEO turnover identified by prior literature. We follow Beneish, Marshall, and Yang (2017) and include an indicator variable for whether a CEO is close to retirement (aged 63 years or more), as CEO departures are more likely in such cases, regardless of ESG issues. We further include CEO age and tenure, as longer-tenured executives should have more proven skills and also be more entrenched (Jenter and Kanaan (2015)). Additionally, we include indicator variables for gender, for CEO-Chairman dual position (remaining as Chairman could be a form of window-dressing as the former CEO would still control the board (Beneish, Marshall, and Yang (2017))), and for founder-CEOs (according to Leone and Liu (2010), founders are less likely to be fired following economic misconduct). CEO control variables are measured in year t in all subsequent tests.

We control for firm size by including the natural logarithm of total assets, and for prior performance by including ROA (%). In addition, controlling for prior poor stock performance

[13] These 13 firm-year observations are (listed from highest to lowest RRI): Transocean in 2010; Siemens in 2007; Baxter International in 2008; General Motors in 2014; Equifax in 2017; UBS Group in 2010; Fiat Chrysler Automotives in 2014; Volkswagen in 2015; Walmart in 2008; Rolls-Royce Holdings in 2017; Transocean in 2011; UBS Group in 2011; and Volkswagen in 2014. The average CEO turnover rate in year t or $t + 1$ for this subsample is extremely high; 61.5%.

is important because it has been shown to negatively affect CEO retention (Weisbach (1988), Warner, Watts, and Wruck (1988), Barro and Barro (1990), Jenter and Kanaan (2015), Kaplan and Minton (2006)). Following Beneish, Marshall, and Yang (2017), we do this by including the market-adjusted stock performance for the past two years (monthly compounded) measured through the end of the month ending prior to the month in which the RRI peaks, or an event takes place. However, as Jenter and Lewellen (2021) note, using a linear performance variable can lead to the turnover probability going to zero as performance increases. Thus, we also calculate performance deciles (by year) based on the average industry-adjusted stock returns divided by the standard deviation of the returns for a firm in the yearly [-2, 0] window (Jenter and Lewellen (2021)) and employ this variable as an alternative performance measure in robustness tests. Furthermore, we control for institutional ownership (%) (here we follow Dyck et al. (2019)), and for governance and board characteristics by including variables for board independence (%), board size, succession (factor of directors close to retirement age), and gender ratio (%).[14] All firm-level variables are measured in year $t-1$, except for stock performance which is measured in the monthly [-24, -1] interval relative to a yearly RRI peak, or an event taking place, in month *m* of year *t*.

To account for potential cross-country variation in CEO turnover rates (Defond and Hung (2004)), we include the following time-variant country-level variables: the natural logarithm of GDP per capita, the globalization index (KOF Swiss Federal Institute of Technology Zurich), the Regulatory Quality and the Corruption Control indices (World Bank), the Political Executive Constraints measure (PolityIV), and the Heritage Economic Freedom index (www.heritage.org). Country-level control variables follow those used in Liang and Renneboog (2017) and are measured in calendar year $t-1$ in all subsequent tests.

Unless otherwise specified, all our regressions include calendar year fixed effects to account for potential yearly variation in CEO turnover rates, country fixed effects (based on the country in which the firm is headquartered in), and industry fixed effects (based on two-digit Standard Industry Classification (SIC) codes). In our main tests, we use two-way clustered standard errors by industry (based on two-digit SIC codes) and year to account for potential cross-sectional and serial correlations, and to be consistent with the included fixed effects (Petersen (2009)). Finally, we winsorize all continuous variables at the 1st and 99th percentiles.

[14] As discussed in Beneish, Marshall, and Yang (2017), higher board independence, and smaller and younger boards are associated with firings of CEOs due to poor performance. Liu (2018) finds that a higher board gender ratio is related to a lower number of environmental violations, which could lead boards with a higher ratio of females serving on it to be more likely to fire the CEO following ESG misconduct.

3.4 Panel data sample construction and characteristics

To conform to our annual CEO turnover data, we begin by converting our monthly RRI data to annual data. When an ESG incidence breaks out, the board and major shareholders could prefer to wait and see whether the issue leads to widespread media coverage—reaching a larger portion of potential customers, investors, etc.—before deciding on whether to take action (such as firing the CEO).[15] Thus, we identify, for each firm and calendar year, the month in which the reputational risk is at its highest level. If this procedure yields multiple months with equally high RRIs, we choose the month with the highest jump in RRI. If jumps are equally high, we choose the first observation (timewise). This assures that we time the ESG event with the peak coverage in the media. This yields a potential sample of 1,568 (firms) · 11 (years) = 17,248 observations.

Next, we merge our RepRisk sample with our CEO turnover sample. This yields an unbalanced panel data set consisting of 13,482 firm-year observations for 1,419 firms for years 2007-2017. We then merge this sample with BoardEx data and lose 226 firm-year observations in this process. After merging with firm-level data from COMPUSTAT and FactSet, we lose another 1,211 firm-year observations, and another 915 firm-year observations after merging with stock performance data from CRSP and COMPUSTAT. Finally, we merge with country-level data from different sources (no observations lost). Thus, our final sample is an unbalanced panel data set consisting of 11,094 firm-year observations for a total of 1,194 firms listed on the S&P 500 (n = 6,272) and Stoxx Europe 600 (n = 4,822) indexes for years 2007-2017. Table 1 Panel A shows information on sample construction.

Within this sample, we identify 770 firm-year observations for which a firm's risk exposure to ESG issues goes above normal levels. Of these 770 observations, 436 have high risk exposure to ESG issues, and 334 have extreme risk (321 with very high, and 13 with extremely high). Most firm-year observations (over 93%) have normal levels of risk exposure. Table 1 Panel B provides information regarding the distribution of RRI among our sample firms, Panel C shows the distribution of firms with extreme risk exposure to ESG issues by year, while in Panel D, issues are categorized based on their type of issue (E, S, G).

We contrast firm-years with extreme risk exposure to firm-years with normal or high levels of risk exposure. As shown in Table 2, firm-years with extreme risk exposure, by construction, have higher average RRI: 63.5 versus 19.2 for firm-years with normal or high levels of risk exposure. The exposed firms are larger, and their past stock performance is also significantly

[15] We thank Luc Renneboog for this insightful comment.

lower, possibly due to the impact of the ESG incidences. In addition, firm-years with extreme risk exposure have on average lower levels of institutional ownership, but, interestingly, higher ESG ratings. However, the two subsamples are similar in many other dimensions: prior profitability (ROA), leverage, cash-to-total assets, Market-to-Book value, Tobin's q, and Altman's z-score. Also, firm-year observations with extreme risk exposure have larger boards and higher gender diversity on the board, but the two subsamples are similar in terms of board independence and proportion of directors close to retirement. Finally, CEOs of firms with extreme risk exposure are significantly shorter-tenured than CEOs of firms with normal or high risk exposure. In terms of CEO characteristics like age, gender, close to retirement, and founder status, the two subsamples are quite similar. Also, there are no significant differences between the two subsamples in terms of country-level variables.

In all our subsequent test where we employ our panel data set, the dependent variable is an indicator variable for whether a CEO loses his or her job within the same or the subsequent year of the RRI spike in year *t*.[16]

3.5 Event study sample construction and characteristics

To test our hypothesis on the impact of materiality versus shaming on CEO turnover, we construct a sample of negative ESG events. Each day, RepRisk collects all the news articles on ESG issues about a firm and classifies them by type of issue, severity, reach, and novelty, which provides an objective and quantitative way of assessing the impact of an issue. The variable *severity* ranges from 1-3, with values equal to three representing the highest level of severity (how many people were affected); *reach* is a measure of the influence or readership of the source in which a news article is published in, and ranges from 1-3 where 3 corresponds to highest reach; and *novelty* measures the "newness" of an issue on a scale from 1 to 2, where 2 indicates that the news story was published for the first time in a country. To identify announcement dates for the events, we rely on both the RepRisk database, which includes information on monthly RRI values, and the RepRisk News Item database, which includes

[16] In comparison, Peters and Wagner (2014) and Jenter and Kanaan (2015), who study the link between firm performance and CEO turnover, measure turnover by year; Hazarika, Karpoff, and Nahata (2012), who study the link between CEO turnover and earnings management, measure turnover in the subsequent year of earnings management; Aharony, Liu, and Yawson (2015) use [0, 3] years and [-1, 3] yearly windows; and Beneish, Marshall, and Yang (2017) use a fixed [-6, +12] monthly window in most of their regressions. As shown in the Internet Appendix Table 3, results are similar when we measure CEO turnover in year *t* (i.e., the same calendar year as an incidence occurs).

information on daily news articles on ESG issues.[17] We implement the following testing procedure to identify ESG events:

(i) The start of an ESG event is the month in which the RRI jumps to 60 or above, and the event ends when the RRI again drops below 60. That is, we focus on ESG events for which the risk exposure reaches extreme levels. We use the RepRisk monthly RRI index database to identify events.

(ii) Next, we use the RepRisk News Item database to identify the starting (event) date of each ESG event. Within the first month of an event, we collect information on all news articles published for the first time in a country (i.e., we require *Novelty* to equal two).

(iii) Finally, within that same month, we search for the news article with the highest reach and severity, in that order. If several news articles for the same event have equally high reach and severity, we include the earliest observation. The date of publication of that news article is defined as the event date. Appendix Table A.3 shows an example of the News Item database, and how event dates are identified.

It is worth pointing out that it is possibly more cumbersome to identify exact event dates for ESG issues than in more traditional event studies in which the event date may be more readily identified (such as the filing of a lawsuit). Notably, almost all companies in our sample have at least one news article in a month, and many have several, that refers to an ESG issue. Most of that coverage is considered normal and is usually inconsequential as the RRI index stays low (e.g., below 50). To deal with the difficulty in identifying the exact event date, we follow prior literature (e.g., Krüger (2015)) and employ also wider event windows.

Our procedure identifies 532 ESG events. For Volkswagen and BP (the anecdotal examples used in this paper), we identify the following dates: September 22nd, 2015 for the Volkswagen *emission scandal*, and April 30th, 2010 for the BP *oil spill*. Both events have highest possible severity and reach on the RepRisk scale. We then merge our event sample with information on CEOs, BoardEx, COMPUSTAT, FactSet, and country-level databases which reduces the sample to 433 events. Finally, we estimate cumulative abnormal returns (CAR) using the market model. The estimation period is -270 trading days to -30 trading days before the event date. The proxy for the market return is the return for the market index of the country in which the company is headquartered in. Data for returns on US stocks, and the S&P

[17] Note that our RepRisk Index measure captures all types of ESG-related media coverage regardless of whether it is a clearly defined ESG incidence or a more minor media coverage of an ESG issue that is just a potential future risk.

500 index, are from CRSP. Data for returns on European stocks are from COMPUSTAT Global, and data for returns on European stock indexes are from WRDS World Indices database. Because of some missing data, we are able to calculate abnormal returns for 406 out of the 433 events.

We find that the cumulative average abnormal returns (CAAR) for the [-5, 5] window is -0.54% and statistically significant (t = -2.20, p = 0.029).[18] This is an important finding, as it suggests that the negative ESG events we identify using the RepRisk database have a strong detrimental impact on shareholder value (i.e., the materiality of the event is large). Additionally, it strengthens the validity of our choice to use a news-based database to measure negative ESG/CSR performance, as opposed to using more traditional ESG/CSR rating scores like the MSCI ESG or the Asset4 ESG indices.

When an event occurs, we track CEO turnover in the fixed interval of [-6, 12] months relative to the month in which the event takes place. We use a fixed interval instead of CEO turnover measured by year (as in our panel data approach) as events can occur at any point in time and we are interested in tracking CEO changes relative to the month in which an event takes place. Our choice of interval follows Beneish, Marshall, and Yang (2017) who argue for the inclusion of six months prior to an event as boards could be aware of a firm's ESG issues before the media learns about them and fire the CEO based on this information. In addition, we manually go through each event to understand what type(s) of ESG issue(s) there was, and to retrieve the announcement date of the CEO turnover.

4 Does the likelihood of CEO turnover increase following ESG issues?

In this section, we test our hypothesis on the effects of ESG risk exposure on CEO turnover. We begin by presenting univariate results for our panel data sample. In Table 2, we contrast firm-years with extreme risk exposure (RRI ≥ 60) to firm-years with normal or high levels of risk exposure (RRI < 60). Notably, the indicator variable for whether a CEO is replaced in year t shows that 13.2% of CEOs in firms with extreme risk exposure were replaced, whereas only 9.4% of CEOs in the sample of firms with no issues were replaced. The difference in means is 3.8 percentage points and statistically significant ($p < 0.001$).[19] Similarly, when examining our

[18] These abnormal returns are similar, albeit somewhat lower, to those reported in Krüger (2015) for 1,542 negative CSR events for US firms: he reports a -0.88% CAAR for the [-5, 5] event window and a -1.31% return for the [-10, 10] window.

[19] The p-value is obtained by regressing an indicator variable for whether a CEO is replaced in year t (or in year t or $t + 1$) on a constant and an indicator variable for whether a firm has extreme risk exposure ($60 \leq RRI \leq 100$) in year t with standard errors clustered by industry and year.

main dependent variable used in our panel data regressions, we find that 23.7% of CEOs of firm-years with extreme risk exposure lose their jobs within the same year or the subsequent year, whereas 18.6% of CEOs of firms with normal or high levels lose their jobs. This translates to a statistically significant (p = 0.038) difference of 5.1 percentage points. For performance-induced turnover (Jenter and Lewellen (2021)), the same numbers are 16.4% for the extreme risk exposure subgroup and 11.7% for the subgroup of firms with normal or high risk exposure; a significant difference of 4.4 percentage points (p = 0.001). These univariate results provide preliminary evidence of the linkage between ESG-related news and CEO turnover likelihood.

The correlation matrix is presented in the Internet Appendix Table 1. Notably, the indicator variable for years with extreme risk exposure is positively and significantly correlated with the main dependent variable. Furthermore, the indicator for a CEO being close to retirement, CEO's age, and CEO's tenure (at the firm) are positively and significantly correlated with the CEO turnover indicator, while the indicator variable for founder-CEOs is negatively and significantly correlated. Also, CEOs of poor-performing firms and CEOs of firms with larger boards are more likely to be replaced.

4.1 Multivariate results

We model the probability of a CEO being replaced at firm i in year t or $t + 1$, relative to a firm's peak RRI being measured in year t. Our baseline model is given by equation (1):

$$\Pr(CEO\ replaced\ in\ the\ same\ or\ subsequent\ year = 1_{it}) =$$

$$F\big(\beta_0 + \beta_1 \cdot Extreme\ risk\ exposure_{it} + \boldsymbol{X'}_{it}\delta + \boldsymbol{Z'}_{i,t-1}\gamma + \boldsymbol{C'}_{c,t-1}\varphi + \eta_t + \xi_c + \theta_s\big), \qquad (1)$$

where F(.) is the cumulative logistic distribution, i indicates the firm, c indicates the country, s indicates the industry, and t indicates the year.[20] $\boldsymbol{X}_{it}$ is a vector of CEO-control variables, $\boldsymbol{Z}_{i,t-1}$ is a vector of firm-level accounting, stock performance, governance, and institutional ownership control variables measured in year $t-1$ (except for stock performance which is measured in months [-24, -1] relative to a peak in RRI in month m in year t), and $\boldsymbol{C}_{c,t-1}$ is a vector of time-variant country-level control variables measured in year $t-1$. Year, country, and industry fixed effects are represented by η_t, ξ_c, and θ_s, respectively. The main independent

[20] We follow prior papers investigating CEO turnover and estimate a pooled logit model (Hazarika, Karpoff, and Nahata (2012), Eisfeldt and Kuhnen (2013), Humphery-Jenner (2012), Jenter and Kanaan (2015)) in which we include year, industry, and country fixed effects, and cluster standard errors by industry and year (as Wooldridge (2010) point out, it is important to cluster standard errors when estimating a pooled logit model using panel data). However, in additional tests, we show that our results hold up when we estimate conditional (fixed-effects) logistic regression models (Khanna, Kim, and Lu (2015), Campbell et al. (2011)) as well as linear probability models (OLS panel data models with firm and year fixed effects) (Peters and Wagner (2014)).

variable is an indicator variable for extreme risk exposure ($60 \leq$ RRI ≤ 100) in a year. As we show in Table 3 columns 3 through 6, high risk exposure issues ($50 \leq$ RRI ≤ 59) have no (significant) additional impact on CEO turnover above what normal (no, low, medium) levels of risk exposure have ($-1 \leq$ RRI < 50). Thus, our baseline model contrasts firm-years with extreme risk exposure to firm-years with normal or high risk exposure. In another set of specifications, we use the peak level of RRI in a year, and the peak level of RRI in a year divided by the average RRI of the firm's country (50%) and sector (50%) in the same year, as continuous measures of risk exposure.

Table 3 presents our main results for estimating equation (1) without industry fixed effects (shown under column 1), and our baseline model equation (1) with year, country, and industry fixed effects (under column 2). The coefficient for the variable *Extreme risk exposure* changes from 0.41 (column 1) to 0.46 (column 2) after including industry fixed effects and remains statistically significant ($p < 0.001$). To gauge the economic significance of the main results, we interpret the coefficient for *Extreme risk exposure* in column 2 as an average marginal effect and find that CEOs of firms with extreme risk exposure have an 6.78 ($p_{marginal\ effect} = 0.002$) percentage points higher probability of losing their job in the same or the subsequent year (24.6 percentage points versus 17.9).[21] Interpreting the same coefficient as an odds ratio suggests that if a firm has extreme risk exposure (= 1) in a year, this multiplies the odds of a CEO being replaced by, on average, 1.587 (i.e., 58.7%). These results provide strong support for the hypothesis that CEOs are replaced for ESG incidences.[22]

A Hosmer-Lemeshow (Pearson goodness-of-fit) test indicates that the data in column 2 (our baseline model) fit the model well ($p = 0.482$). The area under the ROC-curve for this specification is 0.730. Including the *Extreme risk exposure* indicator variable significantly improves the model in column 2: a likelihood ratio test returns a Chi-squared value of 7.61 which translates to a p-value of 0.006 with one degree of freedom.

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[21] The marginal effect is measured as the average marginal effect (average adjusted predictions) for the indicator variable for *Extreme risk exposure*. It is attained by calculating the difference between the probability of CEO turnover if a firm would not have had extreme risk exposure (= 0) in a year and the probability that the same CEO is replaced if the firm would have had extreme risk exposure (= 1) for each observation, leaving all other variables unchanged, and then averaging these differences for the whole sample. In comparison, calculating marginal effects at the means, where the other independent variables are held at their means, yields a 6.81 points higher probability for CEOs of firms with extreme risk exposure. In the remainder of this paper, if not mentioned otherwise, we report average marginal effects (average adjusted predictions).

[22] The number of observations included in the logistic regression models are lower than the number of observations in the full sample as some fixed industry and country fixed effects perfectly predict failure. In addition, there are some missing values for some of the controls included in the regressions. Stepwise regressions, where fixed effects and controls are added stepwise, are shown in the Internet Appendix Table 2.

In columns 3 through 6, we find that the coefficients for *High risk exposure* vary between 0.24 and 0.25 and are not statistically significant at conventional levels in any of the regressions. This suggests that high risk exposure does not have any incremental impact on CEO turnover above and beyond what normal levels of risk exposure have. Thus, in the remainder of the paper, we use the indicator variable *Extreme risk exposure* as our main independent variable.

In column 7, we use the level of RRI as main independent variable and find that the coefficient for this variable is 0.008 but only borderline significant. The economic interpretation of this coefficient suggests that when the RRI index increases by one standard deviation (17.79) this multiplies the odds of a CEO being replaced by 1.152, all else equal. Finally, in column 8, we include the level of peak RRI in a year divided by the average RRI level of the firm's industry (50%) and country (50%) in the same year. The coefficient for this variable is 0.132 but again borderline significant. Overall, the lower significance levels for the continuous RRI variables in columns 7 and 8 compared to the significance level for *Extreme risk exposure* in column 2 suggest that the relationship between ESG risk and CEO turnover is non-linear. Simply put, only more severe cases of ESG issues appear to have a significant impact on the job longevity of CEOs.

The coefficients for the control variables are mostly as expected: older CEOs and the ones closer to retirement are significantly more likely to be replaced; founder-CEOs are significantly less likely (consistent with Leone and Liu (2010) and Beneish, Marshall, and Yang (2017); CEOs of poor performing firms (measured as market-adjusted stock performance) are significantly more likely to be replaced (consistent with Beneish, Marshall, and Yang (2017), Jenter and Kanaan (2015), and Warner, Watts, and Wruck (1988)). Also, the coefficient for CEOs who are also Chairman of the Board enters negatively (but not significantly) (consistent with Beneish, Marshall, and Yang (2017)), and the coefficient for longer-tenured CEOs enter positively.

To convey the effects that higher levels of risk exposure have on the probability of a CEO being replaced, we graph the marginal effects at representative values. We first divide the continuous variable RRI into intervals. The length of each interval is five RRI units, except for the first interval in which we include firms with RRI values equal to -1 or 0, and the last interval in which we include also observations for which the RRI exceeds 80 (as only two observations ever exceed RRI = 80). We then estimate equation (1) using firms belonging to the first interval as the benchmark group and include indicator variables for the remaining intervals (groups). Finally, we calculate the average marginal effects (at representative values) for each group and plot the estimated probabilities of CEO turnover in year t or $t + 1$. As shown in Figure 3, although the probabilities are on elevated levels for values above 50, the probability of CEO turnover starts to increase rapidly when the RRI reaches 60.

4.1.1 Robustness checks

Next, we conduct a series of robustness tests. First, we rerun our equation (1), using an indicator variable for whether a CEO loses his/her position in year *t* as the dependent variable. We find similar results as in our main specification (see the Internet Appendix Table 3). For instance, the coefficient for *Extreme risk exposure* in Column 1 is 0.57 and statistically significant ($p = 0.008$).

Second, it is possible that our results are driven by firms that are both involved in ESG incidences and have older CEOs who would have been replaced irrespective of whether the ESG incidence occurred. Or that CEOs who are close to retirement age are the ones who are replaced following ESG failures, i.e., that an incidence provides an opportunity for the board to speed up a looming CEO transition. To rule out such alternative explanations, we estimate in the Internet Appendix Table 4 column 1 the baseline model but exclude CEOs who are close to retirement (63 years or older) from the analysis. We find that the coefficient for *Extreme risk exposure* is 0.41 and remains statistically significant ($p = 0.007$). That is, our results are not driven by older CEOs being replaced.

In column 2, we estimate the baseline regression but include a firm's lagged ESG performance (the *Total Score* provided by Asset4 ESG by Thomson Reuters Eikon) as an additional control variable. *Total Score* measures the ESG performance without correcting for the impact of ESG controversies. We do not include this variable in our main analysis as we would lose almost 2,000 firm-year observations (depending on column and regression) due to missing observations for ESG data. As shown in column 2, the lagged ESG score enters positively, but is only borderline significant, and the inclusion of this variable does not change our conclusions: the coefficient for *Extreme risk exposure* is 0.47 and remains significant ($p = 0.003$). In the Internet Appendix Table 5, we re-estimate the full Table 3 including the lagged ESG score and find similar results.[23]

In untabulated tests, we re-estimate column 2 in Table 3 (equation (1)) but include industry fixed effects based on four-digit instead of two-digit SIC codes, and change clustering accordingly. Inference remains unchanged: the coefficient for *Extreme risk exposure* changes to 0.60 with a z-statistic of 3.52 ($z = 3.36$ when clustering at year-, industry-, and country-level).

[23] Results for including the ESG variable in all regressions in the paper are qualitatively the same as when we leave it out. These results are available upon request.

The marginal effect of this coefficient implies that the likelihood of CEO turnover is roughly 9 percentage points higher following ESG failures. Also, changing clustering to firm (or industry, country, and year) does not change our main results: the z-statistic for *Extreme risk exposure* changes from 3.49 to 2.44 (3.41) when estimating equation (1).

Finally, in the Internet Appendix Table 8 column 1, we find that ESG risk increases the likelihood of CEO turnover when performance has been poor ("performance-induced"), but also when it has been strong ("other" turnover; Jenter and Lewellen (2021)). This latter finding indicates that some boards appear to treat ESG issues similarly to a personal scandal of a CEO. However, in Table 9, we find that it is in fact only firms with more stakeholder-oriented boards which appear to replace CEOs following ESG issues when performance remains strong. In column 2, we find that the likelihood of forced, but not voluntary, CEO turnover (Peters and Wagner (2014)) goes up following ESG risk in the subsample containing only US firms, which indicates that CEOs are in fact fired for ESG failures.

4.2 Alternative estimation methods

In Table 4, we test whether our main results hold up when using alternative estimation methods. We start by showing that estimating a conditional (fixed effects) logistic regression model (grouped by the variable *Industry*) with similar fixed effects as in our baseline model equation (1) leaves our main findings intact (column 1). In column 2, we estimate equation (1) but replace our linear stock performance measure with performance deciles (by year) calculated as the industry-adjusted stock returns divided by the monthly standard deviations of returns for the yearly interval [-2, 0] (Jenter and Lewellen (2021)) and find that the coefficient for *Extreme risk exposure* is 0.43 and remains statistically significant (p = 0.002).[24] In column 3, we estimate equation (1) as a (pooled) linear probability model (LPM); results hold. In column 4, we include country-year and industry-year interacted fixed effects in our baseline model. This allows us to control for potential country- or industry-specific events occurring in a given year (such as new regulation) and which could have affected CEO turnover rates. We exclude all country time-variant control variables as the country-year interacted fixed effects capture this variation. Again, we find that the coefficient for *Extreme risk exposure* remains positive and significant.

[24] The coefficients for the deciles enter as expected: -0.29 for decile 2, -0.20 for decile 3, -0.33 for decile 4, -0.40 for decile 5, -0.53 for decile 6, -0.46 for decile 7, -0.67 for decile 8, -0.65 for decile 9, and -0.66 for decile 10 (decile 1 is the benchmark group). The coefficients for the indicator variables for deciles 4 through 10 are significant at the 5% level.

Next, our findings could be driven by endogeneity bias. Firms that are more inclined to fire their CEO could also be more likely to end up in our ESG violation sample, or our results could be driven by industry- or size-related factors. To alleviate such concerns, we estimate a conditional (fixed effects) logistic regression model with firm (and year) fixed effects (excluding country and industry fixed effects, but including all CEO-, firm-, and country-level control variables) in column 5. Simply put, we track the same firm over time. We change clustering to firm and year (Petersen (2009)). The coefficient for *Extreme risk exposure* is 0.62 and remains statistically significant (p = 0.036). Interpreting this coefficient as an odds ratio suggests that following extreme risk exposure, the odds of a CEO being replaced multiplies by 1.860, all else equal.

Finally, a drawback with using a conditional logistic regression model is that any such group for which there is no variation for the dependent variable (i.e., a firm does not fire its CEO in any of the years it enters the panel data sample, or it fires its CEO in each year) is excluded from the analysis. This considerably reduces our sample size (to n = 6,790). Thus, we also estimate a panel data logistic regression model with random firm (and year fixed) effects (column 6); a LPM (OLS panel regression) with firm (and year) fixed effects (column 7); and a LPM with random firm (and fixed year) effects (column 8). For the random effects models, we are forced to change clustering to only at the firm-level as panels are not otherwise nested within clusters. Again, the coefficient for the *Extreme risk exposure* variable remains positive and significant across all these columns. Overall, these results provide further support for the hypothesis that CEO turnover is sensitive to ESG risk.

4.3 Kink Regression Discontinuity Design

A potential criticism of our research approach is that our choice of cutoff (RRI = 60), which is based on RepRisk's methodology, is somehow endogenously chosen. To show that this cutoff is empirically motivated—and to explore the causal effects (Card et al., 2015, p. 2456) of negative ESG-related news on consequent CEO turnover—we employ a kink regression discontinuity (RD) design. We use CEO turnover in year t or $t + 1$ as our main dependent variable, the running variable is the highest level for the continuous RRI index in year t, and the treatment parameter is the cutoff for extreme risk exposure (RRI = 60). Instead of a fuzzy RD design, we rely on a sharp RD design as the level of negative media attention required for a firm's risk exposure to reach extreme levels is strictly determined. An important assumption of RD designs is that individuals (in our case firms) cannot precisely manipulate their treatment status around the cutoff (Lee and Lemieux (2010)). This assumption is likely to hold in our setup, as firms in our sample should not be able to directly influence the degree to which the media reports on a specific ESG incidence.

The kink RD design is used to compare the change in the slope (the change in the derivative) at the cutoff, whereas the (jump) RD design is used to compare the change in the level (i.e., the jump) at the cutoff (Card et al. (2015)). We expect no significant jump in CEO turnover probability at the cutoff for RRI = 60 as, in practice, it is unlikely that boards would be able to perfectly distinguish between the severity of negative media attention for RRI values lying very close to, but on each side of, the cutoff. However, if ESG risk is consequential for CEO job longevity, we expect there to be a rapid increase (a slope change) in CEO turnover probability following extreme risk exposure. Thus, we employ a kink RD design.

We begin by showing RD plots in Figure 3, where the cutoff is RRI = 60. The sample period covers all 11,094 firm-year observations between 2007-2017 (CEO turnover is tracked in years 2007-2018). In plots (a) and (c), we use evenly-spaced binning and the number of bins is chosen using the Integrated Mean Square Error (IMSE) method Calonico, Cattaneo, and Titiunik (2015). In plots (b) and (d), we manually choose the number of bins (ad-hoc) so that the average bin length, expressed in RRI units, is two. As depicted in plots (a) and (b), where we fit no curves, there is a clear upward trend in the bins on the right-hand side of the cutoff. Furthermore, in plots (c) and (d), where we fit second-order polynomial curves, the slopes of the fitted curves shift from being relatively flat to being steep upward sloping when RRI reaches extreme risk exposure levels. This suggests that there is a slope change at RRI = 60.

In Table 5, we estimate kink RD design models where the dependent variable is CEO turnover in year t or $t + 1$, the running variable is the continuous RRI index in year t, and the cutoff is extreme risk exposure (RRI = 60). We follow Hartzmark and Sussman (2019) and report, for each estimate, both the conventional RD estimate based on the conventional variance estimator and the bias-corrected RD estimate based on the robust variance estimator (Calonico, Cattaneo, and Titiunik (2014)), respectively. In columns 1-4, we show results for local linear regressions using a first-order (p = 1) polynomial for point estimation, while in columns 5-8, we show results for local quadratic regressions using a second-order (p = 2) polynomial. In all columns, bandwidths are optimally chosen using the common mean square error (MSE) bandwidth selector (Calonico, Cattaneo, and Titiunik (2014)). As Hartzmark and Sussman (2019) point out, results from RD designs may depend on a number of ad-hoc choices such as the clustering of standard errors (changing clustering in RD designs alters bandwidths, and, hence, estimates). We follow their approach and correct standard errors for heteroskedasticity using the nearest neighbor variance estimator in columns 1 and 5, and cluster standard errors in the remaining columns. In columns 3 and 7, we cluster standard errors by industry (based on two-digit SIC codes), while in columns 4 and 8, we use clustering at the firm-level. In addition, as our running variable is discrete, we cluster standard errors by the running variable RRI in columns 2 and 6 (Lee and Card (2008)). All columns include year, industry, and country fixed effects. As shown in Panel A, we find that, across all columns, both conventional and robust bias-corrected RD estimates are positive with coefficients ranging from 0.056 to 0.200. In addition, all coefficients are statistically significant at the 5% level with z-statistics ranging from 2.07 to 4.64. This suggests that there is a significant change in the slope of CEO turnover probability which occurs at the RepRisk-based cutoff for extreme risk exposure (RRI = 60).

We then turn to investigate alternative cutoffs using a kink RD design with multiple cumulative cutoffs Cattaneo et al. (2016). In Panel B, we include, besides the cutoff for extreme risk exposure firms (RRI = 60), also cutoffs for high risk exposure firms (RRI = 50) and arbitrarily chosen cutoffs for RRI = 40 and RRI = 70, respectively. We find that none of the estimates for the alternative cutoffs for RRI = 50 and RRI = 40 are statistically significant, and only three out of eight estimates for the RRI = 70 cutoff are significant (the estimates and their standard errors for the RRI = 60 cutoff are the same as in Panel A). This indicates that the slope change in CEO turnover probability occurs around the cutoff for extreme risk exposure, and not at lower RRI values, further motivating the use of the *Extreme risk exposure* as our main variable of interest in the analysis in this paper.[25] Moreover, the results in this section point towards the existence of a causal relationship between negative ESG-related media attention and consequent CEO turnover.

[25] As Hartzmark and Sussman (2019) point out, RD design results depend on several ad-hoc choices. Thus, we perform an array of robustness tests in the Internet Appendix. First, in the Internet Appendix Table 9, we re-estimate the table excluding fixed effects and find that results in both panels A and B hold. Second, we repeat the analysis (including fixed effects) but change the bandwidth selector to the one common MSE-optimal selector for the sum of regression estimates (Calonico et al. (2019)) in the Internet Appendix Table 10; to the two different MSE-optimal bandwidth selectors for the RD treatment effect estimator (Calonico, Cattaneo, and Farrell (2020)) in the Internet Appendix Table 11; and to the one common coverage error rate (CER)-optimal selector (Calonico, Cattaneo, and Farrell (2020)) in the Internet Appendix Table 12, respectively. Employing the first selector yields similar estimates for the RRI = 60 cutoff as those reported in Table 5 (coefficients range from 0.049 to 0.184, and *z*-statistics from 2.09 to 3.19). When employing the two different MSE-optimal bandwidth selector, eight of the sixteen estimates for the RRI = 60 cutoff are significant at the 5%-level (*z*-statistics range from 1.97 to 2.97), four are borderline significant, and the remaining four are not significant. All estimates are positive. When we use the CER selector, fourteen of sixteen estimates are positive and significant at the 5%-level (*z*-statistics range from 2.11 to 6.54) while the remaining two estimates are positive but not significant. Finally, inference in Table 5 remains unchanged when we employ clustering at the country-level (untabulated results) (estimates range from 0.054 to 0.205, and *z*-statistics from 2.74 to 4.88).

4.4 By ESG type

Our main independent variable measures risks for the three types of ESG issues combined. It is possible that by pooling these issues together, results may be biased if only one type impacts CEO turnover while others do not. Thus, we estimate equation (1) using subsamples for the different types of ESG issues.

We use the variables *Epercentage (%)*, *Spercentage (%)*, and *Gpercentage (%)*—the variables indicate the proportion of E, S, and G related risk incidents relative to all risk incidents, respectively, that make up the current RRI—to assign firms with extreme risk exposure into four groups: (1) Environmental, (2) Social, (3) Stakeholder (E and S) issues[26], and (4) Governance. Grouping is based on which of the variables has the highest value in the month in which the RRI peaks in a year. If the percentages for two, or three, of the groups are equally high, the indicator variables for both, or all three, groups equal one (i.e., groups are not mutually exclusive). It is worth pointing out that even if an issue is defined as, for instance, a G issue, this seldom means that the company in that month has no risk exposure to E or S issues. It simply means that the risk exposure is predominantly due to G concerns.[27] Of the firm-year observations with extreme risk exposure, we identify 60 as E issues, 112 as S issues, 171 as Stakeholder issues, and 166 as G issues.

In Table 6, we find that both Stakeholder and Governance issues, respectively, lead to a significantly higher likelihood of CEOs being replaced. Environmental and Social issues on their own do not appear to significantly (at the 5% level) impact CEO turnover, but when pooled together the effect is significant (indicating that the non-results for E and S types when measured individually may be driven by sample size issues). Interpreting the coefficients in columns 1-4 as marginal effects suggest that CEOs are 8.8 percentage points more likely to be replaced following E issues (not significant); 5.9 points following S issues (borderline significant); 7.1 points following Stakeholder issues (significant at 5% level); and 6.6 points following G issues (significant at 5% level).

In columns 5-8, we contrast firm-years with high risk exposure to firm-years with normal risk exposure and find that, across all columns, the coefficients for *High risk exposure* are

[26] As Liang and Renneboog (2017) point out, environmental (E) and social (S) issues tend to relate more to "nonfinancial stakeholders", while governance (G) issues relate more to shareholders. Hence, E and S issues are often pooled together in ESG studies.

[27] For instance, Volkswagen's *emission scandal* in September 2015 is defined as a G issue since the variable *Gpercentage (%)* equals 60% which is higher than the values for the variables *Epercentage (%)* (21%) and *Spercentage (%)* (19%), respectively.

positive but not significant. That is, CEO turnover is not affected by high risk exposure to any of the types of ESG issues.

4.5 By legal origin

We then turn to test the relationship between country-level factors—including legal origin, shareholder protection, public sector ethics, etc.—and CEO turnover rates following ESG failures. We follow La Porta et al. (2008) and divide firms into five groups: firms headquartered in (1) English common-law countries, (2) French civil-law countries, (3) German civil-law countries, (4) Scandinavian civil-law countries, and (5) Socialist countries. Of the original sample consisting of 11,094 firm-year observations, we identify 7,647 as English common-law countries, 1,610 as French civil-law countries, 1,198 as German civil-law countries, 617 as Scandinavian civil-law countries, and 22 as Socialist countries. In the remainder of the analysis in this section, observations for Socialist countries are left out.[28]

We identify 227 observations with recorded extreme risk exposure for firms located in English common-law countries, whereas the number for firms in civil-law countries is 107 (36 in French civil-law countries, 64 in German civil-law countries, and only 7 in Scandinavian civil-law countries). In un-tabulated univariate results, we find that following extreme risk exposure, 20.7% of CEOs of firms located in common-law countries are replaced in year *t* or *t + 1*. The same number for firms located in civil-law countries is 29.9% (33.3% for French civil-law firms, 29.7% for German civil-law firms, and 14.3% for Scandinavian civil-law firms). For the subsample of firms experiencing extreme risk exposure in a year, the marginal effect of CEO turnover, conditional solely on the legal origin of the country, is 9.2 percentage points higher ($p_{marginal} < 0.001$) for firms in civil-law versus in common-law countries.[29] This univariate result suggests that CEOs of civil-law country firms are more likely to be replaced following extreme risk exposure than CEOs of common-law country firms.

However, to verify this result in a more controlled setting, we proceed with multivariate regression tests. In the Internet Appendix Table 6 Panels A and B, we estimate equation (1) but include also an indicator variable for civil-law countries, and the interaction term between this

[28] We use Appendix B in Liang and Renneboog (2017) as reference for determining a country's legal origin. Czech Republic is the only country in our sample defined as a "Socialist" country. As Liang and Renneboog (2017, p.871) mention, Socialist countries are "in transition and not in equilibrium" (Aghion et al. (2010)). In un-tabulated tests (available upon request), we include Socialist countries in the analysis (also for Table 7) and find that results are unchanged.

[29] We estimate a logit model where the dependent variable is *CEO replaced in year t or t + 1* and the independent variable is an indicator variable for civil-law countries. We include a constant and cluster standard errors by industry and year. Finally, we include only firm-years with extreme risk exposure.

variable and *Extreme risk exposure*. We exclude country fixed effects (as the civil-law dummy is included). Consistent with the findings in Table 3, we find that the coefficient for the indicator variable *Extreme risk exposure* is positive and significant (p = 0.008). However, the coefficient for the interaction term is not significant, which suggests that the likelihood of CEO turnover following ESG incidences is not significantly higher for CEO of firms located in civil-law versus in common-law countries, after controlling for known determinants of CEO turnover. The results are the same when we contrast the type of civil-law legal origins (French, German, and Scandinavian) to the common-law legal origin.

4.5.1 Investor protection, economic freedom, political institutions, culture, etc.

Furthermore, in the Internet Appendix Table 6 Panels C and D, we repeat the analysis above but replace the indicator variable for civil-law countries with an indicator variable for countries which score greater or equal to the median for measures on investor protection (the anti-director rights index (ADRI) by Djankov et al. (2008), Spamann (2010), and La Porta et al. (1998), respectively; and the anti-self-dealing index by Djankov et al. (2008)); on the Public Sector Ethics, the Corporate Governance, and the Corporate Sector Ethics indices by Kaufmann (2004), respectively; on the Employment Laws, the Collective Bargaining, and the Social Security indices by Botero et al. (2004), respectively; and on the six Hofstede et al. (1991) cultural country-level measures, respectively. Again, we do not find that these proxies for differences between countries explain why CEOs are replaced following ESG failures.[30] As long as the media covers the ESG issue extremely negatively (RRI spikes), the CEOs get punished regardless of the country characteristics.

5 Prevention, Disciplining, Shaming, and Boards

5.1 Probability of being involved in an extreme ESG issue and country characteristics

In the previous section, we report that *ex-post* penalties are similar in common- and civil-law countries following ESG failures. In this section, we investigate whether the *ex-ante* preventive measures implemented in civil-law countries Liang and Renneboog (2017), together with higher expectations upon firms to behave socially responsibly in these countries Bénabou and Tirole (2010), deter ESG-related misbehavior. That is, we examine whether firms in civil-law countries are less likely to be involved in extreme risk exposure ESG issues.

[30] These results are in line with Adams and Licht (2019), who report that the degree to which boards are oriented towards "shareholderism" depends on the personal and cultural values of the directors serving on the board, and is not correlated with e.g., the legal origin of a firm's home country, measures on investor protection, etc.

We, essentially, estimate a logistic regression model where the dependent variable is an indicator for whether a firm has an extreme risk exposure issue in year *t*, and zero otherwise. As control variables, we include the same variables as in our baseline model in equation (1), as well as industry and year fixed effects (country fixed effects are left out as the civil-law dummy is included). Standard errors are clustered by industry and year. We estimate the following equation:

$$\Pr(Extreme\ risk\ exposure = 1_{it}) =$$
$$F\big(\beta_0 + \beta_1 \cdot Civil - law\ country_i + \boldsymbol{X'}_{it}\delta + \boldsymbol{Z'}_{i,t-1}\gamma + \boldsymbol{C'}_{c,t-1}\varphi + \eta_t + \theta_s\big), \quad (2)$$

where F(.) is the cumulative logistic distribution, *i* indicates the firm, *c* indicates the country, *s* indicates the industry, and *t* indicates the year. $\boldsymbol{X}_{it}$ is a vector of CEO-control variables, $\boldsymbol{Z}_{i,t-1}$ is a vector of firm-level accounting, stock performance, governance, and institutional ownership control variables measured in year $t - 1$ (stock performance in past two years), and $\boldsymbol{C}_{c,t-1}$ is a vector of time-variant country-level control variables measured in year $t - 1$. Year and industry fixed effects are represented by η_t and θ_s, respectively.

In Panel A of Table 7, we present our main results for this analysis. As shown in column 1, there is no difference in the likelihood of firms being involved in extreme risk exposure issues between firms located in civil- and common-law countries. However, when we divide the civil-law indicator variable into the subtypes of civil-law legal origins (French, German, or Scandinavian) in column 2, we find that firms located in French civil-law countries are significantly less likely, and, in contrast, firms in German civil-law countries are significantly more likely, to have extreme risk exposure in a year than firms in common-law countries. Finally, we find no difference in the likelihoods of experiencing extreme risk exposure in a year between firms in Scandinavian civil-law countries and firms in common-law countries.[31]

In Panel B, we focus on country-level differences with respect to investor protection (Djankov et al. (2008), Spamann (2010)), and to public sector ethics, and corporate governance Kaufmann (2004), respectively. We do not find differences in the probability of a firm having extreme risk exposure using these measures, except that firms located in countries that score high on the anti-self dealing index (Djankov et al. (2008)) are significantly less likely to be involved in extreme ESG issues.

[31] It is worth pointing out that the sample of firms with extreme risk exposure in Scandinavian civil-law countries is very small, $n = 7$, which makes inference problematic.

As reported in the Internet Appendix Table 7, when we contrast countries that score greater or equal to the median to countries that score lower than the median on the (original) anti-director rights index (La Porta et al. (1998)), the employment laws, the collective bargaining, and the social security indices (Botero et al. (2004)), and the corporate sector ethics index (Kaufmann (2004)), respectively, we find no significant differences in the likelihood of firms experiencing extreme risk exposure in a year. Finally, in Panel B, we employ the six Hofstede measures, respectively, as proxies for a country's cultural factors. Again, we do not find any differences in the probability of extreme risk exposure.

Taken together, these results indicate that while there appear to be some differences across countries, and between countries with different legal origins, in ex-ante preventive mechanisms, the ex-post penalties for ESG misbehavior are very similar across countries (and legal origins). A possible explanation for the finding that ex-post penalties are similar is that although civil-law countries tend to be more stakeholder-oriented, and their firms score higher on ESG, the effect this has on ex-post penalties (in terms of being more likely to replace a CEO for an ESG failure) is balanced out by common-law countries relying more on ex-post disciplining of corporate misbehavior in general.

5.2 Materiality versus Shaming

Our results so far show that negative ESG-related news in the media in general leads to an increased probability of CEO turnover. In this section, we test the hypothesis that the boards of firms located in common-law countries react only if the materiality (stock price decline) of an ESG event is substantial, while boards in stakeholder-oriented civil-law countries respond also to the media shaming (negative media publicity) of an event regardless of whether the incident leads to a stock decline. Notably, the stock price decline captures the pecuniary costs associated with an incidence (both direct costs such as legal penalties and compliance costs and indirect costs such as reputational penalties), whereas our shaming measure should capture the non-pecuniary implications of an incidence on a misbehaving firm Dupont and Karpoff (2020).

Using the event study sample (n = 406) described in Section 3.5, we find that the correlation between *CAR[-5, 5]* and CEO turnover within the [-6, 12] months window is -0.086 (p = 0.091), which suggests that CEO turnover around ESG events is linked to the impact they have on shareholders. Furthermore, media attention is also strongly linked to CEO turnover: the correlation between the indicator variable for CEO turnover and the RRI index level is 0.131 (p = 0.008).

We also conduct a multivariate analysis using different CARs and a measure for "Pure Shaming" as main independent variables. *Pure Shaming* is obtained by orthogonalizing the CAR variable with respect to the RRI index variable. That is, *Pure Shaming* is the residuals from an OLS regression model (no constant term) where the dependent variable is the continuous RRI index variable and the independent variable is the respective CAR (both variables are winsorized at 1st and 99th percentiles). By definition, *Pure Shaming* captures the incremental effect of media coverage (i.e., stakeholder-related social pressure; *shaming* effect) on CEO turnover probability above and beyond the stock price performance (i.e., shareholder wealth loss; *materiality* effect). Across all columns, we include the same control variables as in equation (1), as well as industry and year fixed effects.[32] Standard errors are clustered by industry and year.

The results from logistic regressions models in which we regress the 3-day (*CAR[-1, 1]*), 5-day (*CAR[-2, 2]*), and 15-day (*CAR[-7, 7]*) event window CARs, respectively, and *Pure Shaming*, on an indicator variable for whether a CEO loses his or her job are presented in Table 8. Columns 1, 4, and 7 show results for the full samples. We find that the coefficients for the CAR variables are, as expected, negative whereas they are positive for the *Pure Shaming* variable. That is, CEOs are replaced both because of the losses that occur in shareholder wealth due to the ESG events (market discipline) and because of the level of media attention (orthogonalized RRI risk measure is high).

In columns 2, 5, and 8, we include only firms located in common-law countries. As shown across all three columns, the coefficients for the CARs are negative (and significant for the longer CAR intervals), while the coefficients for *Pure Shaming* is positive but not significant. The coefficient for the *CAR[-7, 7]* in column 2 suggests that a one standard deviation (4.59) decrease in the variable (i.e., a negative investor reaction) multiplies the odds of a CEO being replaced by 3.45 (the standardized coefficient is -1.24, i.e., the odds increase by ($e^{-(-1.24)}$)). That is, CEOs of firms located in common-law countries are replaced following ESG events only when the issues have a detrimental impact on shareholder wealth. In contrast, in civil-law

[32] In our choice of fixed effects, we follow Beneish, Marshall, and Yang (2017), who include year and industry fixed effects in robustness tests but present their main results without fixed effects included. Their sample size is very similar to ours; 427 events compared to our 406. We do not apply country fixed effects as we divided the full sample into subsamples based on common- versus civil-law countries, and as some of the logits for these subsamples do not reach convergence because of small sample sizes.

countries (columns 3, 6, and 9), the coefficients for *Pure Shaming* are positive and significant and the coefficients for CARs are negative and significant across all columns.[33]

An important result emerges from the analyses in this section. While in the more stakeholder-oriented civil-law countries, the ESG-related CEO firings are not driven solely by shareholder wealth losses at misbehaving firms, in the shareholder-oriented common-law countries, this appears to be the main driver for why directors decide to fire the CEO following ESG failures. *Pure Shaming* is positive and significant in regressions for the civil-law countries, while it is positive but not significant in the regressions including firms located in common-law countries. Also, the smaller sample sizes in the columns for the civil-law subsample than in the columns for the common-law subsample, together with the coefficients for *CARs* and *Pure Shaming* being statistically significant across all columns for civil-law countries, indicate that in civil-law countries the boards are more sensitive to the media coverage of the ESG failures. Indeed, investigating the time it takes for a CEO to be replaced following a peak in media coverage of the ESG issue (peak RRI), we find that in civil-law countries CEOs are replaced much faster (within 1.70 months) than the common-law countries (3.09 months); the average for the whole sample is 2.42 months.

These results suggest that media's role in exerting pressure on executives and directors following ESG-related corporate misbehavior (Dyck and Zingales (2002)) has a larger effect on the behavior of boards following these issues in civil-law than in common-law countries. Put differently, the increased sensitivity of the corporate boards in civil-law countries to media coverage of ESG issues suggests that the media can play a much larger role in those countries in advocating stakeholder rights and disciplining managerial behavior. Overall, these findings corroborate our hypothesis that while market-based disciplining through shareholder wealth loss is effective in both civil- and common-law countries, shaming by stakeholders (public opinion as formed by the media) seems to have a distinct effect on its own only in civil-law countries.

5.3 Board Stakeholderism

We then turn to examine another potential channel for why CEOs are replaced following ESG incidences, namely, the degree of stakeholder-orientation of a board. Here, we use a board-level approach instead of a country-level approach as firms within the same country, or within

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[33] The variable *Gender* is dropped in all regressions as female = 1 perfectly predicts failure (almost all CEOs in the sample are males). Also, *Political Executive Constraints* is dropped from the regressions for the common-law subsample because of lack of variation, and *Founder-CEO is* dropped as all CEOs in this civil-law subsample are non-founder males.

countries with the same legal origin, may take very different approaches to dealing with stakeholders' interests. To be precise, we test our third hypothesis that only firms with more stakeholder-oriented boards react to ESG incidences when performance is not hurt by an incidence (i.e., there are only non-pecuniary implications for a firm).

As our main dependent variable for CEO turnover does not distinguish between turnovers caused by poor performance and turnovers when performance is strong, we follow Jenter and Lewellen (2021) and classify turnovers into (i) turnovers caused by poor performance (performance is measured as industry-adjusted stock returns divided by the standard deviation of returns in the yearly [-2, 0] interval), and (ii) turnovers which occur when performance has been strong.[34] If the former type of turnover coincides with the occurrence of an ESG incidence, we interpret this as there being pecuniary costs (direct costs, indirect costs, or both) (as performance is hurt), in addition to non-pecuniary implications, imposed on a firm for wrongdoing. In contrast, if the latter type of turnover coincides with an ESG incidence, we argue that there are only nonpecuniary implications for a firm (as performance is not hurt).

We construct two indices for a board's stakeholder-orientation (in the spirit of Adams and Licht (2019), we call this "board stakeholderism") employing a similar procedure as in Ferrell, Liang, and Renneboog (2016) and Cline, Walkling, and Yore (2018). *Board Stakeholderism Index 1* is the sum of the following four indicator variables: firms scoring greater to the median on board independence (as independent directors may be more likely to be stakeholder-oriented Adams and Licht (2019)), firms scoring greater to the median on board gender ratio (as boards with higher female representation on the board may be more likely to be stakeholder-oriented Liu (2018)), firms scoring lower or equal to the median on board nationality mix (boards with more local directors may care more about local communities), and firms scoring lower or equal to the median on board succession (as younger boards could be more progressive and responsive to societal issues)[35]. All variables are lagged, medians are based on the full sample

[34] We use their twoprobit model to estimate the probability of performance-induced turnover (which we term "turnovers caused by poor performance") and the probability of other turnover (which we term "turnovers when performance is strong"), respectively. We then calculate the probability of a turnover being performance-induced given that a turnover has occurred. Turnovers for which this probability exceeds 50% are classified as performance-induced, the rest of the turnovers are other turnovers (Jenter and Lewellen (2021)). The exact calculation of the variable is described in Appendix Table A.1 *Description of variables*. We classify 69.2% of the turnovers in our sample as caused by poor performance (performance-induced turnover) and 30.8% as turnovers when performance is strong. The proportion of turnovers classified as performance-induced is somewhat higher in our study compared to Jenter and Lewellen (2021), possibly because we employ a manual screening process in which some of the turnovers unrelated to performance have already been screened out.

[35] Adams and Licht (2019) find, in their international survey of directors' "shareholderism", that board insider status and age are positively correlated with directors being more shareholder-oriented. Interestingly, being female is also positively correlated with being more shareholder-oriented. Leaving out the indicator variable for higher female representation on the board does not change our results.

(n = 11,094), but indicator variables for each firm i are calculated by each year t. Data for all variables are from BoardEx. Index values range from 0 to 4 in our sample (the mean is 2.22), with higher values proxying for more stakeholder-oriented boards.

Board Stakeholderism Index 2 includes the same four variables as the first index but augments it with five additional indicator variables: whether a governmental representative director serves on a firm's board, whether an employee representative director serves on the firm's board, whether at least one of the firm's directors serves on the board of a non-profit governmental organization, whether at least one of the firm's directors serves on the board of a non-profit charity organization (such as BRAC or WWF), and whether a company is a state-owned enterprise (SOE)[36]. We expect all these variables to be positively correlated with board stakeholderism. All variables are lagged, and data for the variables are from BoardEx except for information on SOE status which comes from Thomson Reuters Eikon's Asset4 ESG database. We lose some observations due to missing values for the additional variables. The index's minimum (maximum) value is 0 (7), with a mean of 3.20.

Measuring board stakeholderism involves trying to "measure" largely unobservable traits and preferences of boards and their directors, and we acknowledge that our indices are, at best, rough estimates of board stakeholderism. To assess the validity of the two indices, we calculate the correlations between the lagged ESG score variable (Thomson Reuters Asset4 ESG *Total Score*) and the indices, respectively. The correlation between a firm's *Board Stakeholderism Index 1* and its ESG score is 0.15, while it is 0.21 between the *Board Stakeholderism Index 2* and the ESG score. Furthermore, the correlation between the first index and whether a company's board has a sustainability committee in place in a year (data are from Asset4 ESG) is 0.05, while it is 0.13 between the second index and the sustainability committee indicator variable. All reported correlations are significant at the 5% level. This indicates that firms with higher ESG ratings tend to have more stakeholder-oriented boards.

We, then, estimate multinomial logistic regression models where the dependent variable equals two if a turnover is related to poor performance, equals one if a turnover occurs when performance has been good, and zero if no turnover occurs in a firm-year. We include all controls except that we replace the variable for market-adjusted stock performance in the past two years with the industry-adjusted stock returns scaled by the standard deviation of the returns in the yearly [-2, 0] window to be consistent with Jenter and Lewellen (2021). Notably,

[36] Information on board members of non-profit organizations is attained from BoardEx using the variable "OrgType" in Networks/Associations – Individual Networks.

this variable captures also the stock performance in the month of, and months after, an ESG incidence takes place (i.e., the pecuniary costs for the wrongdoing). Finally, we include year-, industry-, and country fixed effects, and cluster standard errors by industry and year.

As shown in Table 9, the *Extreme risk exposure* indicator variable enters positively and significantly into the regressions when the dependent variable takes the value of two (i.e., CEO turnover is caused by poor performance). This suggests that extreme risk exposure significantly increases the likelihood of a CEO departure following an ESG incidence even when accounting for the negative impact an incidence has on firm value (and firm performance in general in the current and recent years), and that this likelihood is not tied to a board's degree of stakeholder-orientation. These results are in line with those reported in Jenter and Lewellen (2021) for shareholder-related misconduct.

In contrast, when the dependent variable takes the value of one (i.e., CEO turnover occurs following strong performance), *Extreme risk exposure* does not enter significantly into the regressions. However, the interaction terms between index 1 (model 1) and *Extreme risk exposure,* and index 2 and *Extreme risk exposure* (model 2), enter positively and significantly in both columns. This suggests that CEOs are more likely to be replaced following ESG incidences in firms with more stakeholder-oriented boards. following an ESG incidence. To better understand this finding, we track news (using Google searches) around the events in which a CEO is replaced when performance is good (there are only 16 unique cases in which this occurs). In 9 of the 16 cases, we find news related to ESG issues around the CEO turnover event. For the rest of the cases, there is no specific mentioning about any ESG issue. Although the sample is small, this indicates that in these firms, directors may be willing to replace even well-performing CEOs, or, put differently, CEOs appear to be replaced even though they may be the best choice (in a pecuniary sense) for a firm. Finally, the results also indicate that firms with less stakeholder-oriented (i.e., more shareholder-oriented) boards appear unwilling to replace a CEO when performance has been strong.

6 Conclusions

Employing a manually-collected sample of CEO turnovers in large public companies across 18 countries, we examine the relation between negative news about a firm's ESG issues (ESG risk) and the job longevity of its CEO. Prior studies document that misbehavior that harms investors results in CEOs being fired (Karpoff, Lee, and Martin (2008a), Desai, Hogan, and Wilkins (2006), Hazarika, Karpoff, and Nahata (2012)). In this paper, we test the hypothesis that CEO turnover increases following ESG issues that harm mainly nonfinancial stakeholders of a firm (customers, communities, employees, polluttees, etc.).

We report evidence consistent with this hypothesis: when a firm has extreme risk exposure to an ESG issue during a year, its CEO is more likely to be replaced in the same or in the subsequent year, *ceteris paribus*. This connection is both statistically and economically significant: in multivariate tests, we find that CEOs are roughly 7 percentage points more likely to lose their position following years when firms have extreme risk exposure to ESG issues. Results from a kink regression discontinuity design are consistent with the interpretation of ESG incidences having a causal effect on CEO turnover: we find that there is a significant change in the slope (a "kink") for CEO turnover probability which occurs near the cutoff for extreme risk exposure. Moreover, both nonfinancial stakeholder issues (environmental (E) and social (S) issues pooled together) and the more shareholder-related governance (G) issues have a significant impact on their own on CEO turnover.

Our second hypothesis relates to the inherent differences between civil- and common-law countries in terms of their sensitivity to ESG (Liang and Renneboog (2017)), and to shareholder- versus stakeholder-orientation (La Porta et al. (2000), Tirole (2001)). While we find that market discipline (negative investor reactions) to ESG issues causes CEO turnover in both shareholder-oriented common-law countries and the more stakeholder-oriented civil-law countries, the effect goes beyond market discipline in civil-law countries to include also an additional shaming effect (pressure put on the firm by media and stakeholders). However, we do not find that other country-level factors such as investor protection, economic freedom, and institutional quality explain CEO turnover rates following ESG incidences in US and European firms. Finally, we provide evidence consistent with the hypothesis that firms with more stakeholder-oriented are more likely to replace CEOs following ESG incidences even firm performance is not hurt (i.e., there are only non-pecuniary implications for firms for wrongdoing). More specifically, these firms appear to be willing to even forgo potential pecuniary benefits by replacing well-performing CEOs for ESG failures.

Overall, our findings suggest that CEOs are held accountable for ESG-related corporate misbehavior in our multi-country sample. The media plays a key role in amplifying the CEO turnover risk following an ESG incident associated with a firm (Dyck and Zingales (2002)) especially in civil-law countries, and in firms with more stakeholder-oriented boards.

References

Adams, Renée B., and Daniel Ferreira, 2007, A theory of friendly boards, *The Journal of Finance* 62, 217–250.

Adams, Renée B., and Amir N. Licht, 2019, Shareholders and stakeholders around the world: The role of values, culture, and law in directors' decisions, *SSRN Electronic Journal*.

Aghion, Philippe, Yann Algan, Pierre Cahuc, and Andrei Shleifer, 2010, Regulation and distrust, *Quarterly Journal of Economics* 125.

Agrawal, Anup, Jeffrey F. Jaffe, and Jonathan M. Karpoff, 1999, Management turnover and governance changes following the revelation of fraud, *The Journal of Law and Economics* 42.

Aharony, Joseph, Chelsea Liu, and Alfred Yawson, 2015, Corporate litigation and executive turnover, *Journal of Corporate Finance* 34.

Arthaud-Day, Marne L., S. Trevis Certo, Catherine M. Dalton, and Dan R. Dalton, 2006, A changing of the guard: Executive and director turnover following corporate financial restatements, *Academy of Management Journal* 49.

Baloria, Vishal P., and Jonas Heese, 2018, The effects of media slant on firm behavior, *Journal of Financial Economics* 129.

Barro, Jason R., and Robert J. Barro, 1990, Pay, performance, and turnover of bank CEOs, *Journal of Labor Economics* 8.

Bebchuk, Lucian A., and Roberto Tallarita, 2020, The illusory promise of stakeholder governance, *SSRN Electronic Journal*.

Bebchuk, Lucian, Alma Cohen, and Allen Ferrell, 2009, What Matters in Corporate Governance?, *Review of Financial Studies* 22, 783–827.

Bebchuk, Lucian, and Alex Edmans, 2020, Stakeholder capitalism: The case for and against. Academic debate: ECGI series on corporate purpose, *https://ecgi.global/content/stakeholder-capitalism-case-and-against*.

Bénabou, Roland, and Jean Tirole, 2010, Individual and corporate social responsibility, *Economica* 77.

Beneish, Messod D., Cassandra D. Marshall, and Jun Yang, 2017, Explaining CEO retention in misreporting firms, *Journal of Financial Economics* 123.

Benmelech, Efraim, and Carola Frydman, 2015, Military CEOs, *Journal of Financial Economics* 117.

Berle, Adolf, and Gardiner Means, 1932, *The Modern Corporation and Private Property* (Harcourt, Brace & World, New York, NY).

Biggerstaff, Lee, David C. Cicero, and Andy Puckett, 2015, Suspect CEOs, unethical culture, and corporate misbehavior, *Journal of Financial Economics* 117.

Bizjak, John, and Coles Jeffrey, 1995, The effect of private antitrust litigation on the stock-market valuation of the firm, *American Economic Review* 85, 436–461.

Botero, J. C., S. Djankov, R. L. Porta, F. Lopez-de-Silanes, and A. Shleifer, 2004, The regulation oflLabor, *The Quarterly Journal of Economics* 119.

Brady, Jacob, Mary F. Evans, and Eric W. Wehrly, 2019, Reputational penalties for environmental violations: A pure and scientific replication study, *International Review of Law and Economics* 57.

Burns, Natasha, Kristina Minnick, and Laura Starks, 2019, CEO turnover: Cross-country effects, *Unpublished working paper*.

Bushman, Robert, Zhonglan Dai, and Xue Wang, 2010, Risk and CEO turnover, *Journal of Financial Economics* 96.

Cai, Xiangshang, Ning Gao, Ian Garrett, and Yan Xu, 2020, Are CEOs judged on their companies' social reputation?, *Journal of Corporate Finance* 64.

Cai, Ye, Carrie H. Pan, and Meir Statman, 2016, Why do countries matter so much in corporate social performance?, *Journal of Corporate Finance* 41.

Calonico, Sebastian, Matias D. Cattaneo, Max H. Farrell, and Rocío Titiunik, 2019, Regression discontinuity designs using covariates, *The Review of Economics and Statistics* 101.

Calonico, Sebastian, Matias D. Cattaneo, and Rocio Titiunik, 2014, Robust nonparametric confidence intervals for regression-discontinuity designs, *Econometrica* 82.

Calonico, Sebastian, Matias D. Cattaneo, and Rocío Titiunik, 2015, Optimal data-driven regression discontinuity plots, *Journal of the American Statistical Association* 110.

Calonico, Sebastian, Matias D Cattaneo, and Max H Farrell, 2020, Optimal bandwidth choice for robust bias-corrected inference in regression discontinuity designs, *The Econometrics Journal* 23.

Campbell, T. Colin, Michael Gallmeyer, Shane A. Johnson, Jessica Rutherford, and Brooke W. Stanley, 2011, CEO optimism and forced turnover, *Journal of Financial Economics* 101.

Card, David, David S. Lee, Zhuan Pei, and Andrea Weber, 2015, Inference on causal effects in a generalized regression kink design, *Econometrica* 83.

Cattaneo, Matias D., Luke Keele, Rocío Titiunik, and Gonzalo Vazquez-Bare, 2016, Interpreting regression discontinuity designs with multiple cutoffs, *The Journal of Politics* 78.

Chava, Sudheer, 2014, Environmental externalities and cost of capital, *Management Science* 60.

Christensen, Dane M., 2016, Corporate accountability reporting and high-Profile misconduct, *The Accounting Review* 91.

Cline, Brandon N., Ralph A. Walkling, and Adam S. Yore, 2018, The consequences of managerial indiscretions: Sex, lies, and firm value, *Journal of Financial Economics* 127.

Collins, Denton, Austin L. Reitenga, and Juan Manuel Sanchez, 2008, The impact of accounting restatements on CFO turnover and bonus compensation: Does securities litigation matter?, *Advances in Accounting* 24.

Davidson, Robert, Aiyesha Dey, and Abbie Smith, 2015, Executives' "off-the-job" behavior, corporate culture, and financial reporting risk, *Journal of Financial Economics* 117.

Defond, Mark, and Mingyi Hung, 2004, Investor protection and corporate governance: Evidence from worldwide CEO turnover, *Journal of Accounting Research* 42.

Deng, Xin, Jun-koo Kang, and Buen Sin Low, 2013, Corporate social responsibility and stakeholder value maximization: Evidence from mergers, *Journal of Financial Economics* 110.

Desai, Hemang, Chris Hogan, and Michael Wilkins, 2006, The reputational penalty for aggressive accounting: Earnings

restatements and management turnover, *Accounting Review* 81, 83–112.
Djankov, Simeon, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer, 2008, The law and economics of self-dealing, *Journal of Financial Economics* 88.
Dupont, Quentin, and Jonathan M. Karpoff, 2020, The trust triangle: Laws, reputation, and culture in empirical finance research, *Journal of Business Ethics* 163.
Dyck, Alexander, Karl V. Lins, Lukas Roth, and Hannes F. Wagner, 2019, Do institutional investors drive corporate social responsibility? International evidence, *Journal of Financial Economics* 131.
Dyck, Alexander, Adair Morse, and Luigi Zingales, 2010, Who blows the whistle on corporate fraud?, *The Journal of Finance* 65.
Dyck, Alexander, Natalya Volchkova, and Luigi Zingales, 2008, The corporate governance role of the media: Evidence from Russia, *The Journal of Finance* 63.
Dyck, Alexander, and Luigi Zingales, 2002, The corporate governance role of the media.
Dyck, I. J. Alexander, Adair Morse, and Luigi Zingales, 2013, How pervasive is corporate fraud?, *SSRN Electronic Journal*.
Edmans, Alex, 2011, Does the stock market fully value intangibles? Employee satisfaction and equity prices, *Journal of Financial Economics* 101.
Edmans, Alex, 2020, Company purpose and profit need not be in conflict if we 'grow the pie,' *Economic Affairs* 40.
Eisfeldt, Andrea L., and Camelia M. Kuhnen, 2013, CEO turnover in a competitive assignment framework, *Journal of Financial Economics* 109.
El Ghoul, Sadok, Omrane Guedhami, Chuck C.Y. Kwok, and Dev R. Mishra, 2011, Does corporate social responsibility affect the cost of capital?, *Journal of Banking & Finance* 35.
Fama, Eugene F., and Michael C. Jensen, 1983, Separation of ownership and control, *Journal of Law and Economics* 26, 301–325.
Fatemi, Ali, Martin Glaum, and Stefanie Kaiser, 2018, ESG performance and firm value: The moderating role of disclosure, *Global Finance Journal* 38.
Ferrell, Allen, Hao Liang, and Luc Renneboog, 2016, Socially responsible firms, *Journal of Financial Economics* 122.
Fich, Eliezer M., and Anil Shivdasani, 2006, Are busy boards effective monitors?, *The Journal of Finance* 61.
Fich, Eliezer M., and Anil Shivdasani, 2007, Financial fraud, director reputation, and shareholder wealth, *Journal of Financial Economics* 86.
Friedman, Milton, 1970, A Friedman doctrine-The Social Responsibility Of Business Is to Increase Its Profits, *The Nww York Times*.
Gande, Amar, and Craig Lewis, 2009, Shareholder-initiated class action lawsuits: Shareholder wealth effects and industry spillovers, *Journal of Financial and Quantitative Analysis* 44, 823–850.
Goss, Allen, and Gordon S. Roberts, 2011, The impact of corporate social responsibility on the cost of bank loans, *Journal of Banking & Finance* 35.
Hartzmark, Samuel M., and Abigail B. Sussman, 2019, Do investors value sustainability? A natural experiment examining ranking and fund flows, *The Journal of Finance* 74.
Haslem, Bruce, Irena Hutton, and Aimee Hoffmann Smith, 2017, How much do corporate defendants really lose? A new verdict on the reputation loss induced by corporate litigation, *Financial Management* 46.
Haß, Lars Helge, Maximilian A. Müller, and Skrålan Vergauwe, 2015, Tournament incentives and corporate fraud, *Journal of Corporate Finance* 34.
Hazarika, Sonali, Jonathan M. Karpoff, and Rajarishi Nahata, 2012, Internal corporate governance, CEO turnover, and earnings management, *Journal of Financial Economics* 104.
Hofstede, Geert, Jan Gert Hofstede, and Michael Minkov, 1991, *Culture and Organizations: Software of the Mind* (The McGraw Hill Companies).
Hong, Harrison, and Marcin Kacperczyk, 2009, The price of sin: The effects of social norms on markets, *Journal of Financial Economics* 93.
Humphery-Jenner, Mark L., 2012, Internal and external discipline following securities class actions, *Journal of Financial Intermediation* 21.
Huson, Mark R., Robert Parrino, and Laura T. Starks, 2001, Internal monitoring mechanisms and CEO turnover: A long-term perspective, *The Journal of Finance* 56.
Jarrell, Gregg, and Sam Peltzman, 1985, The impact of product recalls on the wealth of sellers, *Journal of Political Economy* 93, 512–536.
Jenter, Dirk, and Fadi Kanaan, 2015, CEO turnover and relative performance evaluation, *The Journal of Finance* 70.
Jenter, Dirk, and Katharina Lewellen, 2021, Performance-induced CEO turnover, *The Review of Financial Studies* 34.
Jones, Kari, and Paul H. Rubin, 2001, Effects of harmful environmental events on reputations of firms, *Advances in Financial Economics*.
Kaplan, Steven, and Bernadette Minton, 2006, How has CEO turnover changed? Increasingly performance sensitive boards and increasingly uneasy CEOs, *NBER Working Papers*.
Karpoff, Jonathan, Scott Lee, and Gerald Martin, 2008, The cost to firms of cooking the books, *The Journal of Financial and Quantitative Analysis* 43, 581–611.
Karpoff, Jonathan M., 2012, *Does Reputation Work to Discipline Corporate Misconduct?* (Oxford University Press).
Karpoff, Jonathan M., 2021, On a stakeholder model of corporate governance, *Financial Management*.
Karpoff, Jonathan M., Scott D. Lee, and Gerald S. Martin, 2008, The consequences to managers for financial misrepresentation, *Journal of Financial Economics* 88.
Karpoff, Jonathan M., and John R. Lott, 1993, The reputational penalty firms bear from committing criminal fraud, *The Journal of Law and Economics* 36.
Karpoff, Jonathan M., John R. Lott, and Eric W. Wehrly, 2005, The reputational penalties for environmental violations:

Empirical evidence, *The Journal of Law and Economics* 48.
Kaufmann, Daniel, 2004, Corruption, governance and security: Challenges for the rich countries and the world, *SSRN Electronic Journal*.
Khanna, Vikramaditya, E. Han Kim, and Yao Lu, 2015, CEO connectedness and corporate fraud, *The Journal of Finance* 70.
Krüger, Philipp, 2015, Corporate goodness and shareholder wealth, *Journal of Financial Economics* 115.
Krüger, Philipp, Zacharias Sautner, and Laura T Starks, 2020, The importance of climate risks for institutional investors, *The Review of Financial Studies* 33.
La Porta, Rafael, Florencio Lopez-de-Silanes, and Andrei Shleifer, 2008, The economic consequences of legal origins, *Journal of Economic Literature* 46.
La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny, 2000, Investor protection and corporate governance, *Journal of Financial Economics* 58.
La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny, 1998, Law and finance, *Journal of Political Economy* 106.
Lee, David S., and David Card, 2008, Regression discontinuity inference with specification error, *Journal of Econometrics* 142.
Lee, David S, and Thomas Lemieux, 2010, Regression discontinuity designs in economics, *Journal of Economic Literature* 48.
Leone, Andrew J., and Michelle Liu, 2010, Accounting irregularities and executive turnover in founder-managed firms, *The Accounting Review* 85.
Levit, Doron, and Nadya Malenko, 2016, The labor market for directors and externalities in corporate governance, *The Journal of Finance* 71.
Liang, Hao, and Luc Renneboog, 2017, On the foundations of corporate social responsibility, *The Journal of Finance* 72.
Lins, Karl V., Henri Servaes, and Ane Tamayo, 2017, Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis, *The Journal of Finance* 72.
Liu, Chelsea, 2018, Are women greener? Corporate gender diversity and environmental violations, *Journal of Corporate Finance* 52.
Liu, Xiaoding, 2016, Corruption culture and corporate misconduct, *Journal of Financial Economics* 122.
Macintosh, John C.C., 1999, The issues, effects and consequences of the Berle–Dodd debate, 1931–1932, *Accounting, Organizations and Society* 24.
Masulis, Ronald W., and Syed Walid Reza, 2015, Agency problems of corporate philanthropy, *Review of Financial Studies* 28.
Miller, Gregory S., 2006, The press as a watchdog for accounting fraud, *Journal of Accounting Research* 44.
Mitchell, Mark L., and Michael, T. Maloney, 1989, Crisis in the cockpit? The role of market forces in promoting air travel safety, *The Journal of Law and Economics* 32, 329–355.
Nguyen, Duc Duy, Jens Hagendorff, and Arman Eshraghi, 2016, Can bank boards prevent misconduct?, *Review of Finance* 20.
Peters, Florian S., and Alexander F. Wagner, 2014, The executive turnover risk premium, *The Journal of Finance* 69.
Petersen, Mitchell A., 2009, Estimating standard errors in finance panel data sets: Comparing approaches, *Review of Financial Studies* 22.
Servaes, Henri, and Ane Tamayo, 2013, The impact of corporate social responsibility on firm value: The role of customer awareness, *Management Science* 59.
Spamann, Holger, 2010, The "Antidirector Rights Index" revisited, *Review of Financial Studies* 23.
Tirole, Jean, 2001, Corporate governance, *Econometrica* 69, 1–35.
Warner, Jerold B., Ross L. Watts, and Karen H. Wruck, 1988, Stock prices and top management changes, *Journal of Financial Economics* 20.
Weisbach, Michael S., 1988, Outside directors and CEO turnover, *Journal of Financial Economics* 20.
Wooldridge, Jeffrey M., 2010, *Econometric Analysis of Cross-Section and Panel Data*. 2nd ed. (The MIT Press, Cambridge, Massachusetts).
You, Jiaxing, Bohui Zhang, and Le Zhang, 2018, Who captures the power of the pen?, *The Review of Financial Studies* 31.

Figure 1 Jump in CEO turnover odds following extreme risk exposure

The figures illustrate the jump in CEO turnover probability following extreme levels of risk exposure to ESG issues (intense negative media coverage) after removing country fixed effects. We estimate a logit model where the dependent variable is an indicator variable for whether a CEO loses his or her job in year *t* or *t + 1*, and the independent variable is an indicator variable for whether a firm has extreme risk exposure (RepRisk's Reputational Risk Index (RRI) ≥ 60) in year *t*. Country (headquarters of the company) fixed effects are included in both figures. Predicted probabilities are plotted against the RRI index using regression discontinuity plots. In Panel A, each bin represents the sample average for CEO turnover for a specific RRI value (i.e., the bin width equals 1), whereas the bin width is set to 2 in Panel B. The bandwidth is 30 and the cutoff value is RRI = 60. A triangular kernel function is used to construct the local-polynomial estimator, the polynomial fit is $p = 3$, and we exclude observations for bins with only one observation ($n = 3$). The sample period is 2007-2017 (CEO turnover is tracked in years 2007-2018).

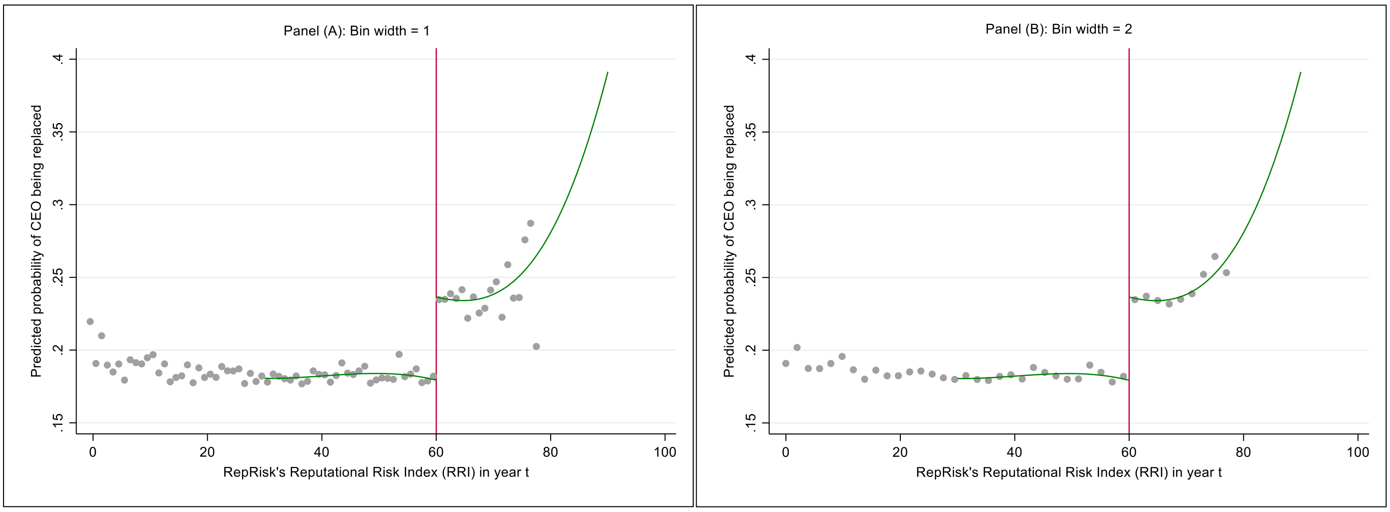

Figure 2 RepRisk's Reputational Risk Index (RRI) to ESG issues

The figure shows the progression of the RepRisk's reputational risk index (RRI) for Volkswagen in year 2015, i.e., its "ESG risk". The figure illustrates how the RRI moved (by month) in response to the *emission scandal*, which received widespread media attention after the US Environmental Protection Agency (EPA) filed a notice of violation against Volkswagen on September 18th, 2015 (https://www.epa.gov/sites/production/files/2015-10/documents/vw-nov-caa-09-18-15.pdf).

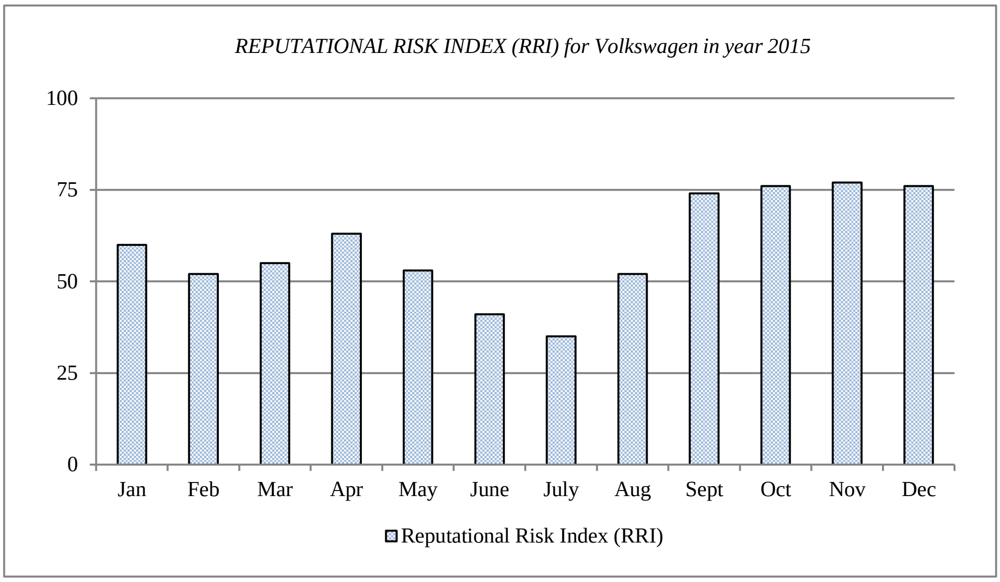

Figure 3 Adjusted predictions at representative values

The figure depicts adjusted predictions at representative values for the baseline model (equation (1); Table 3 column 2). The y-axis shows the adjusted predictions of a CEO being replaced in year *t* or year *t + 1*. The x-axis shows the reputational risk exposure (RRI) divided into groups based on intervals. The first group (left-most) shows the estimated probability of CEO turnover for firm-years with RRI values equal to -1 or 0 in year *t*. This group (*n* = 3,645) is used as the benchmark group in the logistic regression model. The intervals for the remaining groups ([1-5], [6-10], etc.) are 5 units wide. The last group [-76-100] includes also values equal or greater to 80, as there are only 2 observations which ever exceed RRI = 80.

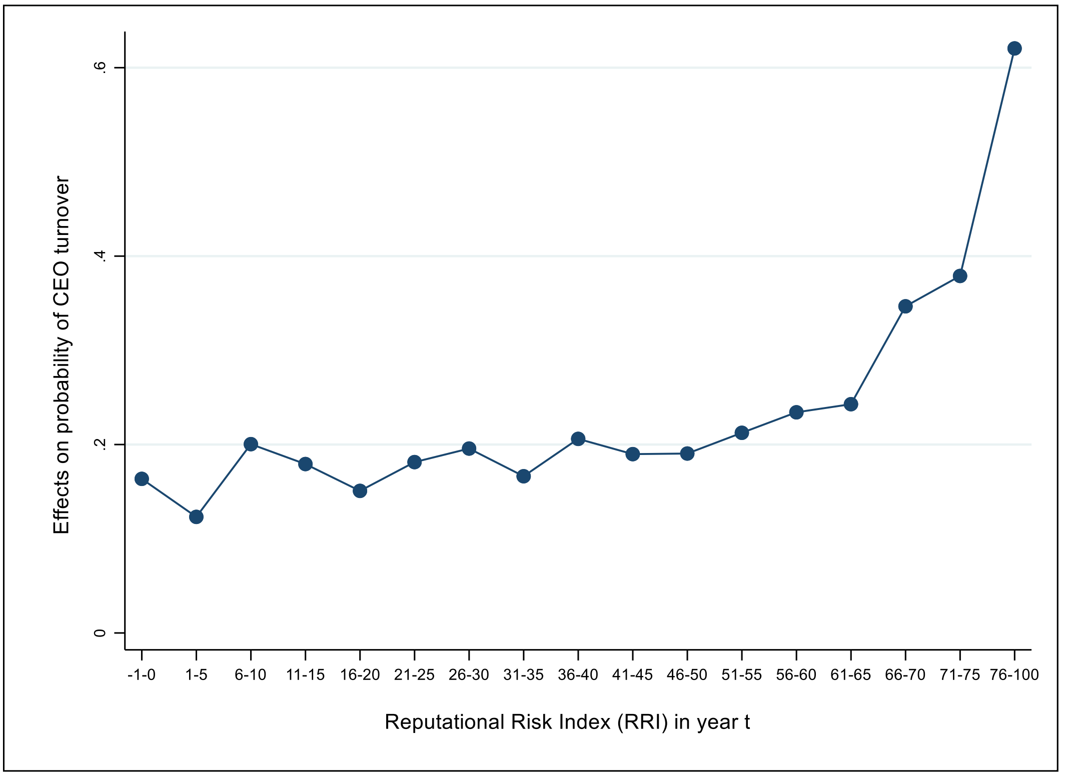

Figure 4 Regression Discontinuity (RD) Design Plots

The figures depict RD design plots for CEO turnover in year *t* or *t + 1* (y-axis) relative to a firm's highest value for the reputational risk index (RRI) in year *t* (x-axis). The cutoff is based on RepRisk's methodology of defining risk exposure levels and equals RRI = 60 in all plots (denotes firm-years with extreme risk exposure in year *t*). The sample period covers all 11,094 firm-year observations between 2007 and 2017 (CEO turnover is tracked in years 2007-2018). In plots (a) and (c), bins are evenly-spaced and are Integrated Mean Square Error (IMSE)-optimal (Calonico, Cattaneo, and Titiunik (2015)). In plots (b) and (d), bins are manually chosen (ad-hoc) so that the average bin length on each side of the cutoff is two (expressed in RRI units). In plots (c) and (d), we fit second-order polynomial curves, the kernel function is triangular, and the bandwidth equals 20.

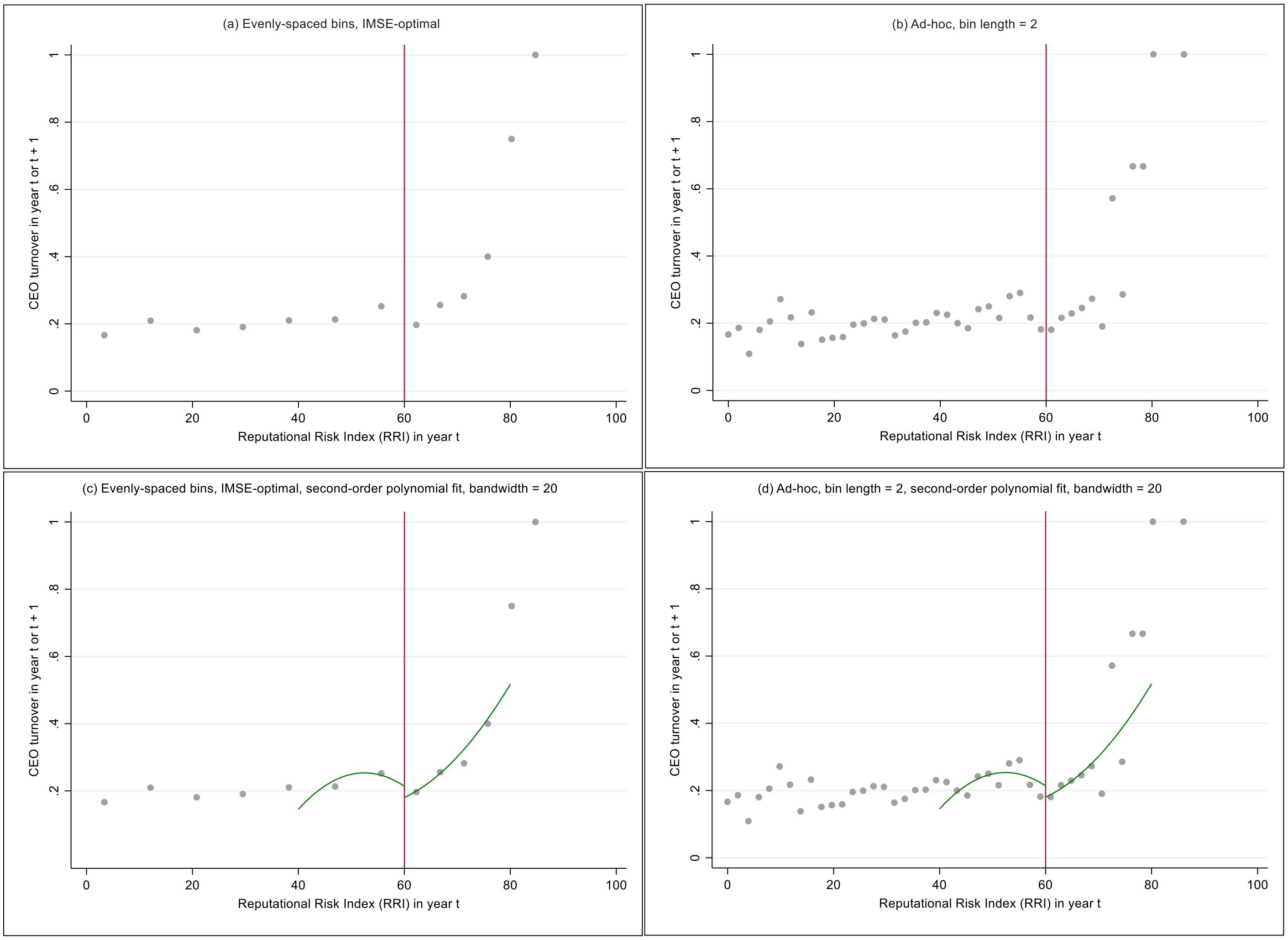

Table 1 Sample construction, and distribution of firm-year observations

Panel A shows sample construction. Panel B shows the distribution for yearly values of the Reputational Risk Index (RRI) among firms included in our final sample (n = 11,094), 2007-2017. Panel C shows the distribution of firm-year observations with extreme risk exposure to ESG issues (60 ⩽ RRI ⩽ 100) in a year (column 1), and for firm-year observations with normal or high levels of risk exposure in a year (-1 ⩽ RRI < 60) (column 2). Column 3 shows the proportion of firm-year observations with extreme risk exposure. Columns 4, 5, and 6 show the distribution of firm-year observations with extremely high risk exposure (75 ⩽ RRI ⩽ 100), very high risk exposure (60 ⩽ RRI ⩽ 74), and high risk exposure (50 ⩽ RRI ⩽ 59) in a year, respectively. Columns 7, 8, and 9 show the distribution of firm-year observations with environmental (E), social (S), and governance (G) issues, respectively. Panel D shows the distribution of E, S, and G issues, respectively, in the sample of firms with RRI ≥ 60 in a year. Issues are divided into types based on which of the three variables *Epercentage*, *Spercentage*, and *Gpercentage* (the variables show the percentage of the RRI index in a month that is made up of E, S, and G issues, respectively), respectively, a firm has the highest value for in the month in which the RRI peaks. Groups are not mutually exclusive, i.e., if two or more types have equally high percentages, the indicator variables for both (or all three) types equal one.

PANEL A: SAMPLE CONSTRUCTION	**Firm-year obs.**	**Number of firms**
RepRisk sample (firm-month-year obs.)	206,976	1,568
Only the month in which the exposure is at its highest level in a year included	17,248	1,568
After merging with CEO turnover sample	13,482	1,419
After merging with Boardex	12,192	1,310
After merging with COMPUSTAT and FactSet	12,009	1,282
After merging with CRSP and COMPUSTAT stock price data	11,094	1,194
After merging with country-level data	11,094	1,194

PANEL B: RISK CLASS	**Value**	**Number of firm-year obs.**	**% of obs.**
"No reported issues"	-1	11	.10%
"Low risk exposure"	0-24	5,922	53.38%
"Medium risk exposure"	25-49	4,391	39.58%
"High risk exposure"	50-59	436	3.93%
"Very high risk exposure"	60-74	321	2.89%
"Extremely high risk exposure"	75-100	13	.12%

PANEL C: ESG ISSUES BY YEAR

Year	(1) *Extreme risk exposure (RRI ≥ 60)*	(2) *Normal or high levels of risk exposure (RRI < 60)*	(3) *% of firms with extreme risk exposure (RRI ≥ 60)*	(4) *Firms with extremely high risk exposure (RRI ≥ 75)*	(5) *Firms with very high risk exposure (60 ≤ RRI <75)*	(6) *Firms with high risk exposure (50 ≤ RRI <60)*	(7) *Environ-mental (E) issues*	(8) *Social (S) issues*	(9) *Gover-nance (G) issues*
2007	12	961	1.23%	1	11	12	7	4	1
2008	21	952	2.16%	2	19	23	8	12	2
2009	12	981	1.21%	0	12	14	3	7	2
2010	15	1,003	1.47%	2	13	27	4	5	7
2011	28	1,018	2.68%	2	26	34	7	7	14
2012	38	1,007	3.64%	0	38	40	9	11	18
2013	37	1,025	3.48%	0	37	58	3	11	23
2014	68	994	6.40%	2	66	51	8	26	35
2015	46	936	4.68%	1	45	64	8	14	24
2016	25	952	2.56%	1	24	49	1	5	19
2017	32	931	3.32%	2	30	64	2	10	21
Sum	**334**	**10,760**	**3.01%**	**13**	**321**	**436**	**60**	**112**	**166**

PANEL D: TYPE OF ISSUE

ESG Issues by Type (only firm-year observations with extreme risk exposure included)	Variable	Observations
Environmental issues	Epercentage (%)	60
Social issues	Spercentage (%)	112
Governance issues	Gpercentage (%)	166

Table 2 Descriptive statistics and univariate analysis

The table reports descriptive statistics for firm-year observations with extreme risk exposure to ESG issues (60 ≤ RRI ≤ 100) (Columns 1-3) and for firm-year observations with normal or high risk exposure to ESG issues (-1 ≤ RRI ≤ 59) (Columns 4-6). Year *t* refers to the calendar year in which a firm's risk exposure is measured. RepRisk and CEO-level variables are measured in year *t*, firm- and country-level variables are measured in year *t – 1*, and market adjusted stock performance is measured in the monthly [-24, -1] interval relative to the RRI peaking in month *m* of year *t*. All continuous variables are winsorized at the 1% and 99% levels. We track risk exposure in years 2007-2017 and CEO turnovers in years 2007-2018 (as the dependent variable measures CEO turnover in year *t* or *t +1*). The sample size consists of 11,094 firm-year observations. Descriptions of all variables are found in Appendix Table A.1. Column 7 reports the difference in means between the two groups, and column 8 reports t-statistics. Standard errors are attained by regressing the variable reported on the left-hand side of the table on a constant and an indicator variable for whether a firm has extreme risk exposure in year *t*, using two-way clustering at the industry- and year-level. *, **, and *** indicate 10%, 5%, and 1% significance levels, respectively.

	Extreme risk exposure to ESG issues in year t (RRI ≥ 60)			*Normal or high risk exposure to ESG issues in year t* (RRI < 60)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	Firm-year obs.	Mean	Median	Firm-year obs.	Mean	Median	Difference in means	t-statistic
CEO replaced in year *t*	334	0.132	0	10,760	0.094	0	0.038***	23.87
CEO replaced in year *t* or *t + 1*	334	0.237	0	10,760	0.186	0	0.051**	2.38
CEO performance-induced turnover (Jenter and Lewellen (2021)) in year *t*	317	0.095	0	9,830	0.060	0	0.034***	4.52
CEO performance-induced turnover (Jenter and Lewellen (2021)) in year *t* or *t + 1*	317	0.164	0	9,844	0.117	0	0.047***	4.38
CEO "other" turnover in year *t*	317	0.041	0	9,830	0.027	0	0.014	1.17
CEO "other "turnover in year *t + 1*	317	0.073	0	9,839	0.054	0	0.018	0.99
RepRisk variables								
Reputational Risk Index (RRI)	334	63.45	63	10,760	19.21	23	45.37***	23.88
Highest value for RRI in past two years	334	65.49	66	10,760	24.64	29	41.89***	17.93
Relative (country- and sector-adjusted) RRI	316	2.11	2.03	10,001	0.88	0.95	1.23***	14.41
CEO-level variables								
Retirement close (= 1) (⩾63 years)	329	0.112	0	10,416	0.138	0	-0.025	-0.71
Age	329	56.15	56	10,416	55.79	56	0.35	0.55
Tenure	327	5.42	5	10,662	6.95	5	-1.60***	-4.65
Gender (Male = 1)	331	0.961	1	10,748	0.965	1	-0.004	-0.25
Chairman (= 1)	328	0.564	1	10,713	0.485	0	0.079**	2.34
Founder (= 1)	331	0.048	0	10,748	0.042	0	0.006	0.33
Firm-level variables								
Natural logarithm of Total Assets	334	11.97	11.94	10,759	9.28	9.10	2.69***	9.12
ROA (%)	318	0.119	0.103	10,403	0.130	0.121	-1.07	-0.68
Market-adj. stock performance in past two years	331	0.057	-0.020	10,305	0.168	0.113	-0.111***	-2.78
Institutional ownership (%)	326	54.00	59.44	10,608	63.74	71.45	-9.74***	-4.16
Cash-to-Total Assets	333	0.088	0.062	10,625	0.074	0.061	-0.014	-1.73
Market-to-Book value	313	2.74	1.81	10,078	3.19	2.35	-0.45	-1.33
Tobin's q	313	1.72	1.23	10,078	1.82	1.45	-0.09	-0.57
Leverage	332	0.687	0.690	10,743	0.628	0.626	0.059	1.46
Altman's z-score	238	3.74	3.02	8,634	3.50	2.78	0.244	0.65
ESG Total Score (Asset4 ESG)	321	76.17	78.76	8,255	58.66	60.01	17.51***	10.15
Governance characteristics								
Board independence (%)	332	0.718	0.786	10,572	0.681	0.750	3.71	1.09
Number of directors	332	14.02	13	10,572	11.26	11	2.76***	5.13
Succession factor	332	0.303	0.300	10,572	0.323	0.300	-0.020	-1.77
% of female directors (gender ratio)	332	0.196	0.2	10,572	0.158	0.154	3.82***	4.60
Country-level variables								
GDP per capita	334	50,676.9	48,466.8	10,760	49,590.8	48,382.6	1,086.1	0.76
Globalization Index	334	84.07	81.68	10,760	83.89	81.68	0.18	0.48
Regulatory Quality	334	1.45	1.46	10,760	1.47	1.49	-0.02	-0.80
Control of Corruption	334	1.47	1.38	10,760	1.49	1.40	-0.02	-0.53
Political Executive Constraints	334	6.94	7.00	10,760	6.93	7.00	0.01	0.31
Economic Freedom Index	334	75.16	76.00	10,760	75.65	76.20	-0.49	-0.81
Corr. Anti-director Rights Index 2005 (Spamann (2010))	334	3.06	2.00	10,698	3.07	2.00	-0.01	-0.04

Table 3 Multivariate results, logistic regression models

The table shows results for estimating equation (1): $\Pr(CEO\ replaced\ in\ the\ same\ or\ in\ the\ subsequent\ year = 1_{it}) = F(\beta_0 + \beta_1 \cdot Extreme\ risk\ exposure_{it} + \boldsymbol{X'}_{it}\delta + \boldsymbol{Z'}_{i,t-1}\gamma + \boldsymbol{C'}_{c,t-1}\varphi + \eta_t + \xi_c + \theta_s)$, where F is the cumulative logistic distribution function, the dependent variable is an indicator for whether a CEO is replaced in year t or $t + 1$, $\boldsymbol{X}_{it}$ is a vector of CEO-control variables, $\boldsymbol{Z}_{i,t-1}$ is a vector of firm-level control variables, and $\boldsymbol{C}_{c,t-1}$ is a vector of country-level control variables. The main independent variable in columns 1 and 2 is an indicator variable for extreme risk exposure (60 ≤ RRI ≤ 100) in year *t*; in columns 3 and 4, it is an indicator variable for high risk exposure (50 ≤ RRI ≤ 59); in columns 5 and 6, we include both these indicator variables; in column 7, it is the level of peak RRI in a year; and in column 8, it is the peak RRI in a year relative to the average RRI for the firm's country (50%) and sector (50%) in that same year. Columns 1-2 and 4-8 show results for the full sample, while in columns 3 and 4, we include only firms with high or normal levels of risk exposure. In columns 1, 2, 7, and 8, the benchmark group constitutes of firm-years with normal or high risk exposure, and in columns 3-6, it constitutes of firm-years with normal risk exposure. CEO controls include *CEO close to retirement* (Age ≥ 63 years), *CEO age*, *Tenure* (at the firm in years), Gender (male = 1), CEO is *Chairman*, and CEO is *Founder*. Firm-level control variables include *Ln(Total assets)*, *Return on Assets*, *Market-adjusted total stock performance* in past two years, *Institutional ownership (%)*, *Board independence (%)*, *Board size*, *Succession*, and *Gender ratio* (%). Country-level variables include the natural logarithm of *GDP*, the *Globalization index*, the *Regulatory Quality* and the *Corruption Control* indices, the *Political Executive Constraints* measure, and the *Heritage Economic Freedom* index. RepRisk and CEO control variables are measured in year *t*, firm- and country-level variables are measured in year *t* – *1*, and market adjusted stock performance is measured in the monthly [-24, -1] interval relative to a peak in RRI in month *m* of year *t*. All continuous variables are winsorized at 1st and 99th percentiles. We track risk exposure in years 2007-2017 and CEO turnovers in 2007-2018. Column 1 includes year and country fixed effects, columns 2, 7, and 8 include year, country, and industry fixed effects, columns 3 and 5 include no fixed effects, and columns 4 and 6 include year fixed effects. *Z*-statistics based on robust standard errors (two-way clustered by industry and year) are reported in parentheses below coefficients. *, **, and *** denote 10%, 5%, and 1% significance levels, respectively.

Dependent variable: *CEO replaced in year t or year t + 1*	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Extreme risk exposure	0.413***	0.462***			0.461***	0.473***		
	(2.96)	(3.49)			(3.73)	(3.94)		
High risk exposure			0.238*	0.241*	0.247*	0.252*		
			(1.83)	(1.76)	(1.80)	(1.80)		
RRI Index Level							0.008*	
							(1.66)	
Relative RRI Index Level								0.132*
								(1.69)
CEO close to retirement (1/0)	0.546***	0.554***	0.499***	0.508***	0.538***	0.548***	0.548***	0.593***
	(3.89)	(3.74)	(3.95)	(3.96)	(4.31)	(4.25)	(3.75)	(4.12)
CEO Age	0.086***	0.087***	0.087***	0.087***	0.085***	0.085***	0.087***	0.085***
	(8.26)	(6.77)	(10.87)	(9.36)	(11.14)	(9.58)	(7.02)	(7.18)
CEO Tenure (at firm)	0.015	0.020	0.013	0.013	0.014	0.015	0.020	0.022
	(1.45)	(1.47)	(1.17)	(0.96)	(1.35)	(0.99)	(1.47)	(1.44)
CEO Gender (Male = 1)	-0.024	-0.019	0.016	0.002	0.010	-0.000	0.002	0.043
	(-0.14)	(-0.09)	(0.10)	(0.01)	(0.07)	(-0.00)	(0.01)	(0.22)
CEO is Chairman of the Board (1/0)	-0.069	-0.098	-0.106	-0.100	-0.112	-0.107	-0.099	-0.144
	(-0.76)	(-0.93)	(-1.60)	(-1.38)	(-1.55)	(-1.37)	(-0.96)	(-1.48)
Founder-CEO (1/0)	-1.025***	-1.040***	-1.045***	-1.051***	-1.029***	-1.035***	-1.056***	-1.094***
	(-3.07)	(-2.72)	(-3.38)	(-3.41)	(-3.20)	(-3.22)	(-2.79)	(-2.59)
Ln(Total Assets)	-0.021	-0.011	-0.017	-0.016	-0.025	-0.025	-0.050	-0.027
	(-0.61)	(-0.19)	(-0.54)	(-0.51)	(-0.78)	(-0.73)	(-0.82)	(-0.42)
Return on Assets (%)	0.005	-0.000	0.003	0.003	0.004	0.004	-0.001	-0.000
	(0.56)	(-0.03)	(0.52)	(0.39)	(0.71)	(0.60)	(-0.17)	(-0.03)
Market-adj. stock performance in past two years	-0.504***	-0.547***	-0.476***	-0.477***	-0.465***	-0.469***	-0.540***	-0.509***
	(-4.67)	(-4.80)	(-6.45)	(-5.23)	(-6.05)	(-5.25)	(-4.65)	(-4.33)
Institutional ownership (%)	0.006**	0.007*	0.005***	0.005***	0.004**	0.005**	0.007*	0.006*
	(2.02)	(1.71)	(2.66)	(2.97)	(2.56)	(2.18)	(1.75)	(1.68)
Board independence (%)	0.002	0.001	0.000	0.000	0.001	0.001	0.001	0.000
	(0.61)	(0.29)	(0.14)	(0.14)	(0.59)	(0.55)	(0.22)	(0.02)
Board size	0.025	0.017	0.010	0.009	0.011	0.011	0.016	0.026
	(1.37)	(0.82)	(1.29)	(0.86)	(1.30)	(1.00)	(0.85)	(1.30)
Succession	0.559	0.601	0.722*	0.715*	0.662*	0.639	0.595	0.580
	(1.36)	(1.39)	(1.88)	(1.89)	(1.67)	(1.63)	(1.36)	(1.45)
Gender ratio (% of female directors)	0.006	0.005	0.009**	0.008	0.008*	0.007	0.005	0.005
	(0.80)	(0.65)	(2.05)	(1.38)	(1.70)	(1.04)	(0.60)	(0.78)
Ln(GDP per capita)	-0.835	-0.931	0.216	0.310	0.197	0.321	-0.908	-0.976
	(-1.43)	(-1.47)	(0.82)	(1.12)	(0.73)	(1.16)	(-1.42)	(-1.59)
Globalization index	-0.124*	-0.127*	0.099***	0.102***	0.101***	0.105***	-0.124*	-0.165
	(-1.90)	(-1.77)	(3.60)	(3.65)	(3.49)	(3.62)	(-1.73)	(-1.63)
Regulatory Quality	-0.256	-0.274	0.050	0.049	0.025	0.027	-0.232	-0.362
	(-0.57)	(-0.58)	(0.11)	(0.10)	(0.06)	(0.06)	(-0.49)	(-0.78)
Control of Corruption	-0.191	-0.196	-0.031	-0.060	-0.048	-0.088	-0.154	-0.277
	(-0.38)	(-0.37)	(-0.10)	(-0.19)	(-0.15)	(-0.29)	(-0.30)	(-0.42)
Political Executive Constraints	-0.290	-0.180	0.028	0.071	0.037	0.094	-0.237	-0.387
	(-0.51)	(-0.26)	(0.13)	(0.31)	(0.16)	(0.40)	(-0.33)	(-0.52)
Heritage Economic Freedom index	-0.011	-0.012	0.008	0.002	0.007	-0.000	-0.012	-0.018
	(-0.31)	(-0.33)	(0.37)	(0.07)	(0.34)	(-0.02)	(-0.32)	(-0.42)
Constant	15.297	16.337	-18.750***	-19.508***	-18.506***	-19.673***	16.261	21.871*
	(1.58)	(1.63)	(-4.68)	(-4.90)	(-4.35)	(-4.73)	(1.62)	(1.83)
Observations	9,770	9,742	9,477	9,477	9,770	9,770	9,742	9,030
Year fixed effects	Yes	Yes	No	Yes	No	Yes	Yes	Yes
Industry fixed effects	No	Yes	No	No	No	No	Yes	Yes
Country fixed effects	Yes	Yes	No	No	No	No	Yes	Yes
Firm-years with extreme risk exposure included	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Pseudo-R^2 (McFadden)	0.0952	0.1080	0.0855	0.0884	0.0860	0.0889	0.1086	0.1113

Table 4 Multivariate results, alternative estimation methods for equation (1)

The table shows results for alternative estimation methods for the baseline model equation (1). Column 1 shows results for a conditional (grouped by industry) logistic regression model. Column 2 shows results for including performance deciles based on Jenter and Lewellen (2021) (industry (average)-adjusted stock returns divided by standard deviation of returns in years [-2, 0]) as the main stock performance measure, and column 3 for using a (pooled) linear probability model (LPM). Column 4 shows results for including country-year and industry-year fixed effects. Column 5 shows results for estimating a conditional logistic regression model with firm (and year) fixed effects; column 6 for a panel data logistic regression model with firm random effects; column 7 for a LPM with firm (and year) fixed effects, and column 8 for a LPM with firm random effects. The dependent variable in all regressions is an indicator variable for whether a CEO is replaced in the same or subsequent year (relative to measuring the peak RRI in year *t*). The main independent variable is an indicator variable for extreme risk ($60 \leq RRI \leq 100$) exposure in year *t*. The benchmark group in all regressions constitutes of firm-years with normal or high risk exposure. Definitions of all variables are in Appendix Table A.1. RepRisk and CEO control variables are measured in year *t*, firm- and country-level variables are measured in year *t – 1*, and market adjusted stock performance in the monthly [-24, -1] interval. All continuous variables are winsorized at 1st and 99th percentiles. We track risk exposure in years 2007-2017 and CEO turnovers from 2007 through 2018. *Z*-statistics (*t*-statistics for LPMs) based on robust standard errors (two-way clustering by industry and year in columns 1-4; by firm and year in column 5 and 7; and by firm in columns 6 and 8) are reported in parentheses below coefficients. *, **, and *** denote 10%, 5%, and 1% significance levels, respectively.

Dependent variable: *CEO replaced in year t or year t + 1*	(1) Conditional (grouped by industry) logit model	(2) Eq. (1) with Jenter and Lewellen (2021) Performance Deciles	(3) LPM (Pooled OLS model)	(4) Logit with country-year and industry-year fixed effects	(5) Conditional (firm fixed effects) logit model	(6) Panel data logit model with firm random effects	(7) LPM (OLS panel model with firm fixed effects)	(8) LPM (OLS panel model with firm random effects)
Extreme risk exposure	0.460***	0.427***	0.074***	0.510***	0.618**	0.643**	0.071**	0.076***
	(3.38)	(3.07)	(3.35)	(3.06)	(2.10)	(2.47)	(2.58)	(2.59)
CEO close to retirement (1/0)	0.547***	0.580***	0.141***	0.615***	0.994***	0.928***	0.172***	0.156***
	(3.88)	(4.03)	(5.20)	(3.83)	(2.74)	(5.44)	(7.55)	(6.88)
CEO Age	0.086***	0.085***	0.010***	0.091***	0.151***	0.158***	0.015***	0.012***
	(8.25)	(6.91)	(6.86)	(9.28)	(4.69)	(8.64)	(9.39)	(9.88)
CEO Tenure (at firm)	0.019	0.020	0.003	0.015	0.413***	0.183***	0.026***	0.009***
	(1.48)	(1.42)	(1.66)	(1.22)	(3.55)	(6.34)	(5.49)	(6.13)
CEO Gender (Male = 1)	-0.018	-0.016	0.008	-0.041	0.806	0.291	0.073	0.015
	(-0.10)	(-0.08)	(0.31)	(-0.18)	(1.50)	(0.87)	(1.54)	(0.53)
CEO is Chairman of the Board (1/0)	-0.098	-0.115	-0.015	-0.137	-0.238	-0.098	-0.021	-0.014
	(-1.07)	(-1.06)	(-1.14)	(-1.31)	(-0.88)	(-0.67)	(-0.98)	(-1.17)
Founder-CEO (1/0)	-1.032***	-1.068***	-0.120**	-1.022**	-5.069**	-3.482***	-0.377***	-0.181***
	(-3.08)	(-2.70)	(-3.12)	(-2.41)	(-2.02)	(-5.23)	(-3.87)	(-5.62)
Ln(Total Assets)	-0.011	-0.011	-0.001	-0.017	0.574	0.012	0.015	-0.004
	(-0.23)	(-0.19)	(-0.20)	(-0.34)	(1.22)	(0.20)	(0.93)	(-0.87)
Return on Assets (%)	-0.000	-0.002	-0.000	-0.004	-0.019	-0.002	-0.002	0.000
	(-0.03)	(-0.24)	(-0.20)	(-0.57)	(-0.80)	(-0.30)	(-1.72)	(0.19)
Market-adj. stock performance in past two years	-0.543***		-0.064***	-0.653***	-0.583***	-0.629***	-0.065***	-0.062***
	(-4.91)		(-4.63)	(-4.62)	(-3.59)	(-5.51)	(-5.91)	(-6.24)
Institutional ownership (%)	0.007**	0.007**	0.001*	0.007**	0.003	0.007**	0.000	0.001**
	(2.11)	(2.00)	(1.82)	(2.36)	(0.13)	(2.01)	(0.80)	(2.10)
Board independence (%)	0.001	0.001	0.000	0.001	-0.010	0.001	-0.001	0.000
	(0.26)	(0.31)	(0.17)	(0.31)	(-0.48)	(0.24)	(-1.77)	(0.43)
Board size	0.017	0.015	0.002	0.016	0.076	0.044*	0.011***	0.003
	(0.85)	(0.79)	(0.81)	(0.88)	(0.84)	(1.90)	(3.54)	(1.28)
Succession	0.593	0.502	0.088	0.597	0.190	0.805	-0.002	0.101**
	(1.44)	(1.11)	(1.52)	(1.27)	(0.16)	(1.50)	(-0.04)	(2.18)
Gender ratio (% of female directors)	0.005	0.005	0.001	0.005	-0.000	0.007	0.000	0.001
	(0.83)	(0.72)	(0.67)	(0.82)	(-0.01)	(1.07)	(0.13)	(1.36)
Ln(GDP per capita)	-0.919**	-0.785	-0.149*		-0.777	-0.050	-0.089	0.018
	(-2.20)	(-1.21)	(-1.90)		(-0.26)	(-0.10)	(-1.30)	(0.41)
Globalization index	-0.126**	-0.058	-0.020		-0.178	0.148***	-0.016	0.013***
	(-2.05)	(-1.10)	(-1.67)		(-0.22)	(3.51)	(-1.16)	(3.88)
Regulatory Quality	-0.271	-0.375	-0.016		-0.329	-0.091	0.004	0.005
	(-0.58)	(-0.71)	(-0.22)		(-0.19)	(-0.20)	(0.06)	(0.10)
Control of Corruption	-0.199	0.017	0.001		-0.268	0.392	0.084	0.010
	(-0.43)	(0.03)	(0.01)		(-0.08)	(1.00)	(1.11)	(0.29)
Political Executive Constraints	-0.179	-0.281	-0.020			0.798*		0.034
	(-0.27)	(-0.39)	(-0.27)			(1.71)		(0.98)
Heritage Economic Freedom index	-0.012	-0.017	-0.002		-0.021	-0.012	-0.005	-0.001
	(-0.34)	(-0.48)	(-0.47)		(-0.12)	(-0.44)	(-1.22)	(-0.28)
Constant		9.959	2.942**	-4.982***		-30.995***	1.433	-2.131***
		(1.13)	(2.26)	(-5.46)		(-4.12)	(0.97)	(-3.38)
Observations	9,742	9,668	9,770	8,724	6,790	9,770	9,770	9,770
Number of firm-fixed effects					715	1,138	1,138	1,138
Jenter & Lewellen (2021) performance deciles	No	Yes	No	No	No	No	No	No
Year fixed effects	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	No	No	No	No	No
Country fixed effects	Yes	Yes	Yes	No	No	No	No	No
Industry-year fixed effects	No	No	No	Yes	No	No	No	No
Country-year fixed effects	No	No	No	Yes	No	No	No	No
Firm fixed (or random) effects	No	No	No	No	Yes	Yes	Yes	Yes
Clustering	Industry Year	Industry Year	Industry Year	Industry Year	Firm Year	Firm	Firm Year	Firm
Pseudo-R^2 (R^2-within for LPM)	0.0994	0.1111	0.1030	0.1551	0.3474	0.2550	0.2100	0.1892

Table 5 Kink Regression Discontinuity (RD) Design

The table depicts results for (sharp) kink RD design models, where the dependent variable is CEO turnover in year *t* or *t + 1,* and the running variable is the highest value for a firm's continuous RRI index in year *t*. All columns include year, industry, and country fixed effects. We use the kink RD design to compare the slopes for CEO turnover probability on each side of the cutoff. The analysis covers 11,094 firm-year observations between years 2007 through 2017 (we track CEO turnover in years 2007-2018). In Panel A, the cutoff is RRI = 60 and indicates if a firm has extreme risk exposure in year *t*. We report two different types of estimates: conventional and robust bias-corrected RD estimates (based on the robust variance estimator (Calonico, Cattaneo, and Titiunik (2014)), respectively. In Panel B, we show results for a multiple cutoff kink RD design (Cattaneo et al. (2016)), where we employ four cutoffs: RRI = 70, RRI = 60, RRI = 50, and RRI = 40. Cutoffs RRI = 60 and RRI = 50 denote firms with extreme and high risk exposure, respectively, and are based on RepRisk's methodology of identifying risk exposure levels for ESG issues. Cutoffs RRI =70 and RRI = 40 are arbitrarily chosen. Bandwidths are chosen using the one common mean square error (MSE)-optimal bandwidth selector (Calonico, Cattaneo, and Titiunik (2014), Calonico et al. (2019). Columns 1-4 show results for local linear regression where the polynomial fit is of first-order (p = 1), while columns 5-8 show results for local quadratic regressions where the polynomial fit is of second-order (p = 2). In columns 1 and 5, standard errors are corrected for heteroskedasticity using the nearest-neighbor estimator, while in columns 2-4 and 6-8, standard errors are corrected using the heteroskedasticity-robust plug-in residuals variance estimator without weights (Calonico et al. (2019), Hartzmark and Sussman (2019)). The clustering variable in columns 2-4 and 6-8 are as shown in the table. In all columns, a local polynomial of p + 1 is used to estimate the bias, the kernel function is triangular, and estimates are adjusted for mass points in the running variable. *Z*-statistics are shown in parentheses. *, **, and *** denote 10%, 5%, and 1% significance levels, respectively.

Dependent variable: *CEO replaced in year t or year t + 1*	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Local linear model (p = 1)				Local quadratic model (p = 2)			
PANEL A: KINK RD DESIGN								
Conventional estimates								
D(RRI = 60)	0.058**	0.076***	0.057***	0.056***	0.131**	0.148***	0.132***	0.130**
	(2.48)	(2.86)	(3.24)	(2.72)	(2.11)	(2.64)	(2.80)	(2.46)
Robust bias-corrected estimates								
D(RRI = 60)	0.102**	0.127***	0.104**	0.100***	0.189**	0.200**	0.190***	0.188**
	(2.43)	(2.81)	(3.22)	(2.63)	(2.07)	(2.51)	(4.64)	(2.40)
Cluster	None	RRI	SIC2	Firm	None	RRI	SIC2	Firm
Observations	11,094	11,094	11,094	11,094	11,094	11,094	11,094	11,094
Observations left of cutoff	248	209	248	248	337	291	337	337
Observations right of cutoff	246	216	246	246	280	269	280	280
Bandwidth selector	MSE-optimal	MSE-optimal	MSE-optimal	MSE-optimal	MSE-optimal	MSE-optimal	MSE-optimal	MSE-optimal
Bandwidth (RRI units)	6.30	5.58	6.37	6.41	8.42	7.98	8.38	8.47
Year, industry, and country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Local linear model (p = 1)				Local quadratic model (p = 2)			
PANEL B: KINK RD WITH MULTIPLE CUTOFFS								
Conventional estimates								
D(RRI = 70)	0.143**	0.042*	0.203***	0.140*	0.251	0.138***	0.281	0.240
	(0.98)	(1.65)	(3.19)	(1.90)	(1.25)	(2.84)	(1.55)	(1.18)
D(RRI = 60)	0.058**	0.076***	0.057***	0.056***	0.131**	0.148***	0.132***	0.130**
	(2.48)	(2.86)	(3.24)	(2.72)	(2.11)	(2.64)	(2.80)	(2.46)
D(RRI = 50)	-0.011	-0.021	-0.009	-0.011	-0.032	-0.041	-0.027	-0.033
	(-0.55)	(-1.49)	(-0.52)	(-0.56)	(-0.72)	(-1.52)	(-0.73)	(-0.73)
D(RRI = 40)	-0.006	-0.007	-0.008	-0.006	-0.019	-0.017	-0.019	-0.019
	(-0.44)	(-1.13)	(-0.68)	(-0.46)	(-1.83)	(-1.17)	(-0.93)	(-0.86)
Robust bias-corrected estimates								
D(RRI = 70)	0.294*	0.144***	0.390**	0.282*	0.427	0.289***	0.455	0.416
	(1.89)	(2.88)	(2.22)	(1.86)	(1.29)	(4.82)	(1.64)	(1.43)
D(RRI = 60)	0.102**	0.127***	0.104**	0.100***	0.189**	0.200**	0.190***	0.188**
	(2.43)	(2.81)	(3.22)	(2.63)	(2.07)	(2.51)	(4.64)	(2.40)
D(RRI = 50)	-0.014	-0.029	-0.012	-0.014	-0.046	-0.064	-0.044	-0.047
	(-0.42)	(-1.19)	(-0.41)	(-0.44)	(-0.76)	(-1.62)	(-0.81)	(-0.76)
D(RRI = 40)	-0.016	-0.019	-0.019	-0.016	-0.021	-0.016	-0.020	-0.021
	(-0.79)	(-1.37)	(-1.04)	(-0.82)	(-0.62)	(-0.72)	(-0.67)	(-0.63)
Clustering	None	RRI	SIC2	Firm	None	RRI	SIC2	Firm
Observations	11,094	11,094	11,094	11,094	11,094	11,094	11,094	11,094
Bandwidth selector	MSE-optimal	MSE-optimal	MSE-optimal	MSE-optimal	MSE-optimal	MSE-optimal	MSE-optimal	MSE-optimal
Year, industry, and country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 6 Multivariate results, by ESG category

The table shows results for estimating equation (1), where the dependent variable is an indicator variable for whether a CEO is replaced in year *t* or *t + 1*. In columns 1-4, the main independent variable is an indicator variable for extreme risk exposure (60 ≤ RRI ≤ 100) in year *t*, and in columns 5-8, it is an indicator variable for high risk exposure (50 ≤ RRI ≤ 59). Columns 1 and 5 show results for E issues, columns 2 and 6 for S issues, columns 3 and 7 for "stakeholder" issues (E and S), and columns 4 and 8 for G issues. The benchmark group in columns 1-4 constitutes of firm-years with normal or high risk exposure, while in columns 5-8, it constitutes of firm-years with normal risk exposure (firm-years with extreme risk exposure are left out). Definitions of all variables are in Appendix Table A.1. All continuous variables are winsorized at 1st and 99th percentiles. We track risk exposure to ESG issues in years 2007-2017 and CEO turnovers from 2007 through 2018. *Z*-statistics based on robust standard errors (clustered by industry and year) are reported in parentheses below coefficients. *, **, and *** denote 10%, 5%, and 1% significance levels, respectively.

Dependent variable: *CEO replaced in year t or year t + 1*	(1) Environ-mental issues	(2) Social issues	(3) Stake-holder (E and S) issues	(4) Gover-nance issues	(5) Environ-mental issues	(6) Social issues	(7) Stake-holder (E and S) issues	(8) Gover-nance issues
Extreme risk exposure	0.583	0.410*	0.483**	0.449**				
	(1.48)	(1.73)	(1.96)	(2.01)				
High risk exposure					0.045	0.138	0.105	0.129
					(0.11)	(0.65)	(0.47)	(0.56)
CEO close to retirement (1/0)	0.544***	0.527***	0.554***	0.515***	0.553***	0.531***	0.533***	0.533***
	(3.47)	(3.39)	(3.58)	(3.51)	(3.43)	(3.48)	(3.42)	(3.44)
CEO Age	0.089***	0.089***	0.088***	0.088***	0.085***	0.087***	0.086***	0.086***
	(7.11)	(6.35)	(6.53)	(7.02)	(7.23)	(7.55)	(7.38)	(7.36)
CEO Tenure (at firm)	0.019	0.019	0.019	0.019	0.018	0.019	0.020	0.020
	(1.36)	(1.39)	(1.38)	(1.44)	(1.45)	(1.47)	(1.53)	(1.53)
CEO Gender (Male = 1)	-0.012	-0.038	-0.040	0.007	0.052	-0.005	0.021	0.023
	(-0.05)	(-0.19)	(-0.19)	(0.03)	(0.23)	(-0.02)	(0.10)	(0.11)
CEO is Chairman of the Board (1/0)	-0.092	-0.092	-0.096	-0.092	-0.098	-0.103	-0.101	-0.101
	(-0.96)	(-0.92)	(-0.95)	(-0.93)	(-0.93)	(-1.00)	(-0.98)	(-0.98)
Founder-CEO (1/0)	-1.063***	-1.007***	-1.017***	-1.074***	-1.038***	-1.053***	-1.049***	-1.050***
	(-2.80)	(-2.61)	(-2.61)	(-2.93)	(-2.77)	(-2.79)	(-2.79)	(-2.80)
Ln(Total Assets)	-0.004	-0.003	-0.002	-0.015	0.004	0.008	0.004	0.004
	(-0.08)	(-0.05)	(-0.03)	(-0.27)	(0.07)	(0.14)	(0.07)	(0.07)
Return on Assets (%)	-0.001	-0.001	-0.001	-0.001	-0.001	0.000	-0.000	-0.000
	(-0.10)	(-0.11)	(-0.09)	(-0.07)	(-0.09)	(0.02)	(-0.02)	(-0.02)
Market-adj. stock performance in past two years	-0.552***	-0.545***	-0.536***	-0.570***	-0.552***	-0.547***	-0.547***	-0.547***
	(-4.83)	(-4.77)	(-4.70)	(-4.99)	(-4.78)	(-4.80)	(-4.71)	(-4.70)
Institutional ownership (%)	0.007*	0.007	0.007*	0.007**	0.007	0.007*	0.007*	0.007*
	(1.77)	(1.64)	(1.69)	(2.00)	(1.50)	(1.73)	(1.80)	(1.78)
Board independence (%)	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001
	(0.08)	(0.09)	(0.10)	(0.24)	(0.32)	(0.38)	(0.31)	(0.31)
Board size	0.015	0.013	0.014	0.018	0.013	0.015	0.016	0.016
	(0.77)	(0.72)	(0.70)	(0.89)	(0.60)	(0.75)	(0.77)	(0.78)
Succession	0.695*	0.634	0.637	0.656	0.630	0.615	0.609	0.616
	(1.68)	(1.47)	(1.50)	(1.54)	(1.45)	(1.36)	(1.36)	(1.38)
Gender ratio (% of female directors)	0.006	0.006	0.006	0.006	0.006	0.005	0.006	0.006
	(0.83)	(0.70)	(0.72)	(0.78)	(0.83)	(0.67)	(0.74)	(0.74)
Ln(GDP per capita)	-0.948	-1.117*	-1.040	-0.916	-0.969	-1.084*	-1.004	-1.001
	(-1.42)	(-1.70)	(-1.61)	(-1.37)	(-1.55)	(-1.72)	(-1.62)	(-1.62)
Globalization index	-0.138**	-0.119*	-0.128*	-0.126*	-0.128*	-0.129*	-0.124	-0.124
	(-2.12)	(-1.77)	(-1.89)	(-1.85)	(-1.68)	(-1.68)	(-1.63)	(-1.62)
Regulatory Quality	-0.273	-0.227	-0.228	-0.316	-0.288	-0.297	-0.275	-0.269
	(-0.57)	(-0.48)	(-0.48)	(-0.68)	(-0.55)	(-0.59)	(-0.56)	(-0.54)
Control of Corruption	-0.145	-0.127	-0.102	-0.265	-0.203	-0.249	-0.209	-0.210
	(-0.28)	(-0.24)	(-0.19)	(-0.51)	(-0.41)	(-0.46)	(-0.41)	(-0.41)
Political Executive Constraints	-0.187	-0.164	-0.186	-0.160	-0.150	-0.160	-0.146	-0.147
	(-0.27)	(-0.24)	(-0.27)	(-0.23)	(-0.22)	(-0.23)	(-0.21)	(-0.21)
Heritage Economic Freedom index	-0.010	-0.012	-0.012	-0.010	-0.012	-0.008	-0.013	-0.013
	(-0.26)	(-0.32)	(-0.32)	(-0.27)	(-0.31)	(-0.22)	(-0.35)	(-0.35)
Constant	16.934*	17.013*	17.159*	15.920	16.631	17.652*	16.512	16.447
	(1.72)	(1.70)	(1.74)	(1.56)	(1.63)	(1.71)	(1.63)	(1.62)
Observations	9,507	9,550	9,603	9,589	9,425	9,511	9,596	9,592
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-years with extreme risk exposure included	Yes	Yes	Yes	Yes	No	No	No	No
Pseudo-R^2	0.1089	0.1081	0.1086	0.1078	0.1062	0.1076	0.1065	0.1066

Table 7 Probability of a firm being exposed to extreme risk exposure to ESG issues in a year, by legal origin

The table shows results for estimating equation (2): $\Pr(Extreme\ risk\ exposure = 1_{it}) = F(\beta_0 + \beta_1 \cdot Civil - law\ country_i + \boldsymbol{X'}_{it}\delta + \boldsymbol{Z'}_{i,t-1}\gamma + \boldsymbol{C'}_{c,t-1}\varphi + \eta_t + \theta_s)$, where the dependent variable takes the value of one if a firm has extreme risk exposure in year *t*. In Panel A, the main independent variables are an indicator variable for civil-law countries (column 1), and indicator variables for the legal origin type of a civil-law country (French, German, or Scandinavian) (column 2), respectively. Legal origin categories are based on La Porta, Lopez-de-Silanes, and Shleifer (2008) and are taken from Appendix B in Liang and Renneboog (2017). In Panel B, the main independent variables are indicator variables for whether a country scores greater or equal to the median for the following time-invariant country-level variables for the 18 countries included in the analysis: anti-director rights index (Revised ADRI, Djankov et al. (2008)) (column 1), the anti-director rights index (Corrected ADRI 2005, Spamann (2010)) (column 2), the Anti-Self Dealing Index Djankov et al. (2008)), (column 3), the public sector ethics index (Kaufmann (2004)) (column 4), and the corporate governance index (Kaufmann (2004)) (column 5), respectively. Definitions of all variables are in Appendix Table A.1. The benchmark group in all regressions constitutes of firm-years with normal or high risk exposure. Control variables (same as in equation (1)) are included in all regressions but are not reported to save space. We include year and industry fixed effects. We follow Liang and Renneboog (2017) and exclude "Socialist" countries from the analysis (Czech Republic is the only country in our sample categorized as a "Socialist" country). *Z*-statistics based on robust standard errors (clustered by industry and year) are reported in parentheses below coefficients. *, **, and *** denote 10%, 5%, and 1% significance levels, respectively.

Dependent variable: *Extreme risk exposure (RRI ≥ 60) in year t*	(1) Common-law vs. civil-law	(2) Common-law vs. type of civil-law (French, German, Scandinavian)
PANEL A: BY LEGAL ORIGIN		
Civil-law country	0.839	
	(1.20)	
French civil-law country		-2.366**
		(-2.09)
German civil-law country		2.101***
		(2.61)
Scandinavian civil-law country		1.552
		(0.98)
Constant	-16.047	12.195
	(-1.59)	(0.83)
Observations	7,007	7,007
Control variables included	Yes	Yes
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Pseudo-R^2	0.4888	0.4974

	(1) Anti-Director Rights Index (Revised Adri, Djankov et al., 2008)	(2) Anti-Director Rights Index (Corrected Adri 2005, Spamann (2010))	(3) Anti-Self Dealing Index (Djankov et al., 2008)	(4) Public Sector Ethics (Kaufmann, 2004)	(5) Corporate Governance Index (Kaufmann, 2004)
PANEL B: BY COUNTRY-LEVEL VARIABLES					
Indicator variable for greater or equal to median	-0.241	-0.713	-1.258**	0.059	-0.334
	(-0.34)	(-0.86)	(-2.10)	(0.08)	(-0.43)
Constant	-16.719	-13.931	-22.616*	-20.366**	-17.045**
	(-0.92)	(-0.85)	(-1.81)	(-2.36)	(-2.53)
Observations	7,007	7,007	7,007	7,007	7,007
Control variables included	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Pseudo-R^2	0.4872	0.4878	0.4920	0.4871	0.4870

Table 8 Materiality vs. Shaming Effects

The table analyzes the relative importance of shaming and materiality effects in civil-law vs. common-law countries. The estimation set-up is through logistic regression models $\Pr(CEO\ replaced\ [-6,12] = 1_i) = (\beta_0 + \beta_1 \cdot CAR[-k,+n]_i + \boldsymbol{X'}_i\delta + \boldsymbol{Z'}_i\gamma + \boldsymbol{C'}_c\varphi + \eta_t + \theta_s)$, where F is the cumulative logistic distribution function. The dependent variable is an indicator variable for whether a CEO is replaced in the monthly interval [-6, 12] months (here we follow Beneish, Marshall, and Yang (2017)) relative to a negative ESG-related news article being published on day *d* of month *m*. $\boldsymbol{X}_i$ is a vector of CEO-control variables, $\boldsymbol{Z}_i$ is a vector of lagged (one year) firm-level control variables (except for market adjusted stock performance which is measured for the monthly interval [-24, -1] relative to an event taking place in month *m* of year *t*), and $\boldsymbol{C}_c$ is a vector of lagged (one year) country-level control variables. *Materiality* effects are captured through stock price reaction (i.e., CAR[-*k*; +*n*]). CARs are estimated using the market model; the estimation window is -270 through -30 trading days. Total returns for US firms, as well as for the S&P 500 index, are from CRSP. Total returns for European firms are from COMPUSTAT Global Daily, and total returns for European country-specific stock indexes are from WRDS World Indices database. The *shaming* effect (*Pure Shaming*) is captured through negative news coverage using the RepRisk's continuous Reputational Risk Index (RRI). We orthogonalize, for each regression, the *materiality* and *shaming* effects by estimating an OLS regression model where the dependent variable is the (winsorized) RRI index, the independent variable is the (winsorized) CAR variable included in the respective column, and the constant is left out. The residuals from this model (varies by column) constitute the *Pure Shaming* variable. All columns include industry and year fixed effects. We identify ESG events using the following procedure: (i) an event is defined to start when RRI goes to 60 or above and lasts for the time it stays at 60 or above; (ii) we use RepRisk's News Item database to identify news articles which were published for the first time in a country (i.e., *Novelty* = 2) within the month in which an event starts; and (iii) within that same month, we define the event date as the publication date of the news article with the highest reach and severity, in that order. Using this procedure, we identify 532 ESG events. After estimating the event study, and merging with other databases, we are left with 406 ESG events. Control variables are the same as in Table 3, and definitions of all variables are in Appendix Table A.1. All continuous variables are winsorized at 1st and 99th percentiles. Columns 1, 4, and 7 include all observations. Columns 2, 5, and 8 include firms in common-law countries, and columns 3, 6, and 9 include firms in civil-law countries. *Z*-statistics (clustered by industry and year) are reported in parentheses below coefficients. *, **, and *** denote 10%, 5%, and 1% significance levels, respectively.

Dependent variable: *CEO replaced in months -6 through 12 relative to a negative ESG-related news event*	(1) Full Sample	(2) Common-law countries	(3) Civil-law countries	(4) Full Sample	(5) Common-law countries	(6) Civil-law countries	(7) Full Sample	(8) Common-law countries	(9) Civil-law countries
CAR[-1; 1] ("Materiality")	-0.482*	-0.476	-3.329***						
	(-1.73)	(-1.39)	(-3.04)						
CAR[-2; 2] ("Materiality")				-0.411*	-0.519*	-2.160***			
				(-1.74)	(-1.77)	(-3.07)			
CAR[-7; 7] ("Materiality")							-0.260*	-0.269**	-2.394**
							(-1.66)	(-2.01)	(-2.37)
Pure Shaming	0.182*	0.180	0.882***	0.159*	0.164	0.832***	0.157*	0.213	1.067**
	(1.95)	(1.39)	(2.80)	(1.75)	(1.39)	(2.84)	(1.67)	(1.48)	(2.54)
CEO close to retirement (1/0)	-0.099	-0.069	-9.713	-0.246	-0.284	-8.567	-0.139	1.543	-8.181
	(-0.13)	(-0.06)	(-1.04)	(-0.33)	(-0.22)	(-1.07)	(-0.17)	(1.01)	(-1.64)
CEO Age	0.150**	0.152	1.206*	0.167**	0.187	1.037*	0.176**	0.181**	1.328***
	(2.06)	(1.15)	(1.67)	(2.15)	(1.47)	(1.79)	(2.20)	(2.01)	(2.98)
CEO Tenure (at firm)	0.143	0.264	2.777**	0.126	0.258	2.597***	0.105	0.139	3.811***
	(1.30)	(1.36)	(2.54)	(1.28)	(1.39)	(2.86)	(1.16)	(0.91)	(3.11)
CEO Gender (Male = 1)									
CEO is Chairman of the Board (1/0)	-0.612	-1.903	-3.844	-0.855	-2.138*	-2.816	-0.708	-2.116*	-4.223
	(-0.73)	(-1.38)	(-0.50)	(-1.15)	(-1.72)	(-0.38)	(-0.98)	(-1.74)	(-0.91)
Founder-CEO (1/0)	0.436	-0.890		0.297	-1.723		0.598	-1.653	
	(0.26)	(-0.41)		(0.20)	(-0.85)		(0.38)	(-0.78)	
Ln(Total Assets)	-0.428	-0.149	-4.080	-0.535	0.173	-3.776	-0.623*	-0.444	-5.357***
	(-1.16)	(-0.16)	(-1.36)	(-1.54)	(0.20)	(-1.29)	(-1.73)	(-0.39)	(-3.03)
Return on Assets (%)	-0.047	-0.155	-1.558**	-0.024	-0.102	-1.450**	-0.019	-0.232**	-1.805**
	(-0.58)	(-1.08)	(-2.18)	(-0.35)	(-0.84)	(-2.42)	(-0.28)	(-2.07)	(-2.55)
Market-adj. stock performance in past two years	-0.270	-3.222*	9.544**	0.227	-1.021	9.300**	0.149	-1.315	12.097***
	(-0.28)	(-1.66)	(2.16)	(0.30)	(-0.68)	(2.16)	(0.19)	(-0.95)	(3.19)
Institutional ownership (%)	-0.000	-0.000	-0.006**	-0.000	-0.000	-0.006*	-0.000	-0.000	-0.008**
	(-1.19)	(-0.53)	(-2.01)	(-1.02)	(-0.24)	(-1.92)	(-1.13)	(-0.58)	(-2.18)
Board independence (%)	0.028	0.052	0.053	0.025	0.022	0.044	0.030	0.017	0.046
	(1.03)	(0.73)	(0.70)	(1.05)	(0.39)	(0.50)	(1.27)	(0.27)	(0.73)
Board size	0.119	0.316	0.203	0.112	0.237	0.141	0.135	0.251	0.158
	(1.22)	(1.55)	(0.32)	(1.30)	(1.31)	(0.20)	(1.62)	(1.48)	(0.33)
Succession	-4.426	-11.332	3.365	-4.611*	-9.783	2.817	-4.118	-6.297	-3.108
	(-1.44)	(-1.28)	(0.35)	(-1.73)	(-1.24)	(0.33)	(-1.33)	(-0.87)	(-0.47)
Gender ratio (% of female directors)	-0.071	0.035	-0.833***	-0.052	0.020	-0.767***	-0.061	0.048	-0.939***
	(-1.59)	(0.50)	(-2.62)	(-1.27)	(0.31)	(-3.10)	(-1.49)	(0.74)	(-3.37)
Ln(GDP per capita)	-2.062	-8.045	-75.444	-2.429	-9.193	-65.682	-2.535	-29.377*	-97.198**
	(-1.01)	(-0.55)	(-1.21)	(-1.22)	(-0.69)	(-1.39)	(-1.36)	(-1.79)	(-2.39)
Globalization index	0.183	-0.662*	10.245*	0.152	-0.595	9.294**	0.178	-0.882***	14.113***
	(1.05)	(-1.69)	(1.93)	(0.93)	(-1.47)	(2.15)	(0.95)	(-3.10)	(2.96)
Regulatory Quality	-1.694	7.184	53.066	-1.919	7.310	45.061	-1.660	15.081***	77.168**
	(-0.69)	(1.11)	(1.28)	(-0.85)	(1.20)	(1.38)	(-0.67)	(2.78)	(2.31)
Control of Corruption	-0.662	2.726	-15.248	-0.298	1.155	-11.665	-0.755	-13.388	-23.145
	(-0.31)	(0.27)	(-1.23)	(-0.15)	(0.13)	(-1.19)	(-0.41)	(-1.36)	(-1.62)
Political Executive Constraints	0.321		25.405**	0.491		23.685**	-0.050		33.604**
	(0.22)		(2.08)	(0.37)		(2.23)	(-0.03)		(2.13)
Heritage Economic Freedom index	0.142	-1.011	-3.794	0.131	-0.737	-3.504	0.167	-1.166*	-5.276**
	(1.03)	(-1.59)	(-1.54)	(1.02)	(-1.09)	(-1.62)	(1.28)	(-1.77)	(-2.11)
Constant	-18.000	188.816	-109.481	-10.066	171.831	-124.356	-10.545	465.678*	-185.573*
	(-0.79)	(0.98)	(-0.44)	(-0.45)	(0.88)	(-0.66)	(-0.47)	(1.85)	(-1.95)
Observations	350	160	125	352	167	122	350	152	125
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo-R^2	0.3057	0.4067	0.6011	0.2857	0.3852	0.5631	0.2858	0.4586	0.5803

Table 9 Board Stakeholderism and CEO Turnover

The table shows results for multinomial logistic regressions where the dependent variable takes a value of two if turnover is caused by poor performance ("performance-induced"), a value of one if turnover occurs when performance is strong ("other" turnover), and zero if there is no turnover in year *t* or *t + 1*. We classify performance-induced versus other turnovers following Jenter and Lewellen (2021). That is, we use their twoprobit model to attain estimates for the probabilities of performance-induced turnover (by estimating a probit model where CEO turnover in year *t* is the dependent variable and independent variables are industry-adjusted stock returns divided by the standard deviation of the returns in years [-2, 0] years, CEO age, CEO tenure, ln(Total assets) (lagged), and an indicator variable for dividend paying firms (lagged)), and other turnover (by estimating a probit model where the dependent variable is CEO turnover in year *t* and independent variables are CEO age, indicators for CEOs aged 61-63, 64-66, and over 66, respectively, CEO tenure, ln(Total assets) (lagged), and an indicator variable for dividend-paying firms (lagged)), respectively. We calculate the probability of turnover as (P(other) + (1 – P(other)) · (P(Performance-induced turnover))). Then, we use the attained probabilities for each firm to calculate the probability of a turnover being performance-induced given that we observe a turnover in a year, i.e., we calculate P(Performance-induced turnover|Turnover) = P(Performance induced and Turnover)/P(Turnover). Turnovers related to poor performance are turnovers for which the implied performance-induced turnover probability is over 50% for a firm in a year (Jenter and Lewellen (2021)). The remaining turnovers are classified as turnovers which occur when performance is strong (other turnovers). We track turnovers in years *t* and *t + 1* relative to measuring the peak RRI in year *t*. If there are multiple turnovers in years *t* and *t + 1* for the same firm, the dependent variable is classified according to the type of turnover occurring in year *t*.

Board Stakeholderism Index 1 is the sum of the following indicator variables: firms which score greater than the median on board independence, firms which score greater than the median on board gender (female) ratio, firms which score lower or equal to the median on board nationality mix, and firms which score lower or equal to the median on board succession, respectively. Medians are calculated based on all observations in the full sample (*n* = 11,094), while the indicator variables are based on a firm's value (relative to the median) in a year. *Board Stakeholderism Index 2* is the sum of a firm's score on *Board Stakeholderism Index 1* plus the sum of indicator variables for whether an employee representative director serves on the board, whether a government representative director serves on the board, whether at least one director serves on a non-profit government organization's board, whether at least one director serves on a non-profit charity organization's board, and whether a firm is a state-owned enterprise (SOE) in a year. All indicator variables used to calculate the indices are measured in year *t – 1*, and data are from BoardEx (except for information on SOE status which is from Thomson Reuters Eikon Asset4 ESG database). Controls are included but not reported to save space (same as in Table 3 except that market-adjusted stock performance in past two years is replaced by industry-adjusted stock returns divided by standard deviation of the returns in the yearly interval [-2, 0] (Jenter and Lewellen (2021)). The main independent variables in column 1 are *Extreme risk exposure*, *Board Stakeholderism Index 1*, and their interaction term. In column 2, they are *Extreme risk exposure*, *Board Stakeholderism Index 2*, and their interaction term. *Z*-statistics (clustered by industry and year) are reported in parentheses below coefficients. *, **, and *** denote 10%, 5%, and 1% significance levels, respectively.

	(1) Multinomial logistic regression		(2) Multinomial logistic regression	
Dependent variable:	*Turnover when performance is strong*	*Turnover caused by poor performance*	*Turnover when performance is strong*	*Turnover caused by poor performance*
Extreme risk exposure	-0.252	1.026**	-0.670	1.750**
	(-0.57)	(2.14)	(-1.15)	(2.23)
Board Stakeholderism Index 1	-0.060	-0.019		
	(-0.63)	(-0.27)		
Board Stakeholderism Index 2		-0.318	-0.093	-0.010
		(-1.25)	(-1.19)	(-0.17)
Extreme risk exposure * *Board Stakeholderism Index*	0.344**	-0.318	0.321**	-0.415
	(2.05)	(-1.25)	(2.24)	(-1.59)
Constant	-17.403	-28.227**	-16.762	-28.136*
	(-0.83)	(-2.03)	(-0.85)	(-1.95)
Controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Observations	9,580		8,689	
Pseudo-R^2	0.1744		0.1794	

Appendix A

Appendix Table A.1 Description of variables

Appendix Table A.1 shows the descriptions of the variables used in this paper, as well as the sources.

Variable Name	**Variable Description**	**Source**
REPRISK VARIABLES:		
Reputational Risk Index (RRI)	*The current Reputational Risk Exposure of firm i in month m of year t. The variable indicates the amount of risk exposure to* ESG (*stakeholder) issues that a firm is exposed to. A value of -1 indicates that the firm has no risk incidents, a value between 0 and 24 indicates low level of risk exposure, between 25 and 49 medium level, 50 and 59 high level, 60 and 74 very high level, and over 75 indicates extremely high risk exposure.*	RepRisk
Extreme Risk Exposure	*An indicator variable which takes the value of one if a company's RRI is between 60 and 100, and zero otherwise. We measure RRI for each firm for each calendar year and choose the RRI of the month in which the RRI index in that year is at its highest level. If the RRI is equally high in two or more months in the same year, we choose the month for which the RRI first peaks.*	RepRisk
High Risk Exposure	*An indicator variable which takes the value of one if a company's RRI is between 50 and 59, and zero otherwise. We measure RRI for each firm for each calendar year and choose the RRI of the month in which the RRI index in that year is at its highest level. If the RRI is equally high in two or more months in the same year, we choose the month for which the RRI first peaks.*	RepRisk
Relative RRI	*A firm's peak RRI in a year relative to the average RRI of firms headquartered in the company's country (50%) and relative to the average RRI of firms in the same industry (50%) in that same year.*	RepRisk
Epercentage (%)	*The proportion of Environment incidents in proportion to all incidents that make up the RRI.*	RepRisk
Spercentage (%)	*The proportion of Social incidents in proportion to all incidents that make up the RRI.*	RepRisk
Gpercentage (%)	*The proportion of Governance incidents in proportion to all incidents that make up the RRI.*	RepRisk
Top Issue	*Shows which ESG category the firm is most exposed to in a month; e.g., Top 1 Issue – "Corruption, Bribery, Extortion, and Money Laundering".*	RepRisk
News Count by Issue	*The number of media publications for Top Issue 1, Top Issue 2, etc.*	RepRisk
Severity breakdown by Issue	*Shows the severity breakdown (1, 2, or 3) for an issue (Top Issue 1, etc.) for each month; 1 represents low severity and 3 represents the highest.*	RepRisk
Reach breakdown by Issue	*Shows the reach breakdown (1, 2, or 3) for an issue (Top 1, Top 2, etc.) for each month; 1 represents low influence sources and 3 high influence sources (such as Financial Times, New York Times, BBC, and others).*	RepRisk
CEO VARIABLES:		
CEO Turnover	*An indicator variable for CEO turnover. 1 = CEO turnover, 0 otherwise. We identify CEO changes using ExecuComp for US firms, as well as CapitalIQ and Orbis for European firms. CEO Turnover is defined is 1 if a CEO change occurs in calendar year t or calendar year t + 1, and 0 otherwise. We manually go through each CEO turnover and check whether the CEO turnover occurred because of a merger, acquisition, or similar reasons, in which case the indicator variable takes the value 0. To attain this information, we rely on public sources (internet sources, annual reports, etc.).*	ExecuComp, CapitalIQ, Orbis, hand-collected data from public sources (webpages, annual reports, etc.)
CEO Turnover[-6, 12]	*CEO Turnover[-6, 12] equals 1 if a CEO is replaced within the [-6, 12] months interval relative to a ESG event occurring in month 0. The choice of the interval follows* Beneish, Marshall, and Yang (2017). *The definition of CEO turnover is the same as for the variable CEO turnover.*	ExecuComp, CapitalIQ, Orbis, hand-collected data from public sources (webpages, annual reports, etc.)
Turnovers caused by poor performance ("performance-induced") and turnovers when performance is strong ("other" turnover)	*We classify "performance-induced" (we name this "turnover caused by poor performance") versus "other" (we name this "turnover when performance is strong") CEO turnover following Jenter and Lewellen (2021). That is, we use their two-probit model to attain estimates for the probabilities of performance-induced turnover (by estimating a probit model where CEO turnover in year t is the dependent variable, and where the independent variables are industry-adjusted stock returns divided by the standard deviation of the returns in years [-2, 0] years, CEO age, CEO tenure, ln(Total assets) (lagged), and an indicator variable for dividend paying firms (lagged)) and other turnover (by estimating a probit model where the dependent variable is CEO turnover in year t, and the independent variables are CEO age, indicators for CEO aged 61-63, 64-66, and over 66, respectively, CEO tenure, ln(Total assets) (lagged), and an indicator variable for dividend-paying firms (lagged)), respectively. We, then, calculate the probability of a turnover occurring in year t as (P(other) + (1 – P(other))· (P(Performance-induced turnover))). Finally, we use the attained probabilities for each firm to calculate the probability of a turnover being performance-induced given that we observe a turnover, i.e., P(Performance-induced turnover|Turnover) = P(Performance induced turnover)/P(Turnover). Turnovers related to performance are turnovers for which the implied probability of a turnover being performance-induced is over 50% for a firm in a year (Jenter and Lewellen (2021)). The remaining turnovers are classified as "other turnover (turnovers when performance is strong).*	Jenter and Lewellen (2021)

Retirement close (>=63 years)	*An indicator variable that equals 1 if a CEO is 63 years or older, i.e., close to retirement, and 0 otherwise (Beneish, Marshall, and Yang (2017)).*	Hand-collected sample (CapitalIQ and Orbis) (Europe) and ExecuComp (US)
Age	*Age of a CEO in years.*	Hand-collected sample (CapitalIQ and Orbis) (Europe) and ExecuComp (US)
CEO tenure	*The time (in years) that a person has served as CEO of a company. For CEOs of US firms, we calculate tenure by subtracting the variable "Date become CEO" from the current year. If a CEO is a former CEO, ExecuComp shows the date for which the CEO rejoined the company CEO. To calculate tenure for CEOs for the first time they join a company, we use the variable "Date Joined Company". For CEOs of European firms, we use data from Orbis and CapitalIQ to calculate tenure.*	Hand-collected sample (CapitalIQ and Orbis) (Europe) and ExecuComp (US)
Gender	*The gender of the CEO. 1 for males, 0 for females.*	ExecuComp (US) and hand-collected sample (CapitalIQ and Orbis) (Europe)
Chairman	*An indicator variable for whether a CEO also holds the Chairman position on the Board. 1 = Yes, 0 = No. For CEOs of US firms, we use the ExecuComp variable "Titleann" to determine whether a CEO is the also the Chairman of the board.*	ExecuComp (US) and hand-collected sample (CapitalIQ and Orbis) (Europe)
Founder	*An indicator variable for whether the CEO is the founder, or co-founder, of the firm. 1 = Yes, 0 = No. For CEOs of US firms, we use ExecuComp variable "Titleann".*	ExecuComp (US) and hand-collected sample (CapitalIQ and Orbis) (Europe)
FIRM-SPECIFIC VARIABLES:		
ROA (%)	*Return on assets, defined as operating income before depreciation (OIBDP) divided by total assets (AT), expressed in US dollars in year t – 1 (converted using year-end exchange rates).*	COMPUSTAT
Ln(Total assets)	*The natural logarithm of total assets (AT), expressed in US dollars in year t - 1 (converted using year-end exchange rates).*	COMPUSTAT
Market-adjusted stock performance in past two years	*The market-adjusted total stock return for the past two years (monthly interval [-24, -1]) calculated as* $\left[\left(1 + r_{m-24}\right)\cdot\left(1 + r_{m-23}\right)\cdot\ldots\cdot\left(1 + r_{m-1}\right) - 1\right]$. *Returns are calculated as: [((PRCCD/AJEXDI) ·TRFD)[End of month])-((PRCCD/AJEXDI) ·TRFD) [End of previous month]]/ ((PRCCD/AJEXDI) ·TRFD)[End of previous month]) for European firms (COMPUSTAT Price data), and using the variable "Ret" from CRSP for US firms. The returns for the markets for US and European firms are the returns for the S&P 500 index ("Sprtrn" in CRSP) and the Stoxx Europe 600 Total market index (COMPUSTAT, 150369), respectively.*	CRSP, COMPUSTAT
Industry-adjusted monthly stock returns, and Performance deciles	*Industry (average)-adjusted monthly stock returns for years [-2, 0] for a company divided by the standard deviation of the monthly returns for the same company measured over the same period (Jenter and Lewellen (2021)). Deciles are calculated by year based on the performance of the companies included in the panel data sample (n = 11,094).*	CRSP, COMPUSTAT
Institutional ownership (%)	*The percentage of total shares held by institutional owners in a given calendar year.*	FactSet
Board independence (%)	*The proportion of independent directors serving on the firm's board at the Annual Report date.*	BoardEx
Board size	*The number of directors serving on the firm's board at the Annual Report date.*	BoardEx
Gender ratio (% of female directors)	*The proportion of male directors serving on the firm's board at the Annual Report date.*	BoardEx
Succession Factor	*The proportion of directors close to retirement as reported at the Annual Report date.*	BoardEx
Leverage	*Total Liabilities (LT)-to-assets (AT). All values are in US dollars (converted using year-end exchange rates).*	COMPUSTAT
Cash-to-total assets	*Cash (CH) divided by total assets (AT). All values are in US dollars (converted using year-end exchange rates).*	COMPUSTAT
Altman's z-score	*A firm's Altman z-score as defined in Liu (2018), i.e., 1.2 · (working capital (WCAP)/total assets (AT)) + 1.4 · (retained earnings (RE)/total assets(AT)) + 3.3 · (EBIT/total assets(AT)) + 0.6 · (total market capitalization(MKVALT for US firms; Outstanding shares (CSHOI) multiplied by daily closing price (PRCCD) of the last trading day of a year for European firms)/book value of total liabilities(LT)) + 1 · (sales(SALE)/total assets(AT)). All values are in US dollars (converted using year-end exchange rates).*	COMPUSTAT
Tobin's Q	*Calculated as in Christensen (2016), i.e., Tobin's q is the natural logarithm of market value of assets divided by total assets (AT). Market value of assets is the market capitalization (MKVALT for US firms; Outstanding shares (CSHOI) multiplied by daily closing price (PRCCD) of the last trading day of a year for European firms), plus the book value of debt calculated as total assets (AT) - common stock (CEQ) - balance sheet deferred taxed (TXDB). We follow Bebchuk, Cohen, and Ferrell (2009) and set CEQ and TXDB equal to zero for missing variables. All values are in US dollars (converted using year-end exchange rates).*	COMPUSTAT
Market-to-book value	*Market value (MKVALT for US firms; Outstanding shares (CSHOI) multiplied by daily closing price (PRCCD) of the last trading day of a year for European firms) divided by book value of equity (CEQ). All values are in US dollars (converted using year-end exchange rates).*	COMPUSTAT
Exchange Rates	*Foreign exchange rates (at the end of a year). The exchange rates are used to calculate variables which are reported in other currencies than in US dollars to US dollars (converted using year-end exchange rates).*	Federal Reserve, H10 Report (WRDS)
ESG Total Score	*The ESG performance of a company in year t – 1. The "Total score" measures the ESG performance of a company without adjusting for the potential impact an ESG controversy*	Thomson Reuters Eikon Asset4 ESG (Refinitiv)

	has on the firm's ESG score. The variable ranges from 0 to 100 with higher values corresponding to better ESG performance.	
COUNTRY-SPECIFIC VARIABLES:		
Legal origin	*The legal origin of a country (English common-law, French civil-law, German civil-law, or Scandinavian law) in which it is headquartered (we use COMPUSTAT's "loc" variable).*	Liang and Renneboog (2017), Appendix B
Civil-law country	*An indicator variable which equals one if a firm is located in a civil-law legal origin country, and zero if it located in is an English common-law country.*	Liang and Renneboog (2017), Appendix B
Anti-Director Rights Index	*The Anti-Director Rights Index (La Porta et al., 1998; Spamann, 2010). Higher values proxy for stronger investor protection.*	La Porta et al. (1998), Djankov et al. (2008), Spamann (2010)
Anti-Self Dealing Index	*"The index is a proxy for legal protection against corporate insiders" (Djankov et al., 2008). Higher values correspond to stronger investor protection.*	Djankov et al. (2008)
Economic Freedom	*The index measures the degree to which a country's economy is considered "free" (monetary, investment, business, trade freedom, etc.). Higher values proxy for more freer economies.*	www.heritage.org
Public Sector Ethics	*"Percentage of firms in a country that give satisfactory ratings on judicial independence, judicial bribery, quality of legal framework, property protection, parliament effectiveness, and police effectiveness" (Kaufmann (2004, p. 102)). Higher values correspond to higher public sector ethics.*	Kaufmann (2004)
Corporate Governance Index	*"Percentage of firms in a country that give satisfactory ratings on protection of minority shareholders, quality of training, willingness to delegate authority, nepotism, and corporate governance" (Kaufmann (2004, p. 102)). Higher values correspond to better corporate governance.*	Kaufmann (2004)
Corruption Control	*"Control of Corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests" (World Bank). Higher values correspond to higher degrees of corruption control.*	World Bank (World Governance Indicators)
Regulatory Quality	*"Regulatory Quality captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development" (World Bank). Higher values correspond to higher regulatory quality.*	World Bank (World Governance Indicators)
Ln(GDP per capital) (in US (2015) dollars)	*The natural logarithm of the Gross Domestic Product (GDP) per capita expressed in US (2015) dollars.*	World Bank
Political Executive Constraints	*Variable XCONST from PolityIV database. According to PolityIV, the variable measures "the extent of institutionalized constraints on the decision-making power of CEOs".*	PolityIV (www.systemic-peace.org)
Globalization Index	*"The KOF Globalisation Index measures the economic, social and political dimensions of globalisation" (https://kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html). Higher values correspond to more globalized economies.*	ETH Zürich KOF Swiss Economic Institute
Employment Laws Index	*The index proxies for how well labor forces and employers are protected by laws. Higher values correspond to more protection. Higher scores correspond to higher protection.*	Botero et al. (2004)
Collective Bargaining Index	*The index proxies for labor union power by looking at collective bargaining laws. Higher values correspond to stronger collective bargaining power.*	Botero et al. (2004)
Social Security Laws Index	*The variable measures how well a country covers (i) risks for older people, people with disability, and death, (ii) risks related to sickness and health, and (iii) unemployment. Higher scores relate to more coverage.*	Botero et al. (2004)
BOARD STAKEHOLDERISM		
Board Stakeholderism Index 1	The sum of the following indicator variables: firms which score greater than the median on board independence, firms which score greater than the median on board gender (female) ratio, firms which score lower or equal to the median on board nationality mix, and firms which score lower or equal to the median on board succession, respectively. Medians are calculated based on all observations in the full sample (*n* = 11,094), while the indicator variables are based on a firm's value (relative to the median) in a year.	BoardEx
Board Stakeholderism Index 2	The sum of a firm's score on *Board Stakeholderism Index 1* plus the sum of indicator variables for whether an employee representative director serves on the board, whether a government representative director serves on the board, whether at least one director serves on a non-profit government organization's board, whether at least one director serves on a non-profit charity organization's board, and whether a firm is a state-owned enterprise (SOE) in a year.	BoardEx; Thomson Reuters Eikon Asset4 ESG (Refinitiv)

Appendix Table A.2 ESG issue types

Appendix Table A.2 shows the ESG issues, as defined by RepRisk.

ENVIRONMENTAL	SOCIAL		CORPORATE GOVERNANCE
	Community relations	*Employee relations*	
Global pollution	Human rights abuses	Forced labor	Corruption, bribery, extortion, money laundering
Local pollution	Impacts on communities	Child labor	Executive compensation
Impacts on ecosystems and landscape	Local participation issues	Freedom of association and collective bargaining	Misleading communication, e.g., "greenwashing"
Overuse and wasting of resources	Social discrimination	Discrimination in employment	Fraud
Waste issues		Health and safety issues	Tax evasion
Animal mistreatment		Poor employment conditions	Tax optimization
			Anti-competitive practices

Cross-cutting Issues
Controversial products and services
Products (health and environmental issues)
Violation of international standards
Violation of national legislation
Supply chain issues

Appendix Table A.3 RepRisk News Item database

Appendix Table A.3 shows selected news items (articles) as reported in RepRisk's News Item database for the company Volkswagen before and after the *emission scandal*. The table illustrates how event dates (the publication date, i.e. the variable *News_date*) are chosen in the event study. Event dates are required to have *Novelty* equal to two (i.e., they are published for the first time in a country), and then the news item with the highest reach and severity, in that order, is chosen as the event date. The US Environmental Protection Agency (EPA) filed a notice of violation against Volkswagen on September 18th, 2015 (https://www.epa.gov/sites/production/files/2015-10/documents/vw-nov-caa-09-18-15.pdf). According to the News Item database, the date on which the news peaked for Volkswagen was on September 22nd, 2015, and is thus chosen as the event date. Only the most severe issues by date are shown in the example, the rest are left out. Dots represent a change in date (only a subset of all news articles—as there are so many—in a day are shown).

	News_date	Name	RepRisk_st~D	RepRisk_su~D	Source_lan~e	Related_issues	Related_countries	Novelty	Reach	Severity	ISIN
1	16sep2015	Volkswagen AG (Volkswagen Group; VW)	136682	200990	German	Climate change, GHG emissions, and global pollution	Germany	1	1	1	DE0007664039
2	.	.						.	.	.	DE0007664039
3	.	.						.	.	.	DE0007664039
4	17sep2015	Volkswagen AG (Volkswagen Group; VW)	135959	167825	Chinese	Violation of national legislation;Corruption, bribery, extortion and money laundering	China	2	2	1	DE0007664039
5	17sep2015	Volkswagen AG (Volkswagen Group; VW)	135971	167843	German	Impacts on communities;Local pollution;Violation of national legislation;Misleading communication	Germany	2	1	2	DE0007664039
6	.	.						.	.	.	DE0007664039
7	.	.						.	.	.	DE0007664039
8	18sep2015	Volkswagen AG (Volkswagen Group; VW)	136793	398661	Italian	Violation of national legislation;Fraud	Italy	2	2	1	DE0007664039
9	18sep2015	Volkswagen AG (Volkswagen Group; VW)	136323	168274	Spanish	Human rights abuses and corporate complicity	Unspecified	2	2	1	DE0007664039
10	18sep2015	Volkswagen AG (Volkswagen Group; VW)	136793	398670	Italian	Fraud	United States of America	1	2	1	DE0007664039
11	.	.						.	.	.	DE0007664039
12	.	.						.	.	.	DE0007664039
13	20sep2015	Volkswagen AG (Volkswagen Group; VW)	136087	167992	English	Impacts on communities;Local pollution;Violation of national legislation;Products (health and envir…	United States of America	2	3	2	DE0007664039
14	20sep2015	Volkswagen AG (Volkswagen Group; VW)	136106	168019	English	Local pollution;Violation of national legislation;Products (health and environmental issues);Fraud	United States of America	2	3	2	DE0007664039
15	.	.						.	.	.	DE0007664039
16	.	.						.	.	.	DE0007664039
17	21sep2015	Volkswagen AG (Volkswagen Group; VW)	136334	168294	English	Corruption, bribery, extortion and money laundering	Unspecified	2	3	1	DE0007664039
18	21sep2015	Volkswagen AG (Volkswagen Group; VW)	136331	168285	English	Local pollution;Products (health and environmental issues);Fraud	Canada;United States of America	2	2	2	DE0007664039
19	21sep2015	Volkswagen AG (Volkswagen Group; VW)	136331	168288	English	Violation of national legislation;Products (health and environmental issues);Misleading communicati…	United States of America	2	2	2	DE0007664039
20	21sep2015	Volkswagen AG (Volkswagen Group; VW)	136334	168293	English	Local pollution;Violation of national legislation;Products (health and environmental issues);Fraud	United States of America	1	3	2	DE0007664039
21	.	.						.	.	.	DE0007664039
22	.	.						.	.	.	DE0007664039
23	22sep2015	Volkswagen AG (Volkswagen Group; VW)	136469	168471	English	Fraud	Italy;United States of America	2	3	3	DE0007664039
24	22sep2015	Volkswagen AG (Volkswagen Group; VW)	136581	168611	English	Violation of national legislation;Fraud	Canada;United States of America	2	3	1	DE0007664039
25	22sep2015	Volkswagen AG (Volkswagen Group; VW)	136469	168491	English	Violation of national legislation	Italy	2	3	1	DE0007664039
26	22sep2015	Volkswagen AG (Volkswagen Group; VW)	136492	168498	English	Violation of national legislation;Fraud	Korea; Republic of (South Korea)	2	3	1	DE0007664039
27	22sep2015	Volkswagen AG (Volkswagen Group; VW)	136495	168582	English	Violation of national legislation;Fraud	France;Italy;Korea; Republic of (South Korea)	2	3	1	DE0007664039
28	22sep2015	Volkswagen AG (Volkswagen Group; VW)	136604	168639	English	Violation of national legislation;Fraud	United States of America	2	2	1	DE0007664039
29	.	.						.	.	.	DE0007664039
30	.	.						.	.	.	DE0007664039
31	23sep2015	Volkswagen AG (Volkswagen Group; VW)	136570	168599	English	Impacts on communities;Impacts on landscapes, ecosystems and biodiversity;Violation of national leg…	United States of America	2	3	2	DE0007664039
32	23sep2015	Volkswagen AG (Volkswagen Group; VW)	136673	168748	English	Violation of national legislation;Human rights abuses and corporate complicity;Freedom of associati…	Brazil	2	3	2	DE0007664039
33	23sep2015	Volkswagen AG (Volkswagen Group; VW)	136633	168683	English	Tax evasion	France	2	3	1	DE0007664039
34	23sep2015	Volkswagen AG (Volkswagen Group; VW)	136673	168823	English	Fraud	Unspecified	2	3	1	DE0007664039
35	23sep2015	Volkswagen AG (Volkswagen Group; VW)	136757	168848	German	Impacts on landscapes, ecosystems and biodiversity;Local pollution;Climate change, GHG emissions, a…	United States of America	2	2	2	DE0007664039
36	23sep2015	Volkswagen AG (Volkswagen Group; VW)	136672	168747	English	Impacts on communities;Local pollution;Products (health and environmental issues);Fraud	United Kingdom of Great Britain and Northern Irel…	2	2	2	DE0007664039
37	.	.						.	.	.	DE0007664039
38	.	.						.	.	.	DE0007664039
39	24sep2015	Volkswagen AG (Volkswagen Group; VW)	136780	168884	English	Climate change, GHG emissions, and global pollution;Violation of national legislation;Fraud	United States of America	2	3	2	DE0007664039
40	24sep2015	Volkswagen AG (Volkswagen Group; VW)	136860	169006	English	Products (health and environmental issues);Fraud	Unspecified	2	3	1	DE0007664039
41	24sep2015	Volkswagen AG (Volkswagen Group; VW)	136813	168926	German	Local pollution;Products (health and environmental issues);Fraud	Canada;United States of America	2	2	2	DE0007664039
42	24sep2015	Volkswagen AG (Volkswagen Group; VW)	136813	169007	German	Local pollution;Products (health and environmental issues);Fraud	Unspecified	2	2	2	DE0007664039
43	24sep2015	Volkswagen AG (Volkswagen Group; VW)	136808	168921	German	Fraud	Australia;Canada;Czech Republic;Germany;Italy;Swi…	2	2	2	DE0007664039
44	24sep2015	Volkswagen AG (Volkswagen Group; VW)	136808	169305	German	Fraud	Australia;Canada;Czech Republic;Germany;Italy;Swi…	2	2	1	DE0007664039
45	.	.						.	.	.	DE0007664039
46	.	.						.	.	.	DE0007664039