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Informal Institutions and Corporate Reputational Exposure: The Role of Public Environmental Perceptions

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Public awareness about issues surrounding the physical environment and climate change is becoming more important around the world. However, there is a lack of research on the association between environment-related perceptions and reputational exposure. Therefore, we know little about whether and how reputational exposure is shaped by institutional pressures, as would be stipulated by institutional theory. Using a sample of 643 firms from 19 European countries over the period 2015–2018, we aim to shed further light on this issue. Our results show that more environmentally friendly public perceptions result in lower reputational exposure. This finding holds when, on an individual basis, we examine public opinions on energy, climate and the introduction of related policies. To ensure robustness in our results, we conduct a number of analyses and tests designed to alleviate endogeneity and correct sample bias.

Introduction

We would like to thank Konstantinos Stathopoulos (discussant) and other participants at the Essex conference 'Corporate Governance in Changing Institutional Environments' for valuable comments. Thanks are also due to participants at the 9th International Conference of the Financial Engineering and Banking Society (Prague, 2019), the 9th National Conference of the Financial Engineering and Banking Society (Athens, 2018) and the King's Business School seminar series. Alexia Ventouri acknowledges the internal research fund from King's Business School. Fotios Pasiouras thanks Montpellier Business School (MBS), a founding member of the public research centre Montpellier Research in Management, MRM (EA 4557, Univ. Montpellier). We are also grateful to Douglas Cumming (Co-Editor-in-Chief), Claudia Girardone (Guest Editor) and the three anonymous reviewers. This paper was under review for the Corporate Governance in Extreme Institutional Environments special issue and went through three rounds of revisions. Any remaining errors are our own.

In recent years, policy-makers have introduced various initiatives to address environmental concerns and to combat climate change. These often take the form of pressures from a formal institutional environment, like environmental courts and regulations, which can in turn be associated with higher costs and lower profits for firms (Berkman, Jona and Soderstrom, 2019; Zhang, Yu and Kong, 2019), putting pressure on managers.¹ For example, Mark Carney (2019) highlights that the global transition needed to tackle the climate crisis could result in an abrupt

¹Well-known examples of policy-making initiatives are the Kyoto Protocol, the European Union Emissions Trading Scheme and the Paris Agreement.

financial collapse, as firms struggle to operate under extreme shifts in the institutional environment. Additionally, managers face further pressure from informal institutions, like social norms and beliefs that enhance public awareness of how firms' activities can have an impact on the physical environment and climate change. Arguably, therefore, firms now operate within an extreme institutional environment where they must balance the interests of shareholders with those of other stakeholder groups. While some recent studies have examined the impact of formal environment-related institutions on firm outcomes (Shi and Xu, 2018; Zhang, Yu and Kong, 2019), less attention has been given to the role of informal institutions. Accordingly, this study examines whether informal institutions impact public perceptions of environmental issues and how such perceptions influence corporate reputation.

Corporate reputation and the associated risks have received much attention from academics and practitioners, illustrating their relationship to market value (Black, Carnes and Richardson, 2000; Weber Shandwick and KRC Research, 2020), perceived importance for executives (Deloitte, 2014) and association with better firm outcomes (e.g. Cao *et al.*, 2015; Roberts and Dowling, 2002). Nonetheless, evidence suggests that only a small proportion of firms feel capable of managing reputational risk (Deloitte, 2014), which might be explained by poor understanding of its sources and how to measure it (Deloitte, 2016).

Therefore, a question that naturally emerges is what drives reputation and reputational risk. Today, most of our knowledge comes from country-specific studies (mainly focused on the USA) that analyse firm-specific and industry-specific factors like financial performance, size and popular management techniques (Staw and Epstein, 2000), downsizing (Zyglidopoulos, 2005), board characteristics (Musteen, Dattal and Kemmerer, 2010), social performance and the nature of business activities (Brammer and Pavelin, 2006; Nardella, Brammer and Surdu, 2019). In other words, as discussed by Soleimani, Schnepfer and Newbury (2014), the reputation literature often implicitly treats the driving factors of firm reputation as fixed and universal across countries, while the impact of national institutions on corporate reputation assessment has received comparatively less attention and is still not fully understood. Gardberg (2006) emphasizes that since cor-

porate reputation is a social variable in an open system, varying regulatory, normative and cognitive elements of national institutional environments may affect corporate reputation construction and expectations, and thus its international generalizability.

As little is known about the country-level drivers of reputational assessments (Soleimani, Schnepfer and Newbury, 2014), this study extends the literature on corporate reputational rankings (e.g. Bermiss, Zajac and King, 2014) by examining how public perceptions of environmental issues affect reputational risk. Our analysis is based on institutional theory, which has been widely adopted to explain how firm behaviour is driven by institutional pressures. Despite the wide adoption of institutional theory in studies of environmental management practices (Berrone *et al.*, 2013; Daddi *et al.*, 2016), corporate social responsibility (Brammer, Jackson and Matten, 2012), sustainable practices (Glover *et al.*, 2014) and climate change strategies (Daddi *et al.*, 2016), there has been little empirical investigation of the institutional drivers of reputation (see e.g. Deephouse, Newbury and Soleimani, 2016; Soleimani, Schnepfer and Newbury, 2014), and no study of the association between environment-related perceptions of the public and reputational exposure. Building on neo-institutionalism theory and upper echelons theory, we also examine the conditional role of the background characteristics of company directors. Thus, we make two contributions to the literature. First, as we discuss in detail in the next section, the impact of public perceptions on environmental issues and reputational exposure is ambiguous, as it could be either positive or negative. This remains an open question to be answered empirically, and we present the first systematic analysis of this issue in a cross-country setting. This is not only a matter of using a large international sample. Most importantly, it allows us to examine whether country-level characteristics, like formal institutions (e.g. rule of law, regulatory quality), moderate this relationship. Second, we examine the conditional role of an array of firm-level corporate governance characteristics, like CEO nationality, board age diversity, board qualifications, board nationality mix and board gender mix. Our findings could be of interest to various groups. First, as we present new empirical evidence, they could be of interest to scholars on corporate reputation, corporate governance and institutional theory. Second, as

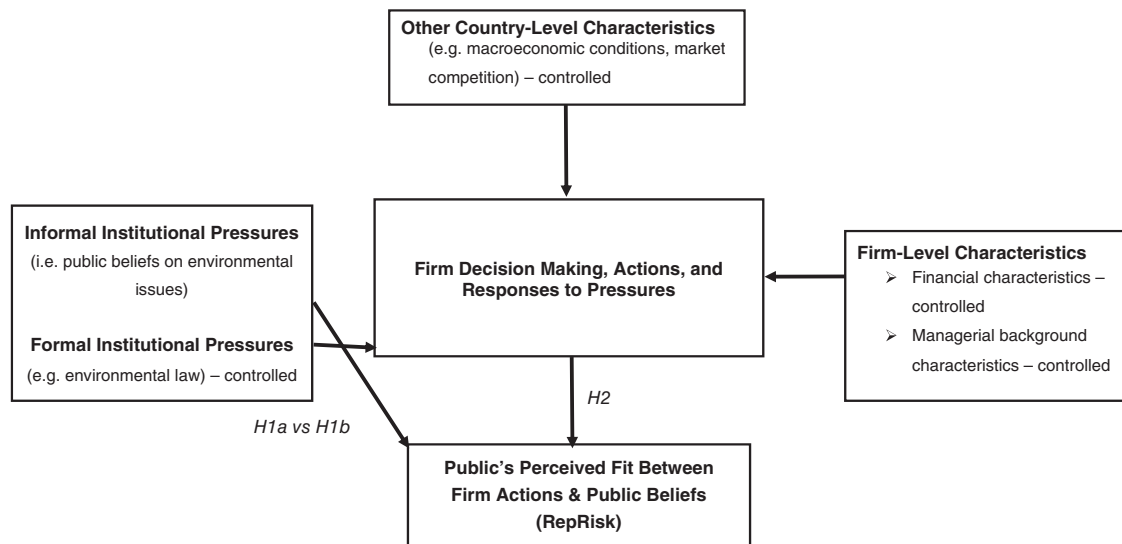


Figure 1. Conceptual framework: informal institutional pressures and corporate reputation

we discuss in more detail, they could be of interest to firm stakeholders like policy-makers, managers, shareholders and prospective investors.

The rest of this paper is structured as follows. The following section discusses the theoretical background and develops the hypotheses. The third section then outlines the data and methodology. The fourth section reports the results. Finally, the last section discusses our findings and concludes.

Institutional theory and reputation

Institutional theory emphasizes how the social and cultural pressures imposed on organizations influence their practices and structures (Scott, 1992). Central to this theory is the idea that many aspects of organizations are driven by the desire to achieve fit with the institutional environment. This fit has been defined as ‘the degree of compliance by an organisation with the organisational form of structures, routines, and systems prescribed by institutional norms’ (Kondra and Hinings, 1998, p. 750). Thus, institutional theory appears integral to the concept of corporate reputation, which represents the collective evaluation by stakeholders of a firm’s goals, values and behaviour compared to those of other firms and to the stakeholders’ own expectations (Deephouse, Newburry and Soleimani, 2016; Mishina, Block and Mannor, 2012). Within the same context,

Soleimani, Schnepfer and Newburry (2014) highlight that corporate reputation depends on the extent to which firm behaviour conforms with socially constructed beliefs about which goals and objectives should be pursued. Figure 1 outlines our research framework and hypotheses, which we discuss in more detail below.

The traditional view of institutional theory asserts that institutional isomorphism makes organizations quite similar, through a process that leads them to adopt similar forms and practices (DiMaggio and Powell, 1983), and consequently promotes the success and survival of organizations (Meyer and Rowan, 1977).² Within this context, Oliver (1991) highlights that the self-serving advantages of compliance with institutional norms and requirements are illustrated by the claimed association between organizational conformity and

²DiMaggio and Powell (1983) distinguish between three mechanisms through which institutional isomorphic change occurs. The first is coercive isomorphism that stems from political influence and the problem of legitimacy. This results from both formal and informal (e.g. cultural expectations) pressures on organizations. The second mechanism is mimetic isomorphism resulting from standard responses to uncertainty. In this case, organizations adopt mimetic behaviours and tend to model themselves on similar organizations in their field that they perceive as more legitimate or successful. The third mechanism is normative isomorphism, associated with professionalization. Nonetheless, DiMaggio and Powell (1983) also recognize that this typology is analytic and that these types are not always empirically distinct.

the various rewards discussed in the institutional literature, including increased prestige. Wright and Rwabizambuga (2006) also argue that ‘firms are rewarded with enhanced legitimacy and reputation if they develop internal structures “isomorphic” with external institutional pressures’ (p. 90). In general, this traditional view of institutional isomorphism and organizational similarities implies that managerial and other firm-level characteristics do not have an important role. For example, according to Oliver (1991), ‘institutional theory illustrates how the exercise of strategic choice may be pre-empted when organisations are unconscious of, blind to, or otherwise take for granted the institutional process to which they adhere’ (p. 148). Moreover, ‘In the face of very widely shared and taken-for-granted understandings of what constitutes legitimate or rational behaviour, organisations will conform largely because it does not occur to them to do otherwise’ (Oliver, 1991, p. 169). Along the same lines, Suchman (1995) argues that external institutions, like culture, construct and interpenetrate the organization in every respect. Therefore, the decisions of the managers are often constructed by the same belief systems that determine the reactions of the audience. This leads to a high degree of convergence between institutionalization and legitimacy.

Based on the above discussion, we expect that societal beliefs about the environment will have a direct impact on reputation. Firms have no option but to be institutionalized and behave in accordance with public expectations. With the consequential narrowing of the gap between broader societal expectations and the effects of corporate practices that can challenge the legitimacy and reputation of individual firms, reputational exposure will decline. Therefore, we formulate the first hypothesis as follows:

H1a There is a negative relationship between environmentally friendly societal beliefs and corporate reputational exposure.

However, various neo-institutionalism studies (Walls and Hoffman, 2013) argue that firms may respond heterogeneously when subjected to a homogenous level of institutional pressures (Aharonson and Bort, 2015; Oliver, 1991; Wang, Li and Zhao, 2018). At the same time, societies with more environmentally friendly societal beliefs tend to set higher standards for their companies, and

therefore firms face a greater risk of falling short of the expectations. In more detail, organizations must devote resources towards environmental initiatives in a way that simultaneously satisfies their economic objectives (Hoffman, 2001). This might conflict with pressures from shareholders to increase profitability. As Oliver (1991) considers, an organization whose performance and survival only moderately depend upon good public opinion might choose avoidance tactics in response to institutional rules and expectations. Within the same context, Chen *et al.* (2018) mention that high expenditure and unclear future benefit make some firms reluctant to engage in green innovation, even when faced with strong institutional pressures. They also note that institutional pressures are coercive in nature, driven by the threat of either legal sanction or social sanction, like protests, negative press and diminished reputation and image.

Consequently, it is possible that higher expectations are more likely to be violated by firms, leading to poor institutional fit, public criticism and higher reputational exposure. Thus, under this scenario we would expect to find a positive association between public environmental perceptions and corporate reputational exposure. Hence, we formulate the alternative first hypothesis as follows:

H1b There is a positive relationship between environmentally friendly societal beliefs and corporate reputational exposure.

Another issue recently discussed in the literature is that the response to institutional pressures depends upon managerial factors. For instance, Walls and Hoffman (2013) propose that the variance in organizational actions towards environmental sustainability depends primarily on the direction set by the board. Wang, Li and Zhao (2018) find that top management’s environmental commitment moderates the relationship between institutional pressures and environmental management practices. Along the same lines, focusing on institutional pressures on corporate climate change strategies, Daddi *et al.* (2020) conclude that companies with higher managerial sensitivity to climate change are more likely to adopt both mitigation and adaptation strategies. González-Benito and González-Benito (2008) highlight the role of managers’ ability and willingness to monitor and listen to stakeholders’ environmental demands. As they

discuss, even if stakeholder demands are clearly specified (which is not always the case), managers might differ in their level of attention and ascribed importance. In some cases, managers might overstate the consequences of ignoring such demands; in other cases, they could underestimate them. These arguments and findings appear to be in line with upper echelons theory, which states that organizational outcomes, including both strategic choices and performance levels, are partially predicted by the background characteristics of the top management team (Hambrick and Mason, 1984). Therefore, we formulate the second hypothesis as follows:

- H2 Background characteristics of the board of directors moderate the relationship between environmentally friendly societal beliefs and corporate reputational exposure.

Data and methodology

Data

To examine whether public perceptions on environmental issues impact on reputational exposure, we use information from various sources. To quantify reputational exposure, we use the ratings of reputational risk related to environmental, social and governance (ESG) issues provided by RepRisk.³ Data on public perceptions of environmental issues are sourced from the European Social Survey (ESS).⁴ Firm-specific charac-

teristics are collected from Datastream. Finally, data on country-related variables are sourced from the World Bank (WB), World Economic Forum (WEF) and the Regulatory Indicators for Sustainable Energy (RISE). Our sample comprises 643 firms operating in 19 countries⁵ and across 18 industries⁶ over the period 2015–2018.⁷ This results in a final balanced panel dataset of 2,372 firm-year observations. The data sources and all the variables are described in Table 1. Table 2 summarizes the distribution of firm observations per country.⁸

Variables

Dependent variable: Reputational exposure rating. The dependent variable is *Reputational exposure rating*, an indicator of ESG-related reputational risk maintained by the business intelligence provider RepRisk. The rating assesses the ESG risk exposure of companies worldwide by systematically capturing *negative* incidents, criticism and controversies on a daily basis from over 80,000 media outlets, stakeholders and third-party sources in 20 languages; these sources include all major print and online media, non-governmental organizations, regulators, news sites, governmental agencies and social media.⁹ RepRisk gathers data through a five-step process: (i) screening; (ii) identification and filtering; (iii) analysis; (iv) quality assurance; and (v) quantification. Once an incident is identified, the analysis includes verification of its type and nature, as well as classification into one or more of the 28 predefined ESG categories. RepRisk argues that its analysis is issues-driven, rather than firm-driven, and so does not

³RepRisk was formed in 1998 as ECOFACT, an environmental and social risk consultancy. In 2006, in response to a request by UBS, RepRisk developed a proprietary, systematic framework to identify and assess companies exposed to ESG risks. In 2007 it launched a fully fledged web-based tool, the RepRisk ESG Risk Platform. Over the years it gained popularity in the market and is currently used by, among others, RobecoSAM in the annual corporate assessment process for the Dow Jones Sustainability Index, the Investment Engagement team of the UN-supported Principles for Responsible Investment and CDP (formerly the Carbon Disclosure Project) in its annual review of companies identified as ‘carbon performance leaders’ or ‘water performance leaders’.

⁴The European Social Survey (ESS) is an academically driven cross-national survey that has been conducted across Europe since 2001. Every 2 years, face-to-face interviews are conducted to measure the attitudes, beliefs and behaviour patterns of diverse populations in around 30 European countries. In this study, we capture public perceptions based on data provided by Round 8 of the ESS (2016): <http://www.europeansocialsurvey.org/data>.

⁵Countries included in the sample: Austria, Belgium, Czech Republic, Finland, France, Germany, Hungary, Ireland, Israel, Italy, Netherlands, Norway, Poland, Portugal, Russia, Spain, Sweden, Switzerland, UK.

⁶Financial services and insurance companies are excluded due to special attributes of the financial industry.

⁷For the purposes of this study, we accessed RepRisk reputational exposure data via Orbis. At the time of writing, Orbis provides RepRisk exposure data for the period 2015–2018.

⁸Acknowledging that the UK dominates our sample (34% of observations), we also estimate the baseline model after excluding the UK (see the robustness test detailed later).

⁹RepRisk ratings do not measure reputation but rather indicate a firm’s ESG-related reputational risk, facilitating assessment relative to peers and tracking over time (for more details, see RepRisk’s research scope at: www.reprisk.com).

Table 1. Variable descriptions and sources

Variable	Description	Source
Reputational exposure rating	<p>Reputational risk rating that reflects: (i) a company's own ESG-related risk exposure due to risk incidents reported specifically about the company, and (ii) the country-sector ESG risk that takes into consideration the sector and location of the company's headquarters and countries where the company has been exposed to ESG risk incidents. The variable takes a value from 1 to 10, where D = 1 and AAA = 10. Higher values indicate a better rating and lower reputational exposure related to ESG issues.</p> <p style="text-align: center;"><i>Dependent variable</i></p>	Orbis
Environmental perceptions (ECP) Energy	<p>Index of public perceptions related to the environment, calculated from the three sub-indices outlined below. It takes a value between 0 and 100, with higher values reflecting more environmentally friendly responses.</p> <p>Sub-index of public perceptions related to energy, based on the answers of individuals in each country to the following questions: (i) 'How likely are you to buy the most energy-efficient home appliance?'; (ii) 'How often do you do things to reduce energy use?'; (iii) 'How confident are you that you could use less energy than now?' Answers given on a predetermined scale were first weighted by the corresponding percentage for each response in each country and then standardized to take a value between 0 and 100. Higher values indicate more environmentally friendly responses.</p>	ESS Survey (2016) ESS Survey (2016)
Climate	<p>Sub-index of public perceptions related to climate, based on the answers of individuals in each country to the following questions: (i) 'Is climate change caused by natural processes, human activity, or both?'; (ii) 'To what extent do you feel personal responsibility to reduce climate change?'; (iii) 'How worried are you about climate change?' Answers given on a predetermined scale were first weighted by the corresponding percentage for each response in each country and then standardized to take a value between 0 and 100. Higher values indicate more environmentally friendly responses.</p>	ESS Survey (2016)
Policy	<p>Sub-index of public perceptions related to environmental policy, based on the answers of individuals in each country to the following questions: (i) 'Do you favour increasing taxes on fossil fuels, such as oil, gas and coal?'; (ii) 'Do you favour using public money to subsidize renewable energy such as wind and solar power?'; and (iii) 'Do you favour banning the sale of the least energy-efficient household appliances?' Answers given on a predetermined scale were first weighted by the corresponding percentage for each response in each country and then standardized to take values between 0 and 100. Higher values indicate more environmentally friendly responses.</p> <p style="text-align: center;"><i>Firm-specific variables</i></p>	ESS Survey (2016)
Profitability	Net interest before tax divided by total assets.	Datastream
Size	Natural logarithm of sales.	Datastream
Capital	Equity divided by total assets.	Datastream
Board age diversity	Standard deviation of the ages of directors.	Boardex
Board qualifications	Standard deviation of the total number of qualifications of directors.	Boardex
Board nationality mix	Proportion of directors from different countries.	Boardex
Board gender ratio	Proportion of male directors.	Boardex
Board size	Natural logarithm of the total number of board members at the end of the fiscal year.	Datastream
Board independence	Percentage of independent board members.	Datastream
Local CEO	Dummy variable that takes the value of one when the CEO is not a foreign national, and zero otherwise.	Orbis
CSR sustainability index	Dummy variable that takes the value of one when the company belongs to a specific sustainability index, and zero otherwise.	Datastream

Table 1. Continued

Variable	Description	Source
CSR-linked senior pay	Dummy variable that takes the value of one when the compensation of senior executives is linked to CSR/H&S/sustainability targets, and zero otherwise.	Datastream
Sustainability reporting	Dummy variable that takes the value of one when the company publishes a separate sustainability report or a section in its annual report on sustainability, and zero otherwise. <i>Country-specific variables</i>	Datastream
GDP growth	Gross domestic product (GDP) growth.	WB
Economic globalization	Foreign direct investment (% of GDP).	WB
Shareholder rights	Extent of Shareholder Rights Index. For each component, a score of zero is assigned if the answer is no, and one if yes: (1) whether the sale of 51% of the buyer's assets requires shareholder approval; (2) whether shareholders representing 10% of the buyer's share capital have the right to call for a meeting of shareholders; (3) whether the buyer must obtain its shareholders' approval every time it issues new shares; (4) whether shareholders automatically receive pre-emption rights when the buyer issues new shares; (5) whether shareholders elect and dismiss the external auditor; (6) whether changes to the rights of a class of shares are only possible if the holders of the affected shares approve; (7) assuming that the buyer is a limited company, whether the sale of 51% of the buyer's assets requires member approval; (8) assuming that the buyer is a limited company, whether members representing 10% have the right to call for a meeting of members; (9) assuming that the buyer is a limited company, whether all or almost all members must consent to add a new member; (10) assuming that the buyer is a limited company, whether members must first offer their interest to the existing members before they can sell to non-members. The index takes a value between 0 and 10, with higher values indicating higher shareholder rights.	WB
RISE	A set of indicators to help compare national policy and regulatory frameworks for sustainable energy. RISE classifies countries into a green zone of strong performers in the top third of the 0–100 score range, a yellow zone of middle-third performers and a red zone of weaker performers in the bottom third.	RISE
Local competition	Indicator of the intensity of local competition, based on answers to the following question in the Executive Opinion Survey of the World Economic Forum: 'In your country, how intense is competition in the local markets?' This index takes a value between 1 (not intense at all) and 7 (extremely intense).	WEF
Buyer sophistication	Indicator of buyer sophistication, based on answers to the following question in the Executive Opinion Survey of the World Economic Forum: 'In your country, on what basis do buyers make purchasing decisions?' This index takes a value between 1 (based solely on the lowest price) and 7 (based on sophisticated performance attributes).	WEF
Labour-employer cooperation	Indicator of cooperation in labour-employer relations, based on answers to the following question in the Executive Opinion Survey of the World Economic Forum: 'In your country, how do you characterize labour-employer relations?' This index takes a value between 1 (generally confrontational) and 7 (generally cooperative).	WEF
Poverty	Percentage of the population living below national poverty lines.	WEF
Temp	Natural logarithm of the difference of monthly temperature over mean, 1979–2010, weighted by land area.	Felbermayr and Gröschl (2014)

Table 1. Continued

Variable	Description	Source
Press	Based on responses to the following question: 'Do the major print and broadcast media represent a wide range of political perspectives?' Responses take a value from 0 to 3: 'The major media represent only the government's perspective' scores 0; 'The major media represent only the perspectives of the government and a government-approved, semi-official opposition party' scores 1; 'The major media represent a variety of political perspectives but they systematically ignore at least one political perspective that is important in this society' scores 2; 'All perspectives that are important in this society are represented in at least one of the major media' scores 3.	GSoD Indices
WGI	Composite index of a country's overall institutional attainment. Computed as the arithmetic average of the following dimensions: Rule of law, Control of corruption, Government effectiveness, Political stability and absence of violence, Regulatory quality, Voice and accountability.	Worldwide Governance Indicators (WBI)
CULTPCA1 and CULTPCA2	Scores from principal component analysis of the six national culture indicators from Hofstede's framework: uncertainty avoidance, individualism, power distance, long-term orientation, indulgence and masculinity.	Author's calculations from Hofstede Insights

Note: ESS = European Social Survey; WB = World Bank; RISE = Regulatory Indicators for Sustainable Energy; WEF = World Economic Forum; GSoD = Global State of Democracy.

Table 2. Firm observations per country (2015–2018)

Country	Frequency	Percentage	
		(%)	Cum. %
Austria	10	1.56	1.56
Belgium	16	2.49	4.04
Czech Republic	3	0.47	4.51
Finland	24	3.73	8.24
France	78	12.13	20.37
Germany	59	9.18	29.55
Hungary	1	0.16	29.7
Ireland	8	1.24	30.95
Israel	9	1.4	32.35
Italy	23	3.58	35.93
Netherlands	24	3.73	39.66
Norway	15	2.33	41.99
Poland	16	2.49	44.48
Portugal	8	1.24	45.72
Russia	27	4.2	49.92
Spain	29	4.51	54.43
Sweden	30	4.67	59.1
Switzerland	45	7	66.1
UK	218	33.9	100
Total	643	100	

necessarily focus on a set list of firms, thus assuring some impartiality. The 28 ESG issues drive the entire research process, and every risk incident in RepRisk's ESG risk platform is linked to at least one of these issues.

Incident categorizations map to the 10 principles of the United Nations Global Compact, and are related to: (i) environmental footprint (e.g. global pollution, overuse and wasting of resources); (ii) community relations (e.g. human rights abuses); (iii) employee relations (e.g. child labour); (iv) corporate governance (e.g. corruption, executive compensation issues); and (v) cross-cutting issues (e.g. controversial products and services). The index also covers 50 ESG 'hot topics', such as palm oil, land mines, deep sea drilling and water scarcity.¹⁰ Each incident is also assigned two proprietary scores based on severity (the magni-

tude of the perceived impact) and reach (the influence or readership of source documents). The data only measure negative ESG impacts, and not positive ESG-related events. Although we would ideally consider both positive and negative reported impacts, positive events are less likely to be reported by the media and are mostly self-reported for marketing purposes, making it especially difficult to capture and quantify such data.

The RepRisk rating assigned to each company ranges from AAA (high quality/low risk) to D (low quality/high risk), similar to a credit rating. This rating reflects: (i) a company's own ESG-related risk exposure due to risk incidents reported specifically about the company, and (ii) the

¹⁰The 'hot topics' are a dynamic concept, with the list expanding over time in line with developments and client feedback. The list included: Abusive/illegal fishing; Agricultural commodity speculation; Alcohol; Animal transportation; Arctic drilling; Asbestos; Automatic and semi-automatic weapons; Biological weapons; Chemical weapons; Cluster munitions; Coal-fired power plants; Conflict minerals; Coral reefs; Cyberattack; Deep sea drilling; Depleted uranium munitions; Diamonds; Drones; Endangered species; Forest burning; Fracking;

Fur and exotic animal skins; Gambling; Gender inequality; Genetically modified organisms; Genocide/Ethnic cleansing; High conservation value forests; Human trafficking; Hydropower (dams); Illegal logging; Indigenous people; Involuntary resettlement; Land grabbing; Land mines; Marijuana/Cannabis; Migrant labour; Monocultures; Mountaintop removal mining; Negligence; Nuclear power; Nuclear weapons; Offshore drilling; Oil sands; Palm oil; Pornography; Predatory lending; Privacy violations; Protected areas; Rare earths; Sand mining/dredging; Security services; Sea-bed mining; Ship breaking and scrapping; Soy; Tax havens; Tobacco; Water security.

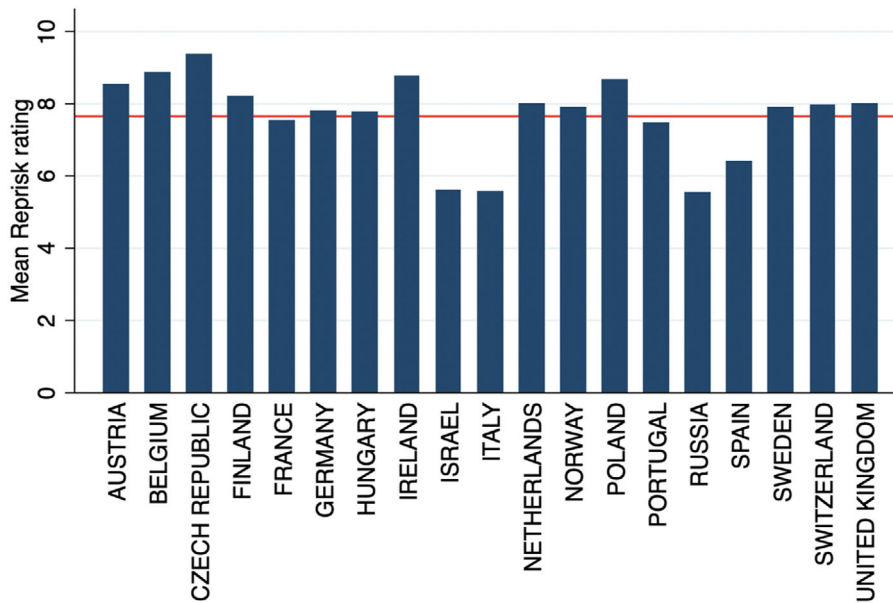


Figure 2. National mean values of RepRisk rating [Colour figure can be viewed at wileyonlinelibrary.com]

country-sector ESG risk, which considers the company's sector, the location of its headquarters and any countries where the company has been exposed to ESG risk incidents. Given its ordered nature, we follow the credit rating literature (see e.g. Ashbaugh-Skaife, Collins and LaFond, 2006) by converting the RepRisk ratings into a 10-point numeric scale in which higher numbers indicate higher quality and lower reputational exposure: D/C = 1, C = 2, CC = 3, CCC = 4, B = 5, BB = 6, BBB = 7, A = 8, AA = 9, AAA = 10. Figure 2 shows the national mean values of the dependent variable. The score ranges from 5.52 (Russia) to 9.36 (Czech Republic), with an overall sample mean of 7.65. Thus, there appears to be variation in reputational risk ratings across countries.

Key independent variables. The core variables of interest in our study are the measures of public attitudes on environmental issues. The ESS applies several methodological standards regarding questionnaire design, interview process, translation and data collection. The questionnaire design is developed every 2 years in English, including extensive testing and piloting by national teams (European Social Survey, 2016). Each country needs to achieve a minimum effective sample, representative of the country's population. The national coordinator, the sampling expert and possibly a representative of the survey agency col-

lectively devise the optimum sampling design per country. Interviews are conducted face-to-face with individuals aged 15 and over (no upper age limit) residing in private households in each country, regardless of their nationality, citizenship or language. The full questionnaire and the complete ESS Round 8 dataset can be downloaded from <http://www.europeansocialsurvey.org>.

To construct our variables, we focus on answers to questions that elicit a person's beliefs regarding energy, climate and policy issues. We then use these three sub-indices to create an overall index of *Environmental perceptions* (also termed *ECP*). The *Energy* sub-index is based on answers to the following three questions: (i) 'How likely are you to buy the most energy-efficient home appliance?'; (ii) 'How often do you do things to reduce energy use?'; and (iii) 'How confident are you that you could use less energy than now?' To construct this sub-index, we weight answers on the predetermined response scale by the corresponding percentage for each response in each country. For example, question (i) above was answered on an 11-point scale ranging from 0 ('Not at all likely') to 10 ('Extremely likely'), and we weight these initial values with the corresponding percentages in each country.¹¹ We follow a similar approach for each of the three questions,

¹¹ For example, the responses to question (i) in Austria were as follows: 1.2% (0, Not at all likely), 0.2% (1),

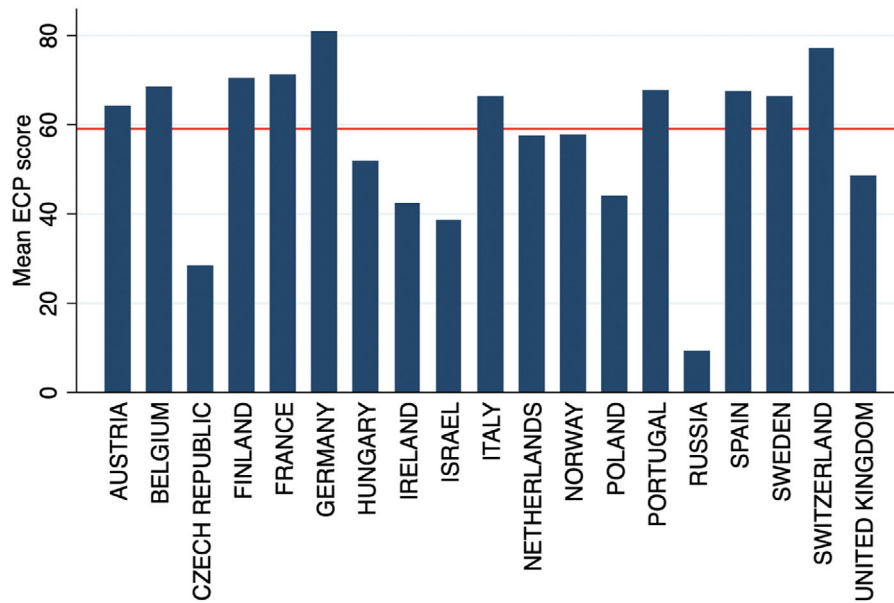


Figure 3. National mean values of ECP scores [Colour figure can be viewed at wileyonlinelibrary.com]

and then aggregate the three individual scores to construct the *Energy* sub-index. To achieve a consistent range of answers across questions and provide scores that are more meaningful, we rescale the values by applying min/max normalization. In all cases, the sub-indices range between 0 (less environmentally friendly responses) and 100 (more environmentally friendly responses).

The *Climate* sub-index is based on the answers to the following questions: (i) ‘Is climate change caused by natural processes, human activity, or both?’; (ii) ‘To what extent do you feel personal responsibility to reduce climate change?’; and (iii) ‘How worried are you about climate change?’ Using the answers to these questions, the *Climate* sub-index is calculated in the same way as the *Energy* sub-index. The *Policy* sub-index is calculated using the answers to three questions revealing the extent of public support for policies to reduce climate change: (i) ‘Do you favour increasing taxes on fossil fuels, such as oil, gas and coal?’; (ii) ‘Do you favour using public money to subsidize renewable energy such as wind and solar power?’; and (iii) ‘Do you favour banning the sale of the least energy-efficient household appliances?’ For all three questions, responses were given on a 5-point scale: 1 = ‘strongly in favour’, 2 = ‘somewhat in favour’, 3 = neither in favour nor against, 4 = ‘somewhat against’, 5 = ‘strongly against’. We quantify and convert these responses in the same

way as for the other two sub-indices, thereby creating a *Policy* sub-index ranging between 0 and 100, with a higher score indicating stronger public support for adopting policies to reduce climate change.

Finally, we calculate the overall index, *Environmental perceptions*, as the average of the *Energy*, *Climate* and *Policy* sub-indices.¹² Figure 3 shows the national mean values of our *Environmental perceptions* measure. We observe large differences across countries in the public *Environmental perceptions* of the public, with values ranging from a low of 9.15 in Russia to a high of 81.0 in Germany.

Control variables. Following earlier studies (Brammer and Pavelin, 2006; Deephouse, Newburry and Soleimani, 2016; Soleimani, Schnepfer and Newburry, 2014), we account for firm-specific financial and corporate governance attributes by controlling for: (i) *Profitability* (return on assets); (ii) *Capital* (equity to total assets); (iii) *Size* (natural logarithm of sales); (iv) *Board size* (natural

0.9% (2), 1.2% (3), 1.6% (4), 6.8% (5), 6.9% (6), 14.8% (7), 19% (8), 15.5% (9), 31.9% (10, Extremely likely). Thus, the score for Austria is 801.5, calculated as follows: $(1.2 \times 0) + (0.2 \times 1) + (0.9 \times 2) + (1.2 \times 3) + (1.6 \times 4) + (6.8 \times 5) + (6.9 \times 6) + (14.8 \times 7) + (19 \times 8) + (15.5 \times 9) + (31.9 \times 10)$. As a final step, we normalize the scores so that they range between 0 and 100.

¹²The Appendix provides further details on the construction of these four variables.

Table 3. Descriptive statistics (2015–2018)

Variable	Obs.	Mean	Std Dev.	Min	Max
Reputational exposure rating	2372	7.640	2.089	1.000	10.000
Environmental perceptions	2429	59.062	16.148	9.146	80.846
Energy	2429	68.391	18.663	0.000	91.704
Climate	2429	60.527	18.884	9.846	87.770
Policy	2429	48.267	15.956	17.593	77.505
Profitability	2429	0.063	0.051	−0.015	0.154
Capital	2429	0.404	0.165	0.158	0.671
Size	2257	22.089	1.483	19.751	24.413
Local CEO	1283	0.777	0.416	0.000	1.000
Board age diversity	2193	7.517	2.304	0.000	19.500
Board qualifications	1558	1.883	1.150	0.000	8.000
Board nationality mix	2179	0.353	0.269	0.000	0.900
Board gender ratio	2193	0.749	0.131	0.286	1.000
Board size	1948	10.407	3.579	2.000	25.000
Board independence	1944	46.614	28.372	0.000	100.000
CSR-linked senior pay	2340	0.162	0.369	0.000	1.000
CSR sustainability index	2344	0.506	0.500	0.000	1.000
Sustainability reporting	2344	0.904	0.295	0.000	1.000
GDP growth	2429	2.022	1.718	−2.828	25.557
Economic globalization	2429	−0.005	0.048	−0.160	0.170
Shareholder rights	2429	6.718	1.037	4.000	9.000
RISE	2429	86.552	6.591	64.850	93.700
Local competition	2429	5.630	0.344	4.200	6.021
Buyer sophistication	2406	4.366	0.493	2.553	5.100
Labour–employment cooperation	2406	5.022	0.705	3.606	6.200
Poverty	1639	0.230	0.376	0.000	2.000
Temp	2389	−6.139	1.646	−8.732	−3.280
Press	2418	0.798	0.104	0.340	0.890
WGI	2429	1.275	0.526	−0.760	1.820
CULTPCA1	2395	8.66e-09	1.837315	−1.914008	4.82435
CULTPCA2	2395	9.61e-09	1.115899	−2.659399	1.672378

Note: All financial variables are winsorized at the 10th and 90th percentiles.

logarithm of number of directors); (v) *Board independence* (percentage of independent board members); and (vi) *CSR-linked senior pay* (executive compensation related to CSR/H&S/Sustainability targets).¹³

Finally, we include several country-level variables to account for potential forms of heterogeneity across countries that may influence corporate reputation. Specifically, we control for: (i) *GDP growth* (%); (ii) *Economic globalization* (FDI/GDP, %); (iii) *Shareholder rights* (WB's Extent of Shareholders Rights Index); and (iv) *RISE* (national regulations for sustainable energy). Later, we consider additional country-specific control variables to account for: (i) *Buyer sophistication*; (ii) *Local competition* (intensity); (iii) *Labour–employer cooperation*; and (iv) *Poverty*. Research has also shown

that industry reputation may influence the perception of individual companies (Soleimani, Schnepfer and Newbury, 2014; Winn, MacDonald and Ziestsma, 2008). Therefore, we control for industry effects using dummy variables.

Table 3 reports descriptive statistics for the dependent and independent variables. We winsorize all variables at the 10th and 90th percentiles to minimize the potential impact of outliers. The correlation matrices for all variables are reported in Tables 4a and 4b. Although there are a few moderately high correlations among country-level controls (between 0.32 and 0.57), the only correlation above 0.7 is between *Labour–employer*

¹³In further analysis below, we consider additional corporate social responsibility (CSR) measures.

Table 4a. Correlation matrix

	Reputational exposure rating	Environmental perceptions	Energy	Climate	Policy	Profitability	Capital	Size	Board size	Board independence	CSR-linked senior pay	CSR sustainability index
Reputational exposure rating	1											
Environmental perceptions	0.0456	1										
Energy	0.0907	0.9037	1									
Climate	0.0249	0.9568	0.873	1								
Policy	0.0037	0.8027	0.514	0.6613	1							
Profitability	0.0672	-0.093	-0.1225	-0.1066	-0.012	1						
Capital	0.1338	-0.1148	-0.1027	-0.153	-0.0435	0.2816	1					
Size	-0.3146	0.1858	0.098	0.1716	0.2331	0.0161	-0.2893	1				
Board size	-0.187	0.4187	0.4185	0.481	0.1993	-0.0616	-0.1905	0.4702	1			
Board independence	0.0489	-0.321	-0.1146	-0.2516	-0.5149	-0.0132	-0.0072	-0.0432	-0.1057	1		
CSR-linked senior pay	0.0033	-0.0808	-0.0625	-0.0914	-0.0601	-0.0671	-0.024	-0.0175	-0.0094	-0.0444	1	
CSR sustainability index	-0.1102	0.0968	0.1081	0.1012	0.045	-0.0303	-0.1528	0.3517	0.2395	0.1622	0.0302	1
Sustainability reporting	-0.0574	-0.0319	0.0143	-0.0138	-0.0923	-0.0055	-0.0242	0.2003	0.1323	0.1853	0.0655	0.2942
GDP growth	0.1429	-0.1015	-0.051	-0.1123	-0.1087	0.0529	0.0545	-0.0623	-0.0634	0.0739	-0.0496	-0.056
Economic globalization	-0.0526	0.5399	0.3635	0.5458	0.5363	-0.0439	-0.0804	0.3095	0.285	-0.3196	-0.0482	0.0479
Shareholder rights	-0.042	-0.306	-0.5123	-0.3544	0.085	0.1109	0.0874	-0.1033	-0.226	-0.1972	0.0168	-0.1049
RISE	0.1008	0.0657	0.1732	-0.0165	0.0192	-0.027	-0.027	-0.2858	-0.089	0.0188	0.0526	-0.0054
Buyer sophistication	0.1753	-0.3387	-0.2491	-0.5049	-0.1258	0.0932	0.1678	-0.2931	-0.4975	0.1133	0.0847	-0.0775
Local competition	0.2091	-0.0812	0.022	-0.112	-0.1306	0.0072	0.0546	-0.3347	-0.2159	0.1084	0.0655	-0.0013
Labour-employment cooperation	0.1436	-0.2156	-0.3685	-0.4027	0.2448	0.1256	0.1427	-0.1476	-0.4673	-0.1856	0.0525	-0.0681
Poverty	-0.155	0.0355	-0.0462	0.1401	-0.0081	-0.1016	-0.176	0.0018	0.1499	0.1597	-0.0923	0.079
CULTPC1	-0.185	0.433	0.3343	0.5592	0.2428	-0.0566	-0.1136	0.3402	0.4618	-0.2525	-0.065	0.0045
CULTPC2	-0.0563	0.2125	0.2322	0.1587	0.178	-0.0551	0.0423	-0.1925	0.1293	-0.2051	0.0027	-0.1382
WGI	0.2594	0.4621	0.4777	0.3141	0.4527	0.0014	0.0478	-0.1476	-0.1209	-0.0202	0.008	0.1095
Local CEO	0.0634	0.0626	0.0994	0.1234	-0.0701	0.0192	-0.0361	-0.0262	0.1166	0.0256	0.0607	0.0282
Board age diversity	-0.0032	0.2754	0.2754	0.3414	0.102	-0.0293	-0.032	-0.0424	0.2194	-0.0934	-0.0489	-0.1059
Temp	0.0853	0.4111	0.172	0.1981	0.7747	0.0483	0.0828	0.0931	-0.0604	-0.512	0.0005	-0.0566

Table 4b. Correlation matrix [continued]

	Sustainability reporting	GDP growth	Economic globalization	Shareholder rights	RISE	Buyer sophistication	Local competition	Labour-employment cooperation	Poverty	CULTPC1	CULTPC2	WGI	Local CEO	Board age diversity
GDP growth	-0.1019	1												
Economic globalization	-0.0574	-0.1681	1											
Shareholder rights	-0.0878	0.0799	-0.2961	1										
RISE	-0.0366	0.0348	-0.3611	0.1061	1									
Buyer sophistication	-0.0038	0.0918	-0.5693	0.3309	0.4254	1								
Local competition	0.0913	-0.0746	-0.3933	0.1205	0.5959	0.5198	1							
Labour-employment cooperation	-0.0737	0.2287	-0.2577	0.5969	0.2928	0.7603	0.3561	1						
Poverty	-0.0083	0.0215	0.0239	0.039	-0.0796	-0.4806	-0.4304	-0.3745	1					
CULTPC1	-0.0294	-0.2807	0.6214	-0.4292	-0.5552	-0.8222	-0.543	-0.7274	0.1627	1				
CULTPC2	-0.1144	-0.2439	-0.1662	0.1646	0.4719	0.0677	0.2819	-0.0866	-0.0266	0.0477	1			
WGI	0.0215	0.2382	0.0175	-0.0527	0.4311	0.4242	0.4144	0.5006	-0.1614	-0.5138	-0.074	1		
Local CEO	0.0922	-0.0553	0.0654	-0.1476	-0.08	-0.1961	-0.0953	-0.2686	0.1163	0.1962	-0.0673	-0.1422	1	
Board age diversity	-0.1685	-0.0822	0.252	-0.2324	-0.135	-0.3895	-0.1972	-0.3859	0.1583	0.3948	-0.0019	-0.1374	0.1182	1
Temp	-0.1359	0.0993	0.3375	0.2075	0.1209	0.2235	0.0692	0.6098	-0.3237	-0.09	-0.0019	0.5018	-0.2268	-0.1359

cooperation and *Buyer sophistication*. Regarding the core variables of interest, we observe that the perceptions variables are positively associated with the RepRisk ratings, providing some preliminary evidence that public attitudes on environmental issues are associated with lower reputational exposure.

Estimation method

To examine how public perceptions on environmental issues impact on reputational risk, we derive a model that represents reputational exposure rating as a function of perception, firm- and country-specific characteristics. In its general form, the model is as follows:

$$\begin{aligned} & \text{Reputational exposure rating} \\ & = f(\text{Perception}, \text{Firm}_{\text{specific}}, \text{Country}_{\text{Specific}} \\ & \quad \text{variables}) \end{aligned} \quad (1)$$

where *Reputational exposure rating* refers to the reputational risk rating of an individual firm (as discussed above); *Perception* represents the index *ECP* or one of the three sub-indices; and *Firm_{specific}* and *Country_{specific}* represent the corresponding control variables. Time and industry dummies are also included in our model. We use an ordered probit model due to the ordinal nature of our categorical dependent variable. Our approach is consistent with that used in the credit ratings literature (see e.g. Khatami, Marchica and Mura, 2016; Papadimitri *et al.*, 2020).

Empirical results

Ordered probit results for H1

Table 5 shows the results of the baseline model. In column 1, we investigate the impact of *Environmental perceptions* while controlling for basic firm-, country- and industry-level factors. In the next columns we present the results for the sub-indices of *Energy* (column 2), *Climate* (column 3) and *Policy* (column 4).

Environmental perceptions appear to have a significantly positive impact on *Reputational exposure rating* (at the 1% level), and this finding holds when we decompose the overall index into the three sub-indices. Overall, our results show that in countries where the public demonstrates more environmentally friendly attitudes and beliefs, com-

panies are more likely to have better reputational risk ratings, and hence lower reputational exposure, providing support for H1a. One potential explanation is that, consistent with systems theory, these firms' managers carefully analyse the operating environment, including public perceptions, and adapt their practices accordingly (Logsdon and Yuthas, 1997). Therefore, this pressure from the public incentivizes firms to advance their frontier in relation to ESG issues, eventually meeting the expectations of stakeholders and lowering their reputational exposure.

Ordered probit results for H2

Up to this point, we have used energy, climate and the adoption of relevant policies to highlight public perceptions of environment-related issues. Such beliefs may play the role of informal institutions, since firms may be subject to different levels of institutional pressures. However, as discussed, recent research suggests that a company's ability to interpret the public perceptions that drive social institutional pressures, and react accordingly, depends on certain board characteristics.

For instance, foreign chief executive officers (CEOs) may perceive and interpret public pressures differently from local CEOs if they come from a society that does not share the same public aspirations. Consequently, external institutional pressures and CEO nationality may interact to affect corporate reputational exposure. To account for this, we introduce the dummy variable *Local CEO* that takes the value of one for a local CEO and zero for a foreign CEO, and we interact it with the indicators of public perceptions. We present the results in Table 6. In general, the interaction term is insignificant, failing to provide support for H2.

In addition, based on previous studies on top management teams, we examine the influence of different kinds of board demographics such as age, qualifications, nationality mix and gender. The reasoning is in line with upper echelons theory, which states that organizational outcomes related to strategic choices and performance are partially predicted by the background characteristics of top executives (see e.g. Bromiley and Rau, 2015; Carpenter, Geletkanycz and Sanders, 2004; Hambrick and Mason, 1984). More specifically, Hambrick and Mason (1984) assert that observable characteristics of top managers, such as their age,

Table 5. Baseline results

Variable	(1)	(2)	(3)	(4)
Environmental perceptions	0.00878*** (0.00181)			
Energy		0.00813*** (0.00174)		
Climate			0.00578*** (0.00173)	
Policy				0.00835*** (0.00168)
Profitability	0.464 (0.488)	0.477 (0.489)	0.373 (0.487)	0.458 (0.488)
Capital	0.182 (0.164)	0.168 (0.164)	0.196 (0.164)	0.173 (0.164)
Size	-0.0931*** (0.0212)	-0.0893*** (0.0212)	-0.0871*** (0.0212)	-0.108*** (0.0213)
Board size	-0.0480*** (0.00846)	-0.0487*** (0.00854)	-0.0500*** (0.00870)	-0.0394*** (0.00846)
Board independence	0.000499 (0.000912)	0.000370 (0.000908)	0.000236 (0.000905)	0.000745 (0.000917)
CSR-linked senior pay	-0.0498 (0.0655)	-0.0535 (0.0657)	-0.0540 (0.0655)	-0.0527 (0.0654)
GDP growth	0.0397*** (0.00979)	0.0362*** (0.00964)	0.0409*** (0.00994)	0.0417*** (0.00991)
Economic globalization	0.915 (0.566)	1.210** (0.550)	1.219** (0.564)	0.777 (0.579)
Shareholder rights	-0.107*** (0.0278)	-0.0740** (0.0312)	-0.111*** (0.0283)	-0.151*** (0.0267)
RISE	-0.00105 (0.00459)	-0.00330 (0.00485)	0.00168 (0.00455)	0.00157 (0.00435)
Observations	2,025	2,025	2,025	2,025
Industry dummies	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES
R-sq.	0.0320	0.0318	0.0309	0.0322

Notes: Ordered probit results from Eq. (1). Column 1 reports results for the 'Baseline' model when the key independent variable is the overall ECP measure. Columns 2–4 report results when the overall ECP measure is decomposed into the *Environmental*, *Climate* and *Policy* sub-indices, respectively. All financial variables are winsorized at the 10th and 90th percentiles. The variables are defined in Table 1. Robust standard errors are reported in parentheses.

***p < 0.01.

**p < 0.05.

education, experience and socioeconomic roots, serve as proxies of their cognitions, values and perspectives, and more generally for psychological dimensions that are difficult to observe and measure. To test these effects, we condition the environmental perception variables on *Board age diversity*, *Board qualifications*, *Board nationality mix* and *Board gender ratio*.¹⁴

¹⁴In general, empirical literature on upper echelons theory focuses on attributes like education, age and experience as observable characteristics that could proxy for unobservable ones. However, as discussed by Carpenter, Geletkanycz and Sanders (2004), studies have considered managerial characteristics not necessarily mentioned in

The results in Table 7 partially support upper echelons theory, with a significantly positive coefficient on the interaction term of *Board age diversity* with *Environmental perceptions*, *Climate* and *Policy*. Consistent with H2, these findings imply that external institutional pressures and the age diversity of board members may interact to affect corporate reputational exposure. This finding might be explained by the wider range of ideas and perceptions among directors who differ in age, which proves helpful when a firm struggles to find

the seminal work of Hambrick and Mason (1984), such as race and gender diversity (Richard et al., 2004). This is why we also consider such attributes in our analysis.

Table 6. CEO nationality

Variable	(1)	(2)	(3)	(4)
Environmental perceptions	0.00355 (0.00626)			
Local CEO	-0.488 (0.409)	-0.735 (0.584)	-0.264 (0.374)	-0.308 (0.284)
Environmental × Local CEO	0.00945 (0.00664)			
Energy		-0.000453 (0.00783)		
Energy × Local CEO		0.0117 (0.00826)		
Climate			0.00312 (0.00573)	
Climate × Local CEO			0.00538 (0.00601)	
Policy				0.00436 (0.00522)
Policy × Local CEO				0.00813 (0.00541)
Profitability	0.593 (0.744)	0.512 (0.745)	0.491 (0.741)	0.639 (0.749)
Capital	0.258 (0.245)	0.263 (0.245)	0.282 (0.245)	0.213 (0.246)
Size	-0.148*** (0.0323)	-0.141*** (0.0326)	-0.140*** (0.0325)	-0.169*** (0.0327)
Board size	-0.0343*** (0.0121)	-0.0351*** (0.0124)	-0.0341*** (0.0126)	-0.0232** (0.0116)
Board independence	0.00187 (0.00155)	0.00133 (0.00153)	0.00145 (0.00152)	0.00246 (0.00157)
CSR-linked senior pay	0.0121 (0.0981)	0.00108 (0.0981)	0.00786 (0.0980)	0.00917 (0.0979)
GDP growth	0.0724*** (0.0255)	0.0715*** (0.0256)	0.0753*** (0.0264)	0.0737*** (0.0257)
Economic globalization	0.995 (0.982)	1.480 (0.956)	1.262 (0.975)	0.807 (1.004)
Shareholder rights	-0.0215 (0.0474)	0.0199 (0.0553)	-0.0338 (0.0478)	-0.0857** (0.0437)
RISE	0.000888 (0.00878)	-0.00174 (0.00939)	0.00634 (0.00844)	0.00251 (0.00836)
Observations	908	908	908	908
Industry dummies	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES
R-sq.	0.0350	0.0345	0.0336	0.0352

Notes: Ordered probit results from Eq. (1) when including CEO nationality as a moderator variable. Column 1 reports results when the key independent variable is the overall ECP measure. Columns 2–4 report results when the overall ECP measure is decomposed into the *Environmental*, *Climate* and *Policy* sub-indices, respectively. All financial variables are winsorized at the 10th and 90th percentiles. The variables are defined in Table 1. Robust standard errors are reported in parentheses.

***p < 0.01.

**p < 0.05.

solutions for compliance issues (Kumar, 2020), subsequently resulting in lower reputational exposure. This should not be surprising as studies have suggested since at least the late 1970s (e.g. Buttell, 1979) that age is closely and consistently related

to attitudinal indicators of environmental concerns.¹⁵ Most importantly, the literature suggests

¹⁵Honnold (1984) outlines two main explanations for the inverse relationship between age and environmental

Table 7. Board age diversity

Variable	(1)	(2)	(3)	(4)
Environmental perceptions	-0.00497 (0.00593)			
Board age diversity	-0.114** (0.0465)	-0.0650 (0.0447)	-0.0913** (0.0401)	-0.117*** (0.0370)
Environmental × Age	0.00164** (0.000738)			
Energy		0.00205 (0.00527)		
Energy × Age		0.000726 (0.000618)		
Climate			-0.00525 (0.00521)	
Climate × Age			0.00120* (0.000618)	
Policy				-0.00798 (0.00549)
Policy × Age				0.00213*** (0.000710)
Profitability	0.481 (0.568)	0.504 (0.568)	0.391 (0.567)	0.513 (0.570)
Capital	0.177 (0.191)	0.154 (0.191)	0.175 (0.191)	0.175 (0.192)
Size	-0.113*** (0.0247)	-0.111*** (0.0248)	-0.111*** (0.0248)	-0.128*** (0.0245)
Board size	-0.0493*** (0.0103)	-0.0499*** (0.0104)	-0.0494*** (0.0105)	-0.0416*** (0.0103)
Board independence	0.000180 (0.00103)	7.05e-05 (0.00103)	-0.000102 (0.00102)	0.000479 (0.00103)
CSR-linked senior pay	0.0319 (0.0778)	0.0292 (0.0777)	0.0266 (0.0779)	0.0318 (0.0775)
GDP growth	0.0566*** (0.0179)	0.0535*** (0.0180)	0.0597*** (0.0186)	0.0592*** (0.0179)
Economic globalization	0.620 (0.616)	0.735 (0.599)	0.978 (0.613)	0.512 (0.630)
Shareholder rights	-0.0996*** (0.0331)	-0.0693* (0.0369)	-0.112*** (0.0330)	-0.143*** (0.0315)
RISE	-0.00552 (0.00528)	-0.00734 (0.00557)	-0.00196 (0.00517)	-0.00428 (0.00506)
Observations	1,539	1,539	1,539	1,539
Industry dummies	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES
R-sq.	0.0324	0.0322	0.0310	0.0333

Notes: Ordered probit results from Eq. (1) when including the standard deviation of the age of directors as a moderator variable. Column 1 reports results when the key independent variable is the overall ECP measure. Columns 2–4 report results when the overall ECP measure is decomposed into the *Environmental*, *Climate* and *Policy* sub-indices, respectively. All financial variables are winsorized at the 10th and 90th percentiles. The variables are defined in Table 1. Robust standard errors are reported in parentheses.

***p < 0.01.

**p < 0.05.

*p < 0.1.

that the age of the board of directors and the top management team influences environmental dis-

concerns: (i) the socio-biological process of aging; and (ii) important historical events differently affecting birth cohorts.

closures (Fernandes, Bornia and Nakamura, 2019) and environmental compliance initiatives (Kumar, 2020). Finally, we find no evidence of a conditional effect from the remaining board demographics (results untabulated), and thus we fail to find further and strong support for upper echelons theory.

Additional analyses

In this section, we present further analysis of: (i) alternative CSR measures; (ii) additional country-level attributes; (iii) altered samples; and (iv) endogeneity. We discuss these tests in turn.

Alternative CSR measures. Various studies point to a positive relationship between social performance and better reputation (Brammer and Pavelin, 2004, 2006). As discussed in Soleimani, Schnepfer and Newburry (2014), since reputation refers to public perceptions of the firm, CSR reporting and participation in voluntary initiatives are particularly relevant because they provide highly visible signals of commitment to CSR. Additionally, RepRisk mentions that its ratings take into account various allegations related to social issues. We therefore introduce two more CSR-related variables. The first is a dummy variable, *CSR sustainability index*, that takes the value of one if the company belongs to a specific sustainability index, and zero otherwise. The second is a dummy variable, *Sustainability reporting*, that takes the value of one if the company publishes a separate sustainability report or a section in its annual report on sustainability, and zero otherwise. The results in Table 8 show that both CSR dummies enter our regressions with an insignificant coefficient; the main results do not change.

Additional country-related controls. We further account for several country-related factors that can influence reputational exposure. Using firm-level data from the WEF database, Walsh *et al.* (2009) find that customer satisfaction and trust significantly impact on corporate reputation. In the absence of firm-level customer data, we control for buyer sophistication at the country level. This indicator reveals the extent to which buyers base their purchases on sophisticated performance attributes and not only on the lowest price. The results in Table 9 confirm the findings of previous studies in that *Buyer sophistication* significantly affects *Reputational exposure ratings*. The effect is positive and statistically significant at the 1% level (except in the model with *Policy* – column 4 – where it falls to 5%).

Hörner (2002) built a theoretical model that shows how competition generates reputation-building behaviour. For example, having a competitor in the market may allow consumers to cred-

ibly punish one firm's dishonest behaviour, thus raising the importance of building and maintaining reputation. We control for the impact of local competition on reputational exposure using an index of the intensity of competition in each country. We find that *Local competition* is positively associated with *Reputational exposure ratings* at the 1% level (columns 5–8), and the environmental perception variables continue to have statistically significant coefficients at the 1% level. Additionally, we control for the extent of cooperation in labour–employer relations. Helm (2011) outlines the important role of employees in reputation building: ‘employees can directly or indirectly, voluntarily or involuntarily, affect reputation by any act that is transmitted to, and communicated by, external audiences who evaluate corporate conduct’ (p. 658). Miles and Mangold (2014) also highlight that in the era of the Internet and social media, the voice of employees can either enhance the organization's public image or be a ticking bomb with adverse effects on corporate reputation. We find that *Labour–employer cooperation* is associated with lower reputational exposure (statistically significant at the 1% level: columns 9–12). Additionally, we control for the impact of poverty using the percentage of the population living below national poverty lines (WEF). The World Economic Forum (2012) outlines that in most countries, improvements in economic living standards are being accompanied by increases in political and civil rights such as freedom of speech, assembly and beliefs. This might have further implications for the priorities, attitude and reactions of citizens in wealthy and less wealthy countries. For example, Lo (2016) finds that the citizens of wealthier societies are more strongly motivated to take environmental action than the citizens of lower-income countries, although at the same time they are relatively less likely to perceive the harmful impacts on the environment as very dangerous. Therefore, the expectations of the citizens and the corporate reactions may differ by level of income, with implications for organizational fit and subsequently corporate reputational exposure. The results in Table 10 reveal a negative relationship between *Poverty* and *Reputational exposure ratings*, implying that in countries with a high percentage of poverty, companies' reputational exposure is also higher. The main results hold.

Given that the *Reputational exposure ratings* indicator captures negative incidents, criticism and

Table 8. Additional CSR variables

Variable	(1)	(2)	(3)	(4)
Environmental perceptions	0.00902*** (0.00194)			
Energy		0.00885*** (0.00191)		
Climate			0.00578*** (0.00186)	
Policy				0.00863*** (0.00181)
Profitability	0.560 (0.529)	0.570 (0.530)	0.467 (0.528)	0.575 (0.530)
Capital	0.160 (0.178)	0.150 (0.178)	0.175 (0.178)	0.147 (0.178)
Size	-0.0942*** (0.0240)	-0.0894*** (0.0241)	-0.0890*** (0.0241)	-0.111*** (0.0240)
Board size	-0.0520*** (0.00984)	-0.0528*** (0.00989)	-0.0540*** (0.0101)	-0.0439*** (0.00983)
Board independence	0.000149 (0.00101)	6.17e-05 (0.00101)	-0.000137 (0.00101)	0.000343 (0.00102)
CSR-linked senior pay	0.0117 (0.0719)	0.00742 (0.0720)	0.00481 (0.0720)	0.00699 (0.0717)
CSR sustainability index	-0.0677 (0.0561)	-0.0703 (0.0561)	-0.0606 (0.0560)	-0.0625 (0.0560)
Sustainability reporting	-0.00186 (0.0923)	0.00227 (0.0919)	-0.0128 (0.0925)	0.0144 (0.0929)
GDP growth	0.0463*** (0.0138)	0.0417*** (0.0136)	0.0485*** (0.0142)	0.0491*** (0.0140)
Economic globalization	0.566 (0.609)	0.821 (0.591)	0.900 (0.604)	0.442 (0.622)
Shareholder rights	-0.114*** (0.0318)	-0.0767** (0.0353)	-0.120*** (0.0323)	-0.160*** (0.0307)
RISE	-0.00152 (0.00505)	-0.00449 (0.00533)	0.00113 (0.00502)	0.00126 (0.00482)
Observations	1,693	1,693	1,693	1,693
Industry dummies	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES
R-sq.	0.0300	0.0300	0.0287	0.0303

Notes: Ordered probit results from Eq. (1) when enhanced with additional CSR-related variables. Column 1 reports results when the key independent variable is the overall ECP measure. Columns 2–4 report results when the overall ECP measure is decomposed into the *Environmental*, *Climate* and *Policy* sub-indices, respectively. All financial variables are winsorized at the 10th and 90th percentiles. The variables are defined in Table 1. Robust standard errors are reported in parentheses.

***p < 0.01.

**p < 0.05.

controversies reported in the media, it is plausible that the level of dissemination of such incidents in a country may drive our results. While it is not possible to examine the exact content reported, we attempt to account for the dissemination of information in a country with a proxy that captures the breadth of print and broadcast perspectives (*Press*). We explore the extent to which this measure moderates the impact of public perceptions on companies' reputational exposure. The coefficient of the interaction term is insignificant or only

marginally significant, revealing a rather weak role in further explaining the aforementioned relationship. Nonetheless, when *Press* enters the regression as an additional control variable, the coefficients of the key variables of interest remain intact in both sign and significance. We do not tabulate these results to conserve space, but they are available upon request.

We also test how differences in reputation across countries could be explained by variation in the level of institutional development (Deephouse,

Table 9. Additional country-related controls – Buyer sophistication, Local competition and Labour–employer cooperation

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Environmental perceptions	0.0077*** (0.0021)				0.0100*** (0.0020)				0.00633*** (0.0021)			
Energy		0.00742*** (0.0020)				0.00889*** (0.0019)				0.00738*** (0.0020)		
Climate			0.00605*** (0.0019)				0.00632*** (0.0019)				0.00513*** (0.0020)	
Policy				0.00662*** (0.0019)				0.0107*** (0.0019)				0.00405* (0.00227)
Profitability	0.511 (0.527)	0.516 (0.528)	0.459 (0.526)	0.509 (0.527)	0.563 (0.528)	0.552 (0.529)	0.458 (0.527)	0.614 (0.529)	0.578 (0.526)	0.616 (0.527)	0.550 (0.525)	0.540 (0.526)
Capital	0.140 (0.179)	0.130 (0.179)	0.147 (0.179)	0.139 (0.179)	0.117 (0.177)	0.108 (0.177)	0.131 (0.177)	0.102 (0.177)	0.130 (0.179)	0.116 (0.179)	0.136 (0.179)	0.131 (0.179)
Size	-0.115*** (0.0232)	-0.111*** (0.0233)	-0.111*** (0.0233)	-0.125*** (0.0232)	-0.0977*** (0.0231)	-0.0938*** (0.0231)	-0.0920*** (0.0231)	-0.116*** (0.0231)	-0.129*** (0.0239)	-0.127*** (0.0239)	-0.127*** (0.0240)	-0.135*** (0.0237)
Board size	-0.0386*** (0.0105)	-0.0392*** (0.0106)	-0.0395*** (0.0107)	-0.0335*** (0.0104)	-0.0591*** (0.010)	-0.0587*** (0.010)	-0.0609*** (0.0102)	-0.0503*** (0.010)	-0.0305*** (0.011)	-0.0307*** (0.011)	-0.0309*** (0.011)	-0.0264*** (0.0110)
Board independence	-0.0002 (0.0010)	-0.0002 (0.0010)	-0.000454 (0.0010)	5.18e-05 (0.0010)	0.000844 (0.0010)	0.000670 (0.0010)	0.000506 (0.0010)	0.00126 (0.0010)	0.000544 (0.0010)	0.000568 (0.0010)	0.000425 (0.0010)	0.000510 (0.000998)
CSR-linked senior pay	-0.00976 (0.0715)	-0.0135 (0.0716)	-0.0119 (0.0715)	-0.0144 (0.0714)	-0.00477 (0.0713)	-0.0112 (0.0714)	-0.0116 (0.0714)	-0.00676 (0.0711)	-0.0315 (0.0721)	-0.0327 (0.0719)	-0.0349 (0.0719)	-0.0380 (0.0724)
GDP growth	0.048*** (0.0140)	0.044*** (0.0138)	0.050*** (0.0143)	0.050*** (0.0141)	0.0465*** (0.0122)	0.0420*** (0.0122)	0.0491*** (0.0123)	0.0493*** (0.0123)	0.0314*** (0.0134)	0.0258*** (0.0131)	0.0307*** (0.0134)	0.0348*** (0.0138)
Economic globalization	1.097* (0.613)	1.322** (0.594)	1.271** (0.606)	1.069* (0.631)	1.305** (0.625)	1.622*** (0.605)	1.680*** (0.623)	1.078* (0.640)	0.723 (0.610)	0.766 (0.598)	0.767 (0.611)	0.936 (0.620)
Shareholder rights	-0.133*** (0.0342)	-0.102*** (0.0379)	-0.139*** (0.0342)	-0.165*** (0.0329)	-0.101*** (0.0319)	-0.0671* (0.0354)	-0.109*** (0.0325)	-0.154*** (0.0305)	-0.188*** (0.0409)	-0.160*** (0.0434)	-0.198*** (0.0399)	-0.208*** (0.0391)
RISE	-0.0115** (0.00561)	-0.0138** (0.00575)	-0.0123** (0.00568)	-0.0069 (0.00559)	-0.0204*** (0.00640)	-0.0213*** (0.00656)	-0.0167*** (0.00633)	-0.019*** (0.00622)	-0.00817 (0.00510)	-0.0120** (0.00534)	-0.00835 (0.00514)	-0.00472 (0.0050)
Buyer sophistication	0.271*** (0.0869)	0.269*** (0.0867)	0.327*** (0.0846)	0.225** (0.0910)								
Local competition					0.540*** (0.104)	0.500*** (0.103)	0.521*** (0.104)	0.594*** (0.105)				

Table 9. (Continued)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Labour-employer cooperation									0.231*** (0.0587)	0.249*** (0.0563)	0.264*** (0.0556)	0.210*** (0.0677)
Observations	1,694	1,694	1,694	1,694	1,709	1,709	1,709	1,709	1,694	1,694	1,694	1,694
Industry dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R-sq.	0.0301	0.0300	0.0297	0.0297	0.0350	0.0344	0.0333	0.0362	0.0311	0.0317	0.0311	0.0303

Notes: Ordered probit results from Eq. (1) when enhanced with additional country-level controls. Columns 1, 5 and 9 report results when the key independent variable is the overall ECP measure; columns 2, 6 and 10 when the independent variable is the *Environmental* sub-index; columns 3, 7 and 11 when the independent variable is the *Climate* sub-index; and columns 4, 8 and 12 when the independent variable is the *Policy* sub-index. All financial variables are winsorized at the 10th and 90th percentiles. The variables are defined in Table 1. Robust standard errors are reported in parentheses.

***p < 0.01.

**p < 0.05.

*p < 0.1.

Table 10. Additional country-related controls – poverty

Variable	(1)	(2)	(3)	(4)
Environmental perceptions	0.0113*** (0.00241)			
Energy		0.00994*** (0.00226)		
Climate			0.00932*** (0.00236)	
Policy				0.00967*** (0.00230)
Profitability	0.408 (0.639)	0.427 (0.641)	0.313 (0.637)	0.381 (0.638)
Capital	0.114 (0.210)	0.102 (0.210)	0.131 (0.210)	0.112 (0.210)
Size	-0.130*** (0.0283)	-0.125*** (0.0284)	-0.122*** (0.0285)	-0.148*** (0.0283)
Board size	-0.0393*** (0.0120)	-0.0407*** (0.0121)	-0.0446*** (0.0122)	-0.0291** (0.0121)
Board independence	0.000795 (0.00117)	0.000525 (0.00116)	0.000465 (0.00116)	0.00108 (0.00117)
CSR-linked senior pay	0.0661 (0.0890)	0.0645 (0.0894)	0.0658 (0.0891)	0.0566 (0.0886)
GDP growth	0.0473*** (0.0152)	0.0427*** (0.0149)	0.0500*** (0.0156)	0.0500*** (0.0155)
Economic globalization	-0.388 (0.768)	0.154 (0.726)	-0.298 (0.772)	-0.369 (0.789)
Shareholder rights	-0.101*** (0.0391)	-0.0604 (0.0424)	-0.0969** (0.0398)	-0.158*** (0.0391)
RISE	-0.0136** (0.00604)	-0.0151** (0.00623)	-0.0120** (0.00611)	-0.00917 (0.00572)
Poverty	-0.257** (0.103)	-0.220** (0.103)	-0.295*** (0.104)	-0.237** (0.103)
Observations	1,204	1,204	1,204	1,204
Industry dummies	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES
R-sq.	0.0387	0.0383	0.0381	0.0380

Notes: Ordered probit results from Eq. (1) when enhanced with additional country-level controls. Column 1 reports results when the key independent variable is the overall ECP measure. Columns 2–4 report results when the overall ECP measure is decomposed into the *Environmental*, *Climate* and *Policy* sub-indices, respectively. All financial variables are winsorized at the 10th and 90th percentiles. The variables are defined in Table 1. Robust standard errors are reported in parentheses.

***p < 0.01.

**p < 0.05.

Newburry and Soleimani, 2016). As in past studies, we use the World Bank’s *WGI* as a measure of each country’s overall institutional attainment. The interaction terms of *WGI* are positive and statistically significant at the 5% level (except for *Policy*), indicating that the impact of environmental perceptions on the reputational risk rating is enhanced in countries with high (compared to low) levels of institutional development. The results are reported in Table 11.

Altering the sample. As discussed above, our main dependent variable has no time-series varia-

tion. Our panel-setting approach is consistent with many studies examining the impact of national culture on firm outcomes, under the assumption that such social norms change little (if at all) over short time periods (Chen *et al.*, 2015; Deephouse, Newburry and Soleimani, 2016; El Ghouli and Zheng, 2016). Still, running the regressions with firm-year observations over 4 years could artificially increase the power of the tests. Therefore, we re-estimate the baseline regression using values averaged over the 5-year period, giving one observation per firm. Additionally, we re-estimate our

Table 11. The moderating effect of institutional development levels (WGI)

Variable	(1)	(2)	(3)	(4)
Environmental perceptions	-0.00568 (0.00418)			
WGI	0.189 (0.130)	0.189 (0.120)	0.132 (0.123)	0.218 (0.163)
Environmental × WGI	0.00597** (0.00282)			
Energy		-0.00295 (0.00319)		
Energy × WGI		0.00538** (0.00232)		
Climate			-0.00619* (0.00353)	
Climate × WGI			0.00716*** (0.00267)	
Policy				-0.0107 (0.00701)
Policy × WGI				0.00699 (0.00437)
Profitability	0.533 (0.524)	0.534 (0.524)	0.521 (0.524)	0.522 (0.525)
Capital	0.0741 (0.176)	0.0720 (0.176)	0.0738 (0.176)	0.0721 (0.176)
Size	-0.135*** (0.0237)	-0.132*** (0.0236)	-0.135*** (0.0236)	-0.134*** (0.0240)
Board size	-0.0266** (0.0108)	-0.0292*** (0.0108)	-0.0281** (0.0110)	-0.0239** (0.0106)
Board independence	-3.74e-05 (0.00101)	-2.85e-05 (0.00101)	5.50e-05 (0.00100)	-0.000271 (0.00102)
CSR-linked senior pay	-0.0350 (0.0717)	-0.0298 (0.0716)	-0.0302 (0.0714)	-0.0469 (0.0715)
GDP growth	0.0300** (0.0135)	0.0295** (0.0133)	0.0324** (0.0136)	0.0258* (0.0134)
Economic globalization	0.759 (0.619)	0.713 (0.603)	0.695 (0.616)	0.973 (0.629)
Shareholder rights	-0.166*** (0.0376)	-0.153*** (0.0404)	-0.163*** (0.0357)	-0.163*** (0.0374)
RISE	-0.0100* (0.00554)	-0.0120** (0.00544)	-0.00971* (0.00551)	-0.0102* (0.00588)
Observations	1,709	1,709	1,709	1,709
Industry dummies	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES
R-sq.	0.0358	0.0360	0.0362	0.0355

Notes: Ordered probit results from Eq. (1) when including institutional development as a moderator variable. Column 1 reports results when the key independent variable is the overall ECP measure. Columns 2–4 report results when the overall ECP measure is decomposed into the *Environmental*, *Climate* and *Policy* sub-indices, respectively. All financial variables are winsorized at the 10th and 90th percentiles. The variables are defined in Table 1. Robust standard errors are reported in parentheses.

*** $p < 0.01$.

** $p < 0.05$.

* $p < 0.1$.

baseline regression by averaging the variables per country and year. The results in Tables 12 and 13 show that our findings are robust to these alternative estimations.

Furthermore, to ensure that the results are not driven by a single country, we estimate our regression by excluding the UK, as the dominant country in our sample (34% of observations). As

Table 12. Averaged values (1)

Variable	(1)	(2)	(3)	(4)
Environmental perceptions (avg)	0.0629*** (0.00308)			
Energy (avg)		0.0420*** (0.00285)		
Climate (avg)			0.0519*** (0.00298)	
Policy (avg)				0.0622*** (0.00333)
Profitability (avg)	2.233 (2.478)	0.445 (2.628)	3.489 (2.496)	1.957 (2.625)
Capital (avg)	15.60*** (0.912)	13.67*** (0.923)	14.19*** (0.938)	15.87*** (1.016)
Size (avg)	0.222*** (0.0581)	0.148*** (0.0526)	-0.173*** (0.0505)	0.104** (0.0522)
Board size (avg)	-0.187*** (0.0206)	-0.213*** (0.0209)	-0.00428 (0.0195)	-0.150*** (0.0192)
Board independence (avg)	0.00115 (0.00163)	-0.000978 (0.00155)	0.00505*** (0.00172)	0.00275 (0.00169)
CSR-linked senior pay (avg)	0.702*** (0.107)	0.586*** (0.103)	0.921*** (0.0972)	0.903*** (0.102)
GDP growth (avg)	0.0502*** (0.0138)	0.0909*** (0.0198)	0.114*** (0.0205)	0.0906*** (0.0187)
Economic globalization (avg)	-0.775 (0.608)	-1.028 (0.730)	-1.442** (0.726)	-1.847*** (0.685)
Shareholder rights (avg)	-0.412*** (0.0313)	-0.671*** (0.0325)	-0.898*** (0.0339)	-0.676*** (0.0314)
RISE (avg)	-0.0326*** (0.00586)	-0.00315 (0.00617)	-0.0184*** (0.00600)	-0.0196*** (0.00615)
Observations	2,322	2,322	2,322	2,322
Industry dummies	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES
R-sq.	0.301	0.240	0.276	0.288

Notes: Ordered probit results from Eq. (1) when variables are averaged over the 4-year period. Column 1 reports results when the key independent variable is the overall ECP measure. Columns 2–4 report results when the overall ECP measure is decomposed into the *Environmental*, *Climate* and *Policy* sub-indices, respectively. All financial variables are winsorized at the 10th and 90th percentiles. The variables are defined in Table 1. Robust standard errors are reported in parentheses.

***p < 0.01.

**p < 0.05.

reported in Table 14, we find no difference in our baseline model. Given the nature of the environmental perception variables, we test a revised specification with standard errors clustered at the country level. As Table 15 reports, the main results hold, with the environmental perception variables being statistically significant for all model variants at the 1% level.

Endogeneity. A potential endogeneity issue clouds the interpretation of our main results. Although reverse causality is unlikely to be a major issue in our setting, public beliefs and views are

arguably influenced by the behaviour or actions of local firms (e.g. the BP oil spill of 2010). In addition, endogeneity could potentially be linked to a spurious relationship due to omitted variable bias and/or measurement error.

To be more precise, a spurious relationship occurs when a third variable creates the appearance of a relationship between two other variables, but this relationship disappears when that third variable is included in the analysis. For example, one may argue that country-level national culture can simultaneously drive both public perception (independent variable) and firm reputational exposure

Table 13. Averaged values (2)

Variable	(1)	(2)	(3)	(4)
Environmental perceptions (avg)	0.0169*** (0.00205)			
Energy (avg)		0.0139*** (0.00180)		
Climate (avg)			0.0104*** (0.00184)	
Policy (avg)				0.0165*** (0.00208)
Profitability (avg)	1.861*** (0.542)	1.864*** (0.543)	1.686*** (0.536)	1.935*** (0.542)
Capital (avg)	0.0806 (0.161)	0.0555 (0.160)	0.0967 (0.161)	0.0457 (0.160)
Size (avg)	-0.101*** (0.0218)	-0.103*** (0.0218)	-0.0960*** (0.0223)	-0.132*** (0.0211)
Board size (avg)	-0.0745*** (0.00907)	-0.0732*** (0.00904)	-0.0787*** (0.00961)	-0.0565*** (0.00881)
Board independence (avg)	-0.00308*** (0.000992)	-0.00282*** (0.000977)	-0.00345*** (0.000997)	-0.00252** (0.000991)
CSR-linked senior pay (avg)	0.156 (0.0974)	0.134 (0.0977)	0.126 (0.0979)	0.145 (0.0965)
GDP growth (avg)	0.107*** (0.0138)	0.0996*** (0.0139)	0.119*** (0.0142)	0.116*** (0.0138)
Economic globalization (avg)	-3.587*** (1.380)	-0.885 (1.201)	-1.389 (1.379)	-4.469*** (1.470)
Shareholder rights (avg)	-0.159*** (0.0262)	-0.0979*** (0.0287)	-0.171*** (0.0263)	-0.244*** (0.0256)
RISE (avg)	-0.0100** (0.00426)	-0.0106** (0.00433)	-0.00315 (0.00425)	-0.00566 (0.00399)
Observations	2,196	2,196	2,196	2,196
Industry dummies	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES
R-sq.	0.0304	0.0299	0.0285	0.0306

Notes: Ordered probit results from Eq. (1) when variables are averaged on a country-year basis. Column 1 reports results when the key independent variable is the overall ECP measure. Columns 2–4 report results when the overall ECP measure is decomposed into the *Environmental*, *Climate* and *Policy* sub-indices, respectively. All financial variables are winsorized at the 10th and 90th percentiles. The variables are defined in Table 1. Robust standard errors are reported in parentheses.

***p < 0.01.

**p < 0.05.

(dependent variable), thus creating a spurious relationship. To account for this, we include national culture as an additional control variable in the baseline specification. We consider all six dimensions identified by Hofstede (1980), Hofstede and Bond (1988) and Hofstede, Hofstede and Minkov (2010), namely power distance, individualism (versus collectivism), masculinity (versus femininity), uncertainty avoidance, long-term orientation (versus short-term orientation) and indulgence (versus restraint). Since we are interested in controlling for these aspects of national culture rather than testing some hypothesis about their potential impact on corporate reputation exposure, and given

the potential correlations between the six dimensions, we resort to principal component analysis. This results in two components with eigenvalues higher than one, explaining in total 0.7684 of the variance. The inclusion of these two cultural components in the regression does not alter our main findings. Thus, it appears that our results are not driven by spurious correlation due to the omission of national culture. The results are reported in Table 16.

As a further test, to isolate the exogenous component of our endogenous variable and alleviate any remaining concerns about public beliefs being influenced by firm behaviour, we re-estimate

Table 14. Excluding the UK

Variable	(1)	(2)	(3)	(4)
Environmental perceptions	0.0121*** (0.00232)			
Energy		0.00845*** (0.00196)		
Climate			0.00754*** (0.00227)	
Policy				0.0130*** (0.00223)
Profitability	1.309** (0.654)	1.331** (0.655)	1.132* (0.654)	1.368** (0.653)
Capital	0.246 (0.217)	0.224 (0.217)	0.267 (0.218)	0.250 (0.217)
Size	-0.0932*** (0.0254)	-0.0979*** (0.0253)	-0.0883*** (0.0259)	-0.117*** (0.0247)
Board size	-0.0324*** (0.00898)	-0.0329*** (0.00903)	-0.0360*** (0.00932)	-0.0179** (0.00912)
Board independence	0.000142 (0.000990)	0.000292 (0.000987)	-6.02e-05 (0.000990)	0.000463 (0.000994)
CSR-linked senior pay	-0.115 (0.0879)	-0.109 (0.0885)	-0.113 (0.0880)	-0.125 (0.0874)
GDP growth	0.0455*** (0.00990)	0.0375*** (0.00963)	0.0449*** (0.0102)	0.0502*** (0.0101)
Economic globalization	2.503*** (0.749)	2.577*** (0.745)	2.725*** (0.746)	2.315*** (0.759)
Shareholder rights	-0.120*** (0.0279)	-0.0799*** (0.0308)	-0.120*** (0.0281)	-0.191*** (0.0293)
RISE	-0.0140** (0.00643)	-0.00963 (0.00623)	-0.00779 (0.00645)	-0.0134** (0.00599)
Observations	1,442	1,442	1,442	1,442
Industry dummies	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES
R-sq.	0.0439	0.0426	0.0418	0.0450

Notes: Ordered probit results from Eq. (1) when excluding the UK from the sample. Column 1 reports results when the key independent variable is the overall ECP measure. Columns 2–4 report results when the overall ECP measure is decomposed into the *Environmental*, *Climate* and *Policy* sub-indices, respectively. All financial variables are winsorized at the 10th and 90th percentiles. The variables are defined in Table 1. Robust standard errors are reported in parentheses.

***p < 0.01.

**p < 0.05.

*p < 0.1.

the baseline model presented in Eq. (1) with an ordered probit regression that allows for endogenous covariates.¹⁶ We propose that the disaster intensity measure for temperature extremes from Felbermayr and Gröschl (2014) can serve as an appropriate instrument. Felbermayr and Gröschl (2014) estimate this index (*Temp*) as the percentage difference between the maximum temperature in 1 month and the corresponding long-run (1979–2010) monthly mean. Strong positive de-

viations are interpreted as heat waves and strong negative deviations as cold waves. We rely on this instrument for two reasons. First, it would be difficult for someone to argue that extreme temperatures may influence directly corporate reputational exposure. Thus, this instrument satisfies the exogeneity requirement. Second, the literature suggests that people’s personal experience of natural hazards or climate change is related to their attitude on climate change and climate policy, their confidence that their actions will affect climate change, and their willingness to save energy to mitigate climate change (Lujala, Lein and Ketil

¹⁶For a more detailed discussion of the model, see Wooldridge (2010).

Table 15. Clustering standard errors at the country level

Variable	(1)	(2)	(3)	(4)
Environmental perceptions	0.00878*** (0.00260)			
Energy		0.00813*** (0.00248)		
Climate			0.00578** (0.00258)	
Policy				0.00835*** (0.00299)
Profitability	0.464 (0.706)	0.477 (0.722)	0.373 (0.673)	0.458 (0.704)
Capital	0.182 (0.191)	0.168 (0.189)	0.196 (0.190)	0.173 (0.192)
Size	-0.0931** (0.0370)	-0.0893** (0.0376)	-0.0871** (0.0384)	-0.108*** (0.0336)
Board size	-0.0480*** (0.0158)	-0.0487*** (0.0168)	-0.0500*** (0.0163)	-0.0394*** (0.0156)
Board independence	0.000499 (0.00109)	0.000370 (0.00105)	0.000236 (0.00107)	0.000745 (0.00115)
CSR-linked senior pay	-0.0498 (0.0991)	-0.0535 (0.1000)	-0.0540 (0.0984)	-0.0527 (0.100)
GDP growth	0.0397*** (0.0112)	0.0362*** (0.0106)	0.0409*** (0.0131)	0.0417*** (0.0121)
Economic globalization	0.915 (0.836)	1.210 (0.797)	1.219 (0.811)	0.777 (0.872)
Shareholder rights	-0.107*** (0.0396)	-0.0740 (0.0493)	-0.111*** (0.0422)	-0.151*** (0.0341)
RISE	-0.00105 (0.00917)	-0.00330 (0.00903)	0.00168 (0.00962)	0.00157 (0.00892)
Observations	2,025	2,025	2,025	2,025
Industry dummies	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES
R-sq.	0.0320	0.0318	0.0309	0.0322

Notes: Ordered probit results from Eq. (1) when clustering standard errors at the country level. Column 1 reports results when the key independent variable is the overall ECP measure. Columns 2–4 report results when the overall ECP measure is decomposed into the *Environmental*, *Climate* and *Policy* sub-indices, respectively. All financial variables are winsorized at the 10th and 90th percentiles. The variables are defined in Table 1. Robust standard errors are reported in parentheses.

***p < 0.01.

**p < 0.05.

Rød, 2015; Spence, Poortinga and Pidgeon, 2011); a growing number of studies from this strand of the literature focus on temperature variations (Hamilton and Keim, 2009; Howe et al., 2013; Leiserowitz, 2006; Weber, 2016). Thus, this instrument should satisfy the relevance requirement of an instrument.

Columns 1–4 in Table 17 report our findings, with Panel A presenting the second-stage results and Panel B the first-stage results. The key variable of interest (*Environmental perceptions*) retains its sign and significance, and the results remain intact for the three sub-indices of *Energy*, *Climate* and

Policy. We also find that the instrument *Temp* is positively related to all four environmental perception variables at the 1% level, thus confirming its impact on the first-stage regression-dependent variable. Given the lack of a formal set of tests to confirm the validity of the instrument, we re-estimate the first-stage model and examine the likelihood ratio chi-square statistic. We obtain a value lower than 0.001, which confirms the significance of the model. Finally, in untabulated results, we also estimate our model using a two-stage least-squares (2SLS) linear model. Although the 2SLS method disregards the ordinal nature of

Table 16. *Controlling for national culture*

Variables	(1)	(2)	(3)	(4)
Environmental perception	0.00650*** (0.00200)			
Energy		0.00613*** (0.00200)		
Climate			0.00511*** (0.00184)	
Policy				0.00571*** (0.00189)
Profitability	0.628 (0.532)	0.626 (0.532)	0.591 (0.531)	0.618 (0.532)
Capital	0.0835 (0.178)	0.0750 (0.178)	0.0940 (0.178)	0.0759 (0.178)
Size	-0.0867*** (0.0237)	-0.0842*** (0.0238)	-0.0806*** (0.0239)	-0.0971*** (0.0239)
Board size	-0.0404*** (0.0104)	-0.0406*** (0.0105)	-0.0420*** (0.0107)	-0.0356*** (0.0103)
Board independence	-0.00191* (0.00110)	-0.00203* (0.00110)	-0.00211* (0.00109)	-0.00171 (0.00111)
Senior ex. compensation – CSR	0.0118 (0.0734)	0.00914 (0.0735)	0.00714 (0.0733)	0.00985 (0.0733)
GDP growth	0.0321** (0.0134)	0.0289** (0.0133)	0.0317** (0.0134)	0.0360*** (0.0138)
Econ. globalization	1.565** (0.631)	1.756*** (0.614)	1.750*** (0.622)	1.507** (0.646)
Shareholder	-0.213*** (0.0389)	-0.184*** (0.0440)	-0.224*** (0.0381)	-0.239*** (0.0364)
RISE	-0.0277*** (0.00686)	-0.0288*** (0.00694)	-0.0291*** (0.00691)	-0.0241*** (0.00689)
CULTPCA1	-0.147*** (0.0278)	-0.144*** (0.0281)	-0.162*** (0.0271)	-0.137*** (0.0286)
CULTPCA2	0.0926** (0.0370)	0.0854** (0.0376)	0.106*** (0.0362)	0.0900** (0.0370)
Observations	1,652	1,652	1,652	1,652
Industry dummies	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES
R-sq	0.0351	0.0350	0.0349	0.0350

Notes: Ordered probit results from Eq. (1) including national culture as an additional control. Column 1 reports results when the key independent variable is the overall ECP measure. Columns 2–4 report results when the overall ECP measure is decomposed into the *Environmental*, *Climate* and *Policy* sub-indices, respectively. All financial variables are winsorized at the 10th and 90th percentiles. The variables are defined in Table 1. Robust standard errors are reported in parentheses.

***p < 0.01.

**p < 0.05.

*p < 0.1.

our dependent variable, it is still a viable and less complex approach (Angrist and Pischke, 2008). The results in both the first and second stage remain the same in terms of sign and significance. While the 2SLS results should be treated with caution due to the ordinal and categorical nature of the dependent variable, the advantage of this approach lies in allowing us to examine the va-

lidity of our instruments. All the relevant tests confirm that our instruments are suitable.¹⁷

¹⁷For instance, for the overall *ECP* measure, the Kleibergen-Paap rk LM statistic (p-value) = 0.000 and the Kleibergen-Paap rk Wald F statistic = 310.366. Similar results are obtained when we use the sub-indices of *Energy*, *Climate* and *Policy*.

Table 17. Dealing with endogeneity with the use of exogenous instruments

	I	II	III	IV
Panel A: Second-stage results				
<i>Dep. Var: Rep. exposure</i>				
Energy	0.029*** (0.0045)			
Climate		0.0374*** (0.0054)		
Policy			0.0157*** (0.0025)	
Environmental perceptions				0.0244 *** (0.0039)
Controls	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES
Time fixed effects	YES	YES	YES	YES
Number of observations				
Panel B: First-stage results				
	<i>Dep. Var: Energy</i>	<i>Dep. Var: Climate</i>	<i>Dep. Var: Policy</i>	<i>Dep. Var: ECP</i>
Instrument				
Temp	3.808*** (0.2018)	2.727 *** (0.2385)	7.268*** (0.1546)	4.601*** (0.1855)
Controls	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES
Time fixed effects	YES	YES	YES	YES

Notes: Results obtained when estimating an ordered probit model with endogenous covariates. Panel A reports the second-stage results. Panel B reports the first-stage results. Column 1 reports results when the key independent variable is the overall ECP measure. Columns 2–4 report results when the overall ECP measure is decomposed into the *Environmental*, *Climate* and *Policy* sub-indices, respectively. All financial variables are winsorized at the 10th and 90th percentiles. The variables are defined in Table 1. Robust standard errors are reported in parentheses.

*** $p < 0.01$.

Discussion and conclusions

Corporate reputation has received substantial attention in the management literature. However, little is known about the factors that drive reputational exposure across countries. Based on insights from institutional theory, which has been widely adopted to explain how firm behaviour is being driven by institutional pressures, we aim to fill this gap. We focus on public perceptions of environment-related issues like energy, climate and the adoption of relevant policies. Such beliefs may play the role of informal institutions, since societal expectations regarding organizational behaviour are possibly the most influential environmental forces. For example, as discussed in the latest Authenticity Gap Report by FleishmanHillard Fishburn (2019), campaigns such as Extinction Rebellion, widespread climate protests and grow-

ing public concern about single-use plastics and irresponsible energy have driven climate change higher on the global agenda. At the same time, attitudes are driven by a greater emphasis on societal purpose and internal scrutiny from the media, and while consumers do not expect companies to fix everything, they will scrutinize them to make a positive difference on the issues under their control. This means that companies nowadays operate within a fast-changing, possibly extreme, informal institutional environment that poses challenges for the management of value and reputation, and subsequently the corporate governance of firms.

Using a sample of 643 firms from 19 European countries over the period 2015–2018, we find that more environmentally friendly public perceptions result in lower reputational exposure. Drilling down into public perceptions, we find that this result holds when we disaggregate the overall

index of environmental perceptions to sub-indices of public opinions on energy, climate and the introduction of related policies. The results are robust to various firm-level and country-level control variables, and to techniques that address potential endogeneity bias. One potential explanation of our findings is that environmentally friendly societal beliefs put pressure on managers to adopt proactive environmental strategies and achieve a fit between corporate policies and public expectations. In turn, this results in lower reputational exposure. We also find that age diversity in the board of directors moderates the association between environmentally friendly public perceptions and reputational exposure.

These findings have implications for both firm internal stakeholders, and policy-makers and other external stakeholders. First, our study documents for the first time in the literature that public beliefs regarding environmental issues have an important impact on firm reputational exposure. Policy-makers could take this into account in designing policies for environmental and social issues. Additionally, for governments and regulatory agents, this means that one way to strengthen the effect of public pressure on firm behaviour is to raise managerial and shareholders' awareness of this relationship. Environmental regulations could have a complementary role to public pressure, and they could also be complemented with education programmes and informative campaigns for managers and shareholders. For example, the FleishmanHillard Fishburn (2019) report reveals that 79% of surveyed consumers are concerned about environmental issues and 59% expect companies to take a stand on climate change, ranking the protection of the environment in consumers' top three expectations. At the same time, 84% of the studied firms experience a gap between people's expectations of them in caring for the environment and people's actual experience of what they are doing. Therefore, the report highlights that organizations should take steps to manage together their brand and reputation, and that failure to communicate effectively on the topics that are of interest to the public and consumers means that they risk alienating their customer base. For example, 80% of consumers are prepared to stop using the products and services of a brand if its response to an issue does not support their personal views. We believe that one potential reason explaining this gap is that while many corporate leaders understand the key

role of business in tackling climate change, they also believe that pursuing a sustainability agenda runs counter to the wishes of their shareholders (Eccles and Klimenko, 2019). However, after interviewing 70 senior executives at 43 global institutional investing firms, Eccles and Klimenko (2019) argue that this perception is outdated, with ESG running behind in the agenda of these executives. This is confirmed in a survey by Bank of America Merrill Lynch, which reveals that US executives underestimated substantially the percentage of their company's shares held by firms employing sustainable investing strategies, with the average estimate being 5% compared to an actual figure closer to 25% (Eccles and Klimenko, 2019). Appropriately designed programmes and campaigns could increase awareness about these issues, align the interests of all parties and subsequently decrease reputational exposures.

Second, given the relationship between reputation and stock prices established in past studies (Gregory, 1998; Raithel and Schwaiger, 2015), prospective international investors could also consider cross-country differences in public environmental perceptions as these might impact corporate reputation exposure, with subsequent implications for the value of their investment. For example, a recent report by Bank of America Merrill Lynch (2019) highlights that ESG-related scandals can mean huge losses for companies and investors, mentioning that 'Major ESG-related controversies during the past six years were accompanied by peak-to-trough market capitalization losses of \$534 billion for large US companies. Loss avoidance is key for portfolio returns over time' (p. 1).

Third, our research brings together the literature on informal institutions and corporate governance. While corporate governance researchers have been debating the impact of board characteristics on firm performance and reputation, our results show that most of the board and corporate governance characteristics do not have a moderating role in the relationship between the informal institutional pressures of public environmental perceptions and corporate reputational exposure. In more detail, board qualifications, board nationality mix and board gender mix do not have a moderating role, with age diversity being the only board characteristic that matters. Existing shareholders could take these findings into account when adopting corporate governance mechanisms.

Fourth, our results have shown that the impact of environmental perceptions on reputational risk rating is enhanced in countries with high (compared to low) levels of institutional development. This can have implications for all the above stakeholders. It will also have implications for firm managers, as it shows that the impact of public perceptions on reputational risk is not uniform across countries, and managers will have to take such country-specific characteristics into account while managing reputational risk.

Limitations

Our study is not without its limitations. First, data availability restricted the analysis to a 4-year period. Future studies could explore if the results hold over longer time periods. Second, public perceptions on environmental issues may vary within a country. While data are currently available only at the country level, future research could possibly consider regional public perceptions and their impact on the reputational risk of locally headquartered corporations. Finally, future research could possibly survey executives to reveal their views and strategic decisions in response to the public's environmental perceptions.

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Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Supplementary Material