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Corporate governance, law, culture, environmental performance and CSR disclosure: A global perspective

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Abstract

This paper investigates the impact of corporate governance and culture background on firms' environmental performance and CSR disclosure from a global perspective. It provides evidence of a positive relationship between environmental performance and CSR disclosure, supporting the voluntary disclosure theory. We find that common internal corporate governance best practices (such as CEO non-duality, ESG committees and gender diversified boards) are associated with better environmental performance and more disclosure of CSR related information. Debt is an effective internal governance vehicle and positively affects firms' environmental performance and CSR disclosure. Cross-listed firms perform better environmentally and disclose more CSR information. Firms residing in countries with stronger legal systems have less voluntary CSR disclosure, implying that external governance is functional and may partially serve as a substitute for internal governance. In terms of culture influence, we find that firms in countries with low power distance, individualism, femininity, high uncertainty avoidance, and long-term orientation perform better environmentally. Firms in low power distance, collectivistic, feminine, long-term oriented, high uncertainty avoidance and restrained countries disclose more CSR information.

1. Introduction

The global COVID-19 pandemic has interrupted numerous businesses in unprecedented ways; it is a wake-up call for corporations to rethink their roles in society but also an opportunity for corporations to re-examine their priorities and improve their relationships with stakeholders. Some recent evidence shows that firms with better corporate social responsibility (CSR) and better environmental performance are subject to less of a negative impact from COVID-19. For example, Ding et al. (2020) provide evidence that pandemic caused stock price drop is milder among firms with more CSR activities. Garel and Petit-Romec (2020) also show that firms with high environmental responsibility are rewarded by outside investors. Apparently, the importance of sustainability should draw firms' attention, particularly during such an extreme situation.
2. Literature review and hypothesis development

2.1. CSR disclosure and environmental performance

The relationship between CSR disclosure and environmental performance is a long-term debated topic in academia. On one hand, economics-based theories such as voluntary disclosure theory suggest that firms with better environmental
performance have incentive to disclose more to signal unobservable proactive strategy and other good qualities of the firms to external stakeholders (Clarkson et al., 2008; Cho et al., 2012). In turn, more disclosure could reduce information asymmetry between managers and external stakeholders and improve a firm's financial transparency. To some extent, disclosure also plays the role of monitoring and disciplining corporate managers and reducing agency costs due to managers' self-serving behavior. This theory implies a positive relationship between CSR disclosure and environmental performance, and is supported by empirical evidence (e.g., Tadros and Magnan, 2019; Uyar et al., 2020; Mahmoudian et al., 2020). For example, Tadros and Magnan (2019) search articles concerning firms' environmental activities from a few widely circulated media such as New York Times, WA Post, Wall Street Journal and construct media exposure measures such as media legitimacy, the amount of negative news and total news. Their study shows that firms with better environmental performance and a higher level of media exposure disclose more CSR information. Using a sample of global logistics firms from 2012 to 2018, Uyar et al. (2020) find that firms with better CSR performance are more likely to issue a higher number of CSR reports, implying that logistics firms are using CSR reporting to signal positively to their stakeholders and that CSR reports reflect firms' true CSR performance. Mahmoudian et al. (2020) investigate how greenhouse gas (GHG) emissions reporting and performance interact with each other using US S&P 500 firms. They find a dynamic positive link between GHG emissions reporting and performance, which suggests a continuous learning process: better reporting leads to better performance and vice versa.

On the other hand, theories from a socio-political perspective, such as legitimacy theory, state that disclosure is used by firms to demonstrate that firms are operating within the bounds of society. This is particularly used strategically by firms with poor environmental performance to cover or smooth negative news and to show that their activities are perceived as legitimate. Legitimacy theory implies that sustainability disclosure is mainly used by managers to influence external (especially bad) perceptions about the firm, used for window dressing and impression purposes and used for reducing exposure to social and political environments. Therefore, firms that disclose more information perform worse. Such negative relation between disclosure and performance is supported by several studies (e.g., Patten, 2002; Gray, 2006; Cho et al., 2012). For example, using archival data of Fortune 500 US firms, Cho et al. (2012) find that firms disclosing environmental capital spending information do not improve subsequent environmental performance relative to non-disclosed firms; after controlling for industry and firm size effects, disclosed firms are associated with worse environmental performance. Overall, voluntary disclosure theory and legitimacy theory suggest two contradicting predictions and the empirical results are mixed and non-conclusive. Recent studies (Hummel and Schlick, 2016; Tadros and Magnan, 2019) suggest that the two theories could be reconciled by splitting firms into high quality and low quality disclosures. Hummel and Schlick (2016) show that high sustainable firms choose high quality disclosure to signal their quality and differentiate themselves from poor performers, while low sustainable firms use low quality disclosure to conceal their real performance and protect their legitimacy. In their study, the authors define high quality disclosure as disclosure with verifiability, reliability, comparability, and consistency. Tadros and Magnan (2019) suggest that firms with low and high performance are motivated by economic and legitimacy incentives differently. The conflicting predictions based on voluntary disclosure theory and legitimacy theory, and inconclusive empirical results in prior research motivate us to re-examine this issue empirically. Also, considering the potential causal relation between performance and disclosure, in this study we use both environmental performance and CSR disclosure as our simultaneous dependent variables in our empirical testing. Our first hypothesis is listed below:

H1a: There is a positive association between environmental performance and the level of CSR disclosure, if voluntary disclosure theory dominates; VS.
H1b: There is a negative association between environmental performance and the level of CSR disclosure, if legitimacy theory dominates.

2.2. The role of internal governance

The milestone of Agency Theory (Jensen and Meckling, 1976) argues that there is information asymmetry between agents (corporate insiders) and principals (outside stakeholders); together with the separation of ownership and control, this causes managers' self-serving behaviors and inefficient corporate decisions. There is extensive literature researching various internal and external governance mechanisms to reduce this inefficiency. Examples of internal governance vehicles include board monitoring (Fama, 1980), incentive compensation (Eisenhardt, 1989), and ownership structure so that the incentives and powers of voting from shareholders matter (e.g., Denis and McConnell, 2003; Cleary and Wang, 2017) and the monitoring from creditors matter (e.g., Jensen, 1986; Li and Wang, 2016; Chu et al., 2020). Corporate governance literature in ESG topics has expanded this line of work. In our study, we focus on two main internal governance mechanisms: monitoring from the board of directors and using debt as a discipline vehicle.

The first main internal governance mechanism we focus on is monitoring from the board of directors, who has a fiduciary duty to monitor managers, making sure managers' actions and decisions align with the interests of stakeholders, provide expertise and resources, and focus on firms' long-term development. Based on the widely supported internal corporate governance best practices regarding the board of directors, an efficient board has the following features: independent board, separating board chair and CEO positions (Rupley et al., 2012; Zhang et al., 2013; de Villiers et al., 2011), establishing ESG committees (Peters and Romi, 2014; Clarkson et al., 2008; Velte, 2016; Cucari et al., 2018), and linking executive compensation to ESG targets (Jacoby et al., 2019; Tamimi and Sebastianelli, 2017). Previous evidence supports that an efficient board
brings benefits to enhance firms’ ESG. Based on UK listed firms from 2002 to 2014, Haque and Ntim (2017) find evidence that firms with more independent boards who adopt ESG-related compensation policies have better environmental performance as measured by carbon reduction initiatives (CRIs). Independent directors, especially those with diverse background or knowledge, can enhance a board’s expertise, reconcile conflicts between stakeholders and persuade managers to engage in more environmental practices (Haque and Ntim, 2017). Consistently, Zhang et al. (2013) provide evidence based on firms listed in the U.S. in the Post Sarbanes-Oxley Era that boards with greater number of outside directors perform better on CSR compared to industry peers. They suggest that firms use board of directors as an efficient way to enhance their moral legitimacy, which is reflected in CSR performance. Based on a sample of Italian listed companies, Cucari et al. (2018) provide evidence that firms with more independent directors and CSR committees influence voluntary ESG disclosure and performance, and managers and investors find this relation highly relevant while making decisions regarding ESG issues. Using a large sample of firms in 19 emerging markets over the period of 2009–2013, Jacoby et al. (2019) confirm that internal corporate governance mechanisms and linking executive compensation to environmental performance encourage and incentivize managers to be more responsible on environmental protection, therefore directly and indirectly improve a firm’s transparency on environmental issues.

Resource dependency theory (Hillman and Dalziel, 2003; Pfeffer and Salancik, 1978) suggests that having a gender diversified board can bring in different resources, perspectives and expertise to the firm to cope with challenging environmental issues (Adams et al., 2015). Therefore, a diversified board is more likely to encourage more CSR disclosure and improve a firm’s environmental performance. Empirical evidence in various countries show support of this positive relation, such as studies of firms in Australia (Galbreath, 2018), Germany (Horbach and Jacob, 2018; Velte, 2016), Spain (Pucheta-Martínez and Bel-Oms, 2018), United Kingdom (Jizi, 2017; Haque and Ntim, 2017; Al-Shaer and Zaman, 2016) and United States (Lu and Herremans, 2019; Zhang et al., 2013). To summarize, well-governed boards provide firms more ability and incentive to monitor and reduce managers’ self-serving behaviors (such as overinvestment in CSR for their own purpose), improve transparency on disclosure of CSR activities and environmental performance, enhance firm’s moral legitimacy and attract stakeholders who consider ESG issues in their decision-making process. The above discussion leads to our second hypothesis:

H2a: Corporate governance best practices (separation of board chair and CEO, board independence, having ESG committees, tying management compensation to ESG targets and having gender diversified boards) are positively associated with better environmental performance.

H2b: Corporate governance best practices (separation of board chair and CEO, board independence, having ESG committees, tying management compensation to ESG targets and having gender diversified boards) are positively associated with a higher level of CSR disclosure.

Another internal governance mechanism we consider in this research is through capital/ownership structure, which is an important factor to reduce inefficiencies due to agency cost between managers and stakeholders and to improve firm performance. Jensen (1986)’s free cash flow hypothesis suggests that debt is used as an important internal control mechanism to reduce managers’ opportunistic behaviors and align their interests with those of other stakeholders (Fama, 1980; Fama and Jensen, 1983; Jensen and Meckling, 1976; Jensen, 1986). There is extensive governance literature, but here we focus on how capital structure affects CSR reporting and environmental performance. Villarón-Peramato et al. (2018a) argue that engaging in CSR activities is used as a self-defence strategy by managers for their private benefits such as advancing their own career and gain other personal benefits. More importantly, the authors provide evidence to support that debt is an efficient disciplinary vehicle to reduce managers’ overinvestment in CSR. From another perspective, Dawkins and Fraas (2011) suggest that creditors demand a risk premium from firms with poor environmental performance. Firms with better environmental performance, on the other hand, have lower cost of debt (Jung et al., 2018). Such evidence implies that creditors are concerned with firms’ sustainability and reward better performing firms lower interest rates. Therefore, subject to the discipline role of debt and in order to reduce future financing costs, managers of firms with higher levels of debt have less opportunity to conduct self-interested behaviors, and have incentive to improve environmental performance and disclose more CSR information to signal to external creditors. We therefore expect:

H3a: Firms with higher levels of debt have better environmental performance.

H3b: Firms with higher levels of debt disclose more CSR information.

2.3. The role of external governance

External governance is an important monitoring mechanism used by parties outside the company. External governance includes but is not limited to monitoring through public pressure, business environments, takeover markets, regulatory environments, legal system that protects investors’ rights via filing, compliance and disclosure requirements by capital markets, security laws, and shareholder litigation (e.g., La Porta et al., 1998; Chen and Bouvain, 2009; Kolk and Perego, 2010; Prado-Lorenzo and Garcia-Sanchez, 2010). Firms in countries with strong investor rights protection and legal enforcement are subject to intensive compulsory or involuntary disclosure and compliance requirements, close monitoring and scrutiny by various outside legal and nonlegal parties. Particularly, firms operating in countries with better anti-director rights protection
and strong legal enforcement face more pressure from stakeholders. Anti-director rights protection gives minority stakeholders more power (La Porta et al., 2002). Strong legal enforcement reduces agency problems and protects stakeholders from managers’ expropriation (Arouri and Pijourlet, 2017). To summarize, strong legal enforcement increases the ability to detect illegal behavior from corporate insiders (e.g., Pukthuanthong et al., 2017), protects stakeholders from managers’ expropriation (Arouri and Pijourlet, 2017) and protects the interest of minority stakeholders (La Porta et al., 1998).

Country level legal system variation is an important factor to understand CSR reporting and environmental performance across the countries (Chih et al., 2008; Prado-Lorenzo and Garcia-Sanchez, 2010; Arouri and Pijourlet, 2017). Legal protection has been found to be linked to higher valuation of firms and more cashflow (La Porta et al., 2002), and in turn to be associated with better sustainability performance (Yu and Zhao, 2015; Miralles-Quiros et al., 2017). Using an international sample, Yu and Zhao (2015) find that sustainability enhances firm value and market responses positively to sustainability engagement in countries with strong investor protection and transparency. A recent study by Jacoby et al. (2019) shows that external governance such as legal system and business environments are important factors affecting environmental information transparency.

Although strong legal environment is positively related to environmental performance, it does not necessarily relate to high level of voluntary CSR disclosure. Mackenzie (2007) finds that in countries with heavy public pressure to engage in climate-change related activities, boards of directors are more likely to oppose the disclosure of greenhouse gas related information because they worry that a high level of disclosure will increase the likelihood of lawsuits and the benefits of disclosure will be outweighed by legal costs. Prado-Lorenzo and Garcia-Sanchez (2010) suggest that legal enforcement determines CSR disclosure. For countries with strong legal enforcement, disclosure is less important because other institutional mechanisms matter and function well (Ball, 2001; Prado-Lorenzo and Garcia-Sanchez, 2010). However, for countries with weak legal enforcement, disclosure can reduce information asymmetry more effectively (Prado-Lorenzo and Garcia-Sanchez, 2010) and facilitate private contracts (Durnev and Kim, 2005). In other words, legal environment serves as a substitute for internal governance (Pukthuanthong et al., 2017) and therefore, for countries with a strong legal environment, disclosure is less effective than the role of disclosure in countries with a weak legal environment. Based on the above discussion, we have the following hypothesis:

H4a: Firms in countries with stronger external investor protection have better environmental performance.
H4b: There is a negative link between investor protection and CSR disclosure.

Internationalization is important in market integration and could offer key external governance outside firms’ home countries. In this research, we use cross listing to measure internationalization. Internationalization is associated with both opportunities and risks for firms. From the opportunity side, firms could benefit from bonding to a stronger legal environment. Through cross-listing in other countries with strong legal environments such as U.S., firms from weak investor protection and enforcement countries can now credibly commit themselves to higher standards of corporate governance (e.g. not expropriating outside investors or self-dealing). Since stringent security laws and enforcement make it harder and more costly for controlling shareholders or managers to obtain private benefits, those laws could effectively protect minority investors to exercise their rights and limit their expropriation by controlling shareholders (Karolyi, 2012). Thus, those firms will attract investors who would otherwise be hesitated to invest, and those firms could potentially raise capital at a lower cost and increase the firm’s value, all else equal. As we discussed earlier, higher firm value is positively associated with better environmental performance.

Additionally, to protect firms’ global reputation, managers are more likely to engage in CSR activities (Attig et al., 2016). CSR actions are used as a strategy (Amato and Amato, 2012) to signal firms’ long-term orientation to outside stakeholders and parties and boost firms’ reputation. Using US firms first then providing robust evidence with firms from 44 countries over the 2002–2010 period, Attig et al. (2016) show that firms with foreign subsidiaries in politically and legally well-operated countries have higher CSR ratings, which support the positive relationship between internationalization and CSR performance.

From the risk side, internationalization will of course incur extra costs and risks if firms are cross listed in countries with strong political and legal institutions. Such costs and risks include additional cultural, regulatory, political, and litigation risks along with a more diverse base of stakeholders (Attig et al., 2016). For risk management purposes, managers are more likely to engage in CSR activities, because they are worried about high litigation risk if they are not in compliance with local societal, cultural or regulatory requirements (Attig et al., 2016). Firms are therefore more likely to increase CSR activities to strengthen their reputation as socially responsible actors. From managers’ own perspective, internationalization makes their experience and skills more indispensable, thus more costly and more difficult to replace (Attig et al., 2016). Higher job security for managers could draw their attention more to responding to stakeholder demands by investing in long-term projects such as CSR activities (Kacperczyk, 2009). Managers have high chance to be replaced if they lose the support of powerful stakeholders (Denis et al., 1997; Rowley and Berman, 2000). For example, cross-listed firms have high odds to dismiss low performing CEOs (Lel and Miller, 2008). From this perspective, CSR activities serve more as a self defence strategy to meet diverse stakeholders’ expectations on sustainability (Villarón-Peramato et al., 2018b). Thus, we anticipate:

H5a: There is a positive link between internationalization and environmental performance.
H5b: There is a positive link between internationalization and CSR disclosure.
2.4. The role of culture background in environmental performance and CSR disclosure

Culture background is an important factor in the study of CSR related issues (Bondy and Starkey, 2014) and the understanding of managers’ ethical attitudes, motivations and behaviors (Christie et al., 2003). Culture background is also an important factor that could affect the tendency of a firm to issue integrated reports, which include both financial and sustainability information (García-Sánchez et al., 2013). A popular and widely used framework in academia to study culture background is Hofstede’s six cultural dimensions based on Hofstede (1980), Hofstede and Bond (1988) and Hofstede et al. (2010). The six dimensions include power distance, individualism, masculinity, uncertainty avoidance, long-term orientation and indulgence. Hofstede’s framework is widely applied to the literature of sustainability, integrated reporting and CSR (e.g. Kim and Kim, 2010; García-Sánchez et al., 2013; Halkos and Skouloudis, 2017; Hur and Kim, 2017; Sannino et al., 2020). In this section, we explain how each of the six cultural dimensions affects CSR reporting and environmental performance.

Power distance refers to: “the less powerful members of organizations and institutions accept and expect that power is distributed unequally” (Hofstede, 2011, 9). Specifically, power distance concept implies that in countries with high power distance that are characterized as undemocratic, i.e., subordinates are more likely to accept and be in accordance to a hierarchy and those in positions of higher power are respected without question. Therefore, it is understandable that in countries with high power distance scores (e.g. Malaysia), subordinates have fewer questions and expect managers to instruct them. And high power distance countries are more likely to sacrifice ethics and sustainability for expediency (e.g., Christie et al., 2003). On the contrary, in countries with low power distance (e.g. Austria), individuals expect powers to be distributed equally and subordinates expect the managers to consult them before making decisions (Hofstede, 2011). Low power distance encourages open discussion (Kumar et al., 2019) and is more likely to collect and respect perspectives from a variety of people, and less likely and able to sacrifice ethics and sustainability for expediency. Disli et al. (2016) study 49 developed and developing countries and provide evidence that firms in low power distance countries generate less carbon dioxide emissions. Several other studies, including Park et al. (2007), Ringov (2007), Peng and Lin (2009), Thanetsunthorn (2015) and Gallego-Álvarez and Ortas (2017) also provide consistent evidence. We therefore expect:

H6.1a: Firms in low power distance cultures have better environmental performance.
H6.1b: Firms in low power distance cultures disclose more CSR information.

Individualism refers to “the degree to which people in a society are integrated into groups” (Hofstede, 2011, 11). Countries that score high on individualism (e.g., the United States) focus on “I” while countries that score low on individualism (e.g. South Korea) focus on collectivism such as “we”. In individualistic countries, people are encouraged to be independent, have different minds and form different interest groups (Kumar et al., 2019). Different interest groups are important for environmental movements (Husted, 2005) and improve environmental performance. Prior research shows that a high level of individualism is linked to lower CO2 emissions (Disli et al., 2016), which is an important measure of environmental performance. However, individualism is found to be negatively related to CSR disclosure (Gallén and Peraita, 2018). In collectivistic countries, there is a positive perception of CSR (Hur and Kim, 2017); firms are more likely to adopt integrated reporting which includes both financial and CSR information (García-Sánchez et al., 2013), because collectivist countries are more sensitive to the stakeholders’ interests, and disclosure is a channel for firms to show they care. Thus, we expect:

H6.2a: Firms in individualistic countries have better environmental performance.
H6.2b: Firms in collectivist countries disclose more CSR information.

Masculinity refers to “the distribution of values between the genders” (Hofstede, 2011, 12), i.e., countries that score high in masculinity such as Japan, maximize the emotional and social role differentiation between male and female. In a masculine culture, men usually work, and women stay home to raise children. Masculine countries admire strength, prioritize work over family (Hofstede, 2011) and prefer pursuing economic growth and wealth maximization over life quality (Kumar et al., 2019). On the contrary, feminine countries such as Sweden minimize the emotional and social role differentiation between male and female, and there are more females in the labor force and political world in such countries (Hofstede, 2011). Previous studies (García-Sánchez et al., 2013; Kim and Kim, 2010; Hur and Kim, 2017; Thanetsunthorn, 2015; Gallén and Peraita, 2018; Disli et al., 2016; Gallego-Álvarez and Ortas, 2017; Sannino et al., 2020) have found consistent evidence of a negative relationship between masculinity, environmental performance and CSR disclosure. We therefore expect:

H6.3a: Firms in feminine countries have better environmental performance.
H6.3b: Firms in feminine countries disclose more CSR information.

Uncertainty avoidance is “related to the level of stress in a society in the face of an unknown future” (Hofstede, 2011, 10), and measures the extent to which people tolerate uncertainty. Countries with low uncertainty avoidance scores (e.g. Singapore) have a relaxed attitude to change and are more comfortable with possible changes due to low stress. On the contrary, in high uncertainty avoidance countries (e.g. Greece), people feel that they need to fight uncertainty continuously and avoid...
risks and other unexpected situations (Hofstede, 2011), implying better environmental performance and more CSR disclosure. Following the empirical evidence provided by Peng and Lin (2009), Kim and Kim (2010), Ho et al. (2012), Disli et al. (2016), Gallego-Álvarez and Ortas (2017), Gallén and Peraíta (2018), Kumar et al. (2019), and Sannino et al. (2020), we expect a positive relationship between uncertainty avoidance and environmental performance and CSR disclosure.

H6.4a: Firms in high uncertainty avoidance countries perform better environmentally.  
H6.4b: Firms in high uncertainty avoidance countries disclose more CSR information.

*Long-term/short-term orientation* refers to whether people focus on the future or the past/current (Hofstede, 2011). Long-term orientated countries (e.g. South Korea) are more willing to learn from other countries, while short-term orientated countries (e.g. Australia) value traditions and are proud of their own countries (Hofstede, 2011). People in long-term orientated cultures are more willing to sacrifice current for future benefits. Improvement in environmental and sustainability performance requires current sacrifice to benefit future generations. Thus, firms in long-term orientated countries are more likely to engage in environmental practices (Durach and Wiengarten, 2017) and generate lower carbon emissions (Disli et al., 2016). Long-term orientation is also positively linked to CSR disclosure (Halkos and Skouloudis, 2017; Kim and Kim, 2010; Wang and Bansal, 2012; Gallego-Álvarez and Ortas, 2017). Therefore, we expect:

H6.5a: Firms in long-term oriented countries have better environmental performance.  
H6.5b: Firms in long-term oriented countries disclose more CSR information.

*Indulgence* is the newest and relatively less studied dimension in Hofstede’s framework as it is newly added in Hofstede et al. (2010). Indulgence refers to the “relatively free gratification of basic and natural human desires related to enjoying life and having fun” (Hofstede, 2011, 16). Countries with a high score of indulgence (e.g. Sweden), put higher importance on leisure and have more freedom to pursue their basic and natural needs, while countries with a low score of indulgence (restrained countries, e.g. Israel), have strict social norms (Hofstede, 2011). Indulgent countries generate more carbon dioxide emissions (Disli et al., 2016). Sun et al. (2019) find that the relationship between corporate social performance and financial performance is stronger in restrained culture. Similarly, Felix et al. (2018) report that in restrained culture, religious people are more concerned about the environment. Therefore, we anticipate:

H6.6a: Firms in restrained countries have better environmental performance.  
H6.6b: Firms in restrained countries disclose more CSR information.

### 3. Sample and methodology

#### 3.1. Sample and data

We start with the universe sample firms included in Sustainalytics database between 2010 and 2017 globally. Sustainalytics is one of the major providers of ESG ratings and is widely used in previous research (Escrig-Olmedo et al., 2019; Jacoby et al., 2019; Lu and Herremans, 2019). After merging Sustainalytics with financial information in Thomson Reuters Eikon database, we have 16,216 observations of ESG ratings with complete finance information. We further collect the legal environments information and other control variables from various databases, delete observations with missing information, and obtain our final sample with 12,218 observations (1,870 unique firms) from 25 countries over the period of 2010 and 2017. Table 1 presents our sample distributions by country and year. Detailed variable description and data sources can be found in Appendix A.

Environmental performance is measured as the carbon intensity compared to peers from Sustainalytics. We use the application level of Global Reporting Initiative (GRI) guideline as the proxy of CSR disclosure. The application level of GRI guideline measures the quantity of disclosure. Firms get higher scores if they disclose more. We use five corporate governance best practices: separation of board chair/CEO, board independence, ESG committees, executive compensation, and board gender diversity. Separation of board chair/CEO is a dummy variable that equals one if the board chair and CEO are separated. Board independence measures the independence of Supervisory Board members for two-tier boards such as firms in Europe. For one-tier boards such as firms in US, board independence measures the independence of Board of Directors. ESG committees represent the highest level of authority that is responsible for ESG issues within the company. Executive compensation measures whether a part of executive remuneration is explicitly linked to ESG performance targets. Board gender diversity measures the percentage of female directors on the board. We use the percentage of long term debt over long term debt plus equity as the measure of capital structure following Villarón-Peramato et al. (2018b).

Based on Haniffa and Cooke (2005), we use a dummy variable indicating multiple listings on different stock exchanges to measure Internalization. Following Choi and Wong (2007), we use a combined index of 50 percent anti-director rights and 50 percent law enforcement in La Porta et al. (1998) to measure Legal Environments. La Porta et al. (1998) measure country level anti-director rights on a scale of 0 to 5. There are five components under law enforcement in La Porta et al. (2002): (1) Efficiency of Judicial System, (2) Rule of Law, (3) Corruption, (4) Risk of Expropriation, (5) Risk of Contract Repudiation, with each on a scale of 0 to 10. We take the average of the five components to calculate the score of law enforcement. Since
anti-director rights (0–5) and the average score of law enforcement (0–10) are based on different scales, we use the raw anti-director rights score divided by its possible maximum score of five plus the average of law enforcement score divided by its possible maximum score of ten to get the legal environments score.

We use Hofstede’s cultural indicators following previous studies. Hofstede database is widely used by researchers to study culture, finance and CSR (e.g. Nguyen and Truong, 2013; Li et al., 2017; Lee et al., 2019). Hofstede’s culture database scores countries on six dimensions based on Hofstede (1980), Hofstede and Bond (1988) and Hofstede et al. (2010): power distance, individualism, masculinity, uncertainty avoidance, long-term orientation and indulgence. Each country is given a score between zero and one hundred for each cultural dimension. To test the impact of culture factors on environmental performance and CSR disclosure, we split the countries into above/below median on each cultural dimension, following Nguyen and Truong (2013) and Lee et al. (2019), and convert each of the six cultural dimensions into a dummy variable, i.e., 1 if it is no less than the median score of the sample countries, and 0 otherwise. Appendix B presents our sample country’s culture classifications used in this study.

We include two country level control variables following Jacoby et al. (2019): GDP growth and country governance. GDP growth is the annual percentage change of GDP growth, collected from the World Bank. Country governance is the sum of six indicators from The Worldwide Governance Indicators (WGI): voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law, control of corruption. Each indicator ranges from 0 to 2.5 (weak) to 2.5 (strong). The sum of these six indicators ranges from 0 to 15. In addition, we include three widely used firm level control variables in environmental performance and CSR disclosure studies: board size (i.e. the number of board of directors), ROA (i.e., net income divided by total assets), and liquidity (i.e., operating cashflow divided by total assets). We winsorize all continuous variables at the 1st and 99th percentiles to control for outliers. Table 2 presents descriptive statistics of variables and Table 3 shows the correlations. Environmental performance ranges from 0 to 100 with a mean of 39.728. CSR disclosure ranges from 0 to 100 with a mean of 29.778. About half of the firms (0.499) in our sample have separated board chair and CEO. The board independence score ranges from 0 to 100 with a mean of 56.795. The ESG committees score ranges between 0 and 100 with a mean of 62.203. Very few firms have linked executive compensation to ESG targets. The executive compensation score ranges from 0 to 100 with a mean of 11.802. Board gender diversity ranges from 0 to 46.15 percent with a mean of 14.757 percent. Table 3 shows that the multicollinearity between most independent variables is low. The highest correlations (r > 0.5) are among the culture variables; therefore, in order to avoid multicollinearity, we regress each cultural dimension in separate models.

3.2. Methodology

Fig. 1 drafts the concept of our research model. Endogeneity and reverse causality are common issues when investigating environmental performance, CSR disclosure and corporate governance. There are two possible sources of endogeneity: (1) unobserved factors that may affect both dependent and independent variables and (2) simultaneity: independent variables

| Table 1 |
| Sample distributions by country and year. |
| Country | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | Total |
| Australia | 53 | 52 | 62 | 62 | 66 | 74 | 79 | 82 | 530 |
| Austria | 10 | 12 | 13 | 13 | 13 | 14 | 14 | 12 | 101 |
| Belgium | 10 | 12 | 11 | 12 | 13 | 12 | 13 | 12 | 95 |
| Canada | 89 | 92 | 98 | 99 | 104 | 112 | 111 | 119 | 824 |
| Denmark | 15 | 14 | 17 | 16 | 16 | 16 | 17 | 17 | 128 |
| Finland | 16 | 15 | 15 | 15 | 15 | 15 | 16 | 15 | 122 |
| France | 69 | 72 | 74 | 75 | 75 | 74 | 75 | 74 | 588 |
| Germany | 47 | 50 | 72 | 68 | 70 | 74 | 75 | 72 | 528 |
| Greece | 8 | 7 | 6 | 5 | 5 | 5 | 5 | 5 | 56 |
| Ireland | 10 | 11 | 11 | 12 | 13 | 14 | 15 | 17 | 103 |
| Italy | 1 | 13 | 13 | 11 | 11 | 14 | 0 | 0 | 63 |
| Japan | 285 | 290 | 295 | 299 | 315 | 339 | 344 | 347 | 2,514 |
| Malaysia | 0 | 0 | 0 | 0 | 4 | 4 | 4 | 4 | 16 |
| Netherlands | 22 | 22 | 21 | 22 | 22 | 25 | 26 | 30 | 190 |
| New Zealand | 0 | 0 | 0 | 0 | 0 | 5 | 6 | 8 | 28 |
| Norway | 11 | 11 | 12 | 13 | 13 | 13 | 13 | 14 | 100 |
| Portugal | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 45 |
| Singapore | 26 | 25 | 25 | 26 | 29 | 29 | 29 | 29 | 218 |
| South Korea | 0 | 0 | 0 | 0 | 0 | 13 | 13 | 8 | 8 |
| Spain | 28 | 29 | 31 | 30 | 30 | 31 | 32 | 32 | 243 |
| Sweden | 27 | 30 | 31 | 31 | 32 | 34 | 34 | 32 | 251 |
| Switzerland | 39 | 41 | 42 | 43 | 46 | 55 | 55 | 55 | 376 |
| United Kingdom | 84 | 85 | 89 | 94 | 100 | 104 | 121 | 117 | 794 |
| United States | 448 | 457 | 474 | 486 | 521 | 529 | 566 | 587 | 4,068 |
| Total | 1,327 | 1,370 | 1,441 | 1,462 | 1,462 | 1,564 | 1,642 | 1,690 | 1,722 | 12,218 |
might be a function of dependent variables (Wintoki et al., 2012). In our research setting, there might be unobservable factors that affect both environmental performance and CSR disclosure such as management's overall strategy (Al-Tuwaijri et al., 2004) and strategic alliances (Thorne et al., 2017). Environmental performance and CSR disclosure might be a function of each other. Reverse causality could be caused by the fact that past environmental performance might affect future CSR disclosure and vice versa. To address these endogeneity issues, we apply a simultaneous equation method and use three-stage least squares (3SLS) following Al-Tuwaijri et al. (2004). Particularly, we run the following two-model system simultaneously:

\[
\text{Environmental Performance} = \text{Lag of } (\beta_0 + \beta_1 \text{CSR Disclosure} + \beta_2 \text{Corporate Governance} + \beta_3 \text{Capital Structure} + \beta_4 \text{Internationalization} \\
+ \beta_5 \text{Legal Environments} + \beta_6 \text{Country GDP} + \beta_7 \text{Country Governance} + \text{Controls} + \text{Year Dummies}) + u_e
\]

\[
\text{CSR Disclosure} = \text{Lag of } (\beta_0 + \beta_1 \text{Environmental Performance} + \beta_2 \text{Corporate Governance} + \beta_3 \text{Capital Structure} + \beta_4 \text{Internationalization} \\
+ \beta_5 \text{Legal Environments} + \beta_6 \text{Country GDP} + \beta_7 \text{Country Governance} + \text{Controls} + \text{Year Dummies}) + v_e
\]

### 4. Empirical results

#### 4.1. Results of corporate governance

We apply 3SLS and run simultaneous regressions of environmental performance and CSR disclosure on previous years' internal and external corporate governance variables, with country and firm level control variables included. Table 4 shows the main results.

Column 1 in Regression 1 shows a positive link between CSR disclosure and environmental performance with 0.36 coefficient and 1% significance level, which implies that firms disclosing more CSR information in the previous year have better environmental performance this year, thus H1a is supported. Among the five internal corporate governance variables, we find three positive significant variables at the 1% significance level: separation of board chair and CEO (β = 2.41), having ESG committees (β = 0.12), and a gender diversified board (β = 0.29). The results are consistent with the prediction of H2a that firms with separated CEO/board chair positions, ESG committees and gender diversified boards have better environmental performance. However, we find a negative significant link between board independence and environmental performance at the 1% significance level (β = −0.03), that is, firms with more independent directors have lower environmental performance. The result is inconsistent with the prediction in H2a regarding board independence, but is consistent with the finding in Naciti (2019) who also uses Sustainalytics database. We find no empirical evidence that supports the link between tying executive compensation to ESG targets and environmental performance. As expected, the level of debt (Capital Structure) is found to be positively linked to environmental performance with a coefficient of 4.20 at the 1% significance level. This result supports H3a and indicates that firms with higher levels of debt are more capable of monitoring managers and have better environmental performance. For external governance, we do not find a significant relationship between Legal Environments and environmental performance, thus H4a is not supported. However, cross-listed firms do have significantly improved environmental performance (β=4.22) at the 1% significance level, which supports H5a.
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 1   |     |     |     |     |     |     |     |     |      |
| 0.2856*** | 1   |     |     |     |     |     |     |     |      |
| 0.108***  | 0.1390**** | 1   |     |     |     |     |     |     |      |
| -0.0532**   | 0.0539***  | 0.0837***  | 1   |     |     |     |     |     |      |
| 0.2004***  | 0.3708***  | -0.0009  | 0.0149* | 1   |     |     |     |     |      |
| 0.0952***  | 0.2803***  | 0.0904*** | 0.1420*** | 0.2467***  | 1   |     |     |     |      |
| 0.1141***  | 0.2134***  | 0.1788*** | 0.3358*** | 0.0901***  | 0.1998***  | 1   |     |     |      |
| 0.0723***  | 0.1137***  | 0.0426*** | 0.0880*** | 0.1254***  | 0.0888***  | 0.1105***  | 1   |     |      |
| 0.1047***  | 0.2024***  | 0.1844*** | -0.0626*** | 0.0266***  | 0.0557***  | 0.1931***  | 0.0242***  | 1   |      |
| -0.1052***  | -0.2783*** | -0.2286*** | 0.2735***  | 0.0099  | -0.0170* | -0.0087  | 0.0154* | -0.4247***  | 1   |
| -0.2016***  | 0.0178***  | 0.0326*** | 0.2587***  | 0.0378*** | 0.0850***  | 0.1492***  | 0.0279***  | -0.0087  | 0.1265***  |
| 0.0383***  | 0.0103***  | 0.2433***  | 0.1954***  | 0.0626***  | 0.0686***  | 0.1276***  | 0.0158*  | 0.1161***  | 0.0620***  |
| 0.1221***  | 0.2112***  | -0.0227*** | -0.1570*** | 0.1520***  | 0.0534***  | 0.0605***  | 0.1509***  | 0.1220***  | -0.2311***  |
| -0.0094  | -0.0433*** | -0.0163* | 0.0625***  | -0.1129*** | -0.0688***  | 0.0545***  | -0.2539***  | -0.001  | 0.0619*  |
| -0.0023  | -0.0368*** | -0.029***  | 0.0716***  | -0.0814*** | -0.0346***  | 0.0346***  | -0.2162***  | -0.0231***  | 0.0984***  |
| -0.1383***  | -0.1610*** | -0.3663*** | -0.0372*** | -0.0501***  | -0.0409***  | -0.2218***  | -0.0274***  | -0.3655***  | 0.3569***  |
| 0.0288***  | -0.0576*** | 0.1132***  | 0.4352***  | -0.0312*** | 0.1559***  | 0.4540***  | 0.1257***  | -0.1054***  | 0.4408***  |
| -0.1330***  | -0.2257*** | -0.1690*** | 0.1242***  | 0.0275***  | -0.0460***  | -0.2440***  | -0.0485***  | -0.2761***  | 0.3652***  |
| 0.0474***  | 0.1162***  | -0.1160*** | -0.5001***  | 0.0550***  | -0.1183***  | -0.3227***  | -0.1018***  | 0.1927***  | -0.6545***  |
| 0.1109***  | 0.1523***  | 0.0540***  | -0.4661*** | 0.1227***  | -0.0529***  | -0.2514***  | -0.0729***  | 0.2106***  | -0.5591***  |
| -0.0069  | -0.0835*** | 0.1411***  | 0.5223***  | -0.0578***  | 0.1046***  | 0.3337***  | 0.0894***  | -0.1129***  | 0.4954***  |

| (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) |
|------|------|------|------|------|------|------|------|------|------|
| 1    |     |     |     |     |     |     |     |     |      |
| 0.1637***  | 1   |     |     |     |     |     |     |     |      |
| -0.1010***  | -0.2460***  | 1   |     |     |     |     |     |     |      |
| 0.0959*   | 0.0463*   | -0.1249* | 1   |     |     |     |     |     |      |
| 0.0218*   | 0.0181*   | -0.1607* | 0.6359***  | 1   |     |     |     |     |      |
| -0.0410***  | -0.4413***  | 0.0085  | -0.0526**  | -0.0038  | 1   |     |     |     |      |
| 0.1288***  | 0.0322***  | -0.0763***  | 0.0682***  | 0.1094***  | 0.1138***  | 1   |     |     |      |
| 0.0119  | -0.0343**  | -0.0720***  | -0.0139  | 0.0283***  | 0.1286***  | 0.0181**  | 1   |     |      |
| -0.2360***  | -0.2299***  | 0.2229***  | -0.1062***  | -0.1236***  | -0.0551***  | -0.0125***  | -0.1292***  | 1   |      |
| -0.1594***  | -0.0068  | 0.1381***  | -0.0736***  | -0.1389***  | -0.2992***  | 0.6336***  | -0.2319***  | 0.7290***  | 1   |
| 0.1786***  | 0.3298***  | -0.2322***  | 0.1164***  | 0.1486***  | -0.1173***  | 0.7364***  | 0.2486***  | -0.8280***  | -0.6835***  |

This table shows the Pearson Correlation of variables used in this research. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.
Fig. 1. Research model. This figure summarizes how firm and country level factors (internal governance, external governance and culture) affect environmental performance and CSR disclosure.

Table 4
Results of corporate governance.

| Variables                      | Regression 1 | CSR Disclosure | Regression 2 | CSR Disclosure |
|-------------------------------|--------------|----------------|--------------|----------------|
| Environmental Performance     |              | 0.17***        |              | 0.17***        |
|                               |              | (25.68)        |              | (25.45)        |
| CSR Disclosure                | 0.36***      | 0.36***        | 0.36***      | 0.36***        |
|                               | (20.01)      | (29.75)        | (20.01)      | (30.01)        |
| Separation of Board Chair     | 2.41***      | 2.39***        | 2.46***      | 2.57***        |
|                               | (3.24)       | (4.37)         | (3.29)       | (4.71)         |
| Board Independence            | -0.03***     | 0.04***        | -0.04***     | 0.04***        |
|                               | (-3.76)      | (6.11)         | (-4.31)      | (6.08)         |
| ESG Committees                | 0.12***      | 0.24***        | 0.12***      | 0.23***        |
|                               | (12.58)      | (33.97)        | (12.34)      | (32.35)        |
| Executive Compensation        | -0.01        | 0.15***        | 0.00         | 0.14***        |
|                               | (-0.68)      | (17.14)        | (-0.05)      | (14.89)        |
| Gender Diversity              | 0.29***      | 0.22***        | 0.30***      | 0.26***        |
|                               | (9.01)       | (9.23)         | (8.88)       | (10.78)        |
| Capital Structure             | 4.20***      | 6.97***        | 5.47***      | 6.42***        |
|                               | (3.09)       | (7.00)         | (3.97)       | (6.37)         |
| Internationalization          | 4.22***      | 3.15***        | 4.17***      | 3.23***        |
|                               | (3.46)       | (3.52)         | (3.43)       | (3.63)         |
| Legal Environments            | 2.29         | -32.11***      | 2.08         | -31.30***      |
|                               | (1.39)       | (-27.21)       | (1.26)       | (-26.57)       |
| GDP Growth                    | -1.07***     | -0.53**        | -1.08***     | -0.55**        |
|                               | (-3.74)      | (-2.50)        | (-3.81)      | (-2.63)        |
| Country Governance            | 1.23***      | -0.62***       | 1.19***      | -0.66***       |
|                               | (4.80)       | (-3.29)        | (4.59)       | (-3.47)        |
| Board Size                    | 0.34***      | 0.78***        | 0.29***      | 0.90***        |
|                               | (3.24)       | (10.06)        | (2.70)       | (11.45)        |
| ROA                           | 0.28***      | 0.14***        | 0.23***      | 0.19***        |
|                               | (3.86)       | (2.69)         | (3.04)       | (3.45)         |
| Liquidity                     | -3.88        | 10.95**        | 11.73        | 1.45           |
|                               | (-0.56)      | (2.14)         | (1.50)       | (0.25)         |
| Constant                      | 25.37***     | 38.03***       | -0.95        | 79.02***       |
|                               | (5.74)       | (11.75)        | (-0.08)      | (8.67)         |
| Year FF                       | Yes          | Yes            | Yes          | Yes            |
| Industry FF                   | No           | No             | Yes          | Yes            |
| Pseudo R-sq.                  | 19.19%       | 32.12%         | 20.01%       | 33.14%         |
| Obs.                          | 12,218       | 12,218         | 12,218       | 12,218         |

This table presents the results of 3SLS regressions of the impacts of internal and external governance variables on environmental performance (columns 1 and 3) and CSR disclosure (columns 2 and 4) simultaneously. Regression 1 does not include industry fixed effects, while regression 2 includes industry fixed effects. The regressors are lagged by one year. All continuous variables are winsorized at the 1st and 99th percentiles. Detailed variable definitions can be found in Appendix A. Parenthetical values are z-statistics. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.
In Column 2 in Regression 1, there is a positive association between environmental performance and CSR disclosure with a coefficient of 0.17 at the 1% significance level, implying that firms with better environmental performance last year disclose more CSR information in the current year, so H1a is supported again. We find five internal corporate governance variables, i.e., separation of board chair and CEO (\(\beta = 2.39\)), board independence (\(\beta = 0.04\)), ESG committees (\(\beta = 0.24\)), executive compensation (\(\beta = 0.15\)) and board gender diversity (\(\beta = 0.22\)) are significantly correlated with higher level of CSR disclosure at the 1% significance level. Thus, H2b is well supported. Capital Structure (\(\beta = 6.97\)) is again found to be positively and significantly related to CSR disclosure at the 1% significance level, confirming that firms with higher levels of debt disclose more CSR information, thus H3b is supported. We find a significant negative impact of legal environments on CSR disclosure (\(\beta = -32.11\)) at the 1% significance level, confirming that in countries with a strong legal environment, disclosure is less effective because other institutional mechanisms matter and function, thus H4b is supported. Internationalization is again significantly and positively associated with CSR disclosure (\(\beta = 3.15\)) at the 1% significance level, so H5b is supported.

For robustness checks, Regression 2 in Table 4 repeats the main 3SLS test with industry fixed effects controlled. The results are consistent with Regression 1. We also repeat the main tests using ordinary least square (OLS) and the results are reported in Table 5, which are quantitatively and qualitatively consistent with the main results presented in Table 4. We do not include industry and/or country dummies in the OLS tests because the variance inflation factors (VIFs) show strong indications of multicollinearity (>10) if industry or country dummies are included.

### Table 5
Robustness check of corporate governance.

|                  | (1) Environmental Performance | (2) Environmental Performance | (3) Environmental Performance | (4) Environmental Performance | (5) CSR Disclosure | (6) CSR Disclosure | (7) CSR Disclosure | (8) CSR Disclosure |
|------------------|------------------------------|------------------------------|------------------------------|------------------------------|-------------------|-------------------|-------------------|-------------------|
| Environmental Performance |                             |                              |                              |                              | 0.23***           | 0.15***           | 0.21***           | 0.14***           |
| CSR Disclosure    | 0.38***                      | 0.30***                      | 0.37***                      | 0.29***                      | (13.25)          | (9.57)           | (12.52)          | (8.87)           |
| (25.18)          | (12.79)                      | (21.82)                      | (11.54)                      |                              |                   |                   |                   |                   |
| Separation of Board Chair | 3.05                        | 2.66                         | 7.16***                      | 2.49*                        |                   |                   |                   |                   |
| (1.72)           | (1.53)                       | (4.87)                       | (2.18)                       |                              |                   |                   |                   |                   |
| Board Independence |                             |                              |                              |                              |                   |                   |                   |                   |
| (−3.12)          | (−3.38)                      | (−0.78)                      | (3.07)                       |                              |                   |                   |                   |                   |
| ESG Committees   | 0.14***                      | 0.14***                      | 0.23***                      | 0.24***                      |                   |                   |                   |                   |
| (6.38)           | (6.15)                       | (6.96)                       | (7.86)                       |                              |                   |                   |                   |                   |
| Executive Compensation | 0.01                        | 0.01                         | 0.16***                      | 0.16***                      |                   |                   |                   |                   |
| (0.39)           | (0.37)                       | (6.02)                       | (6.08)                       |                              |                   |                   |                   |                   |
| Gender Diversity | 0.34***                      | 0.31***                      | 0.29***                      | 0.23***                      |                   |                   |                   |                   |
| (5.04)           | (5.31)                       | (4.47)                       | (3.60)                       |                              |                   |                   |                   |                   |
| Capital Structure | 6.51***                      | 4.61**                       | 12.31***                     | 7.11***                      |                   |                   |                   |                   |
| (3.79)           | (2.97)                       | (4.86)                       | (3.48)                       |                              |                   |                   |                   |                   |
| Internationalization | 6.54**                      | 4.59*                        | 5.54**                       | 3.35*                        |                   |                   |                   |                   |
| (2.45)           | (1.94)                       | (3.04)                       | (1.91)                       |                              |                   |                   |                   |                   |
| Legal Environments | 1.85                       | −0.10                        | −28.56***                    | −32.39***                    |                   |                   |                   |                   |
| (0.66)           | (−0.03)                      | (−10.29)                     | (−14.52)                     |                              |                   |                   |                   |                   |
| GDP Growth       | −1.11**                      | −1.21***                     | −1.09**                      | −1.49**                      | −1.77***          | −0.36            | −0.57            |                   |
| (−2.89)          | (−3.12)                      | (−2.93)                      | (−4.12)                      | (−4.86)                      | (−1.02)           | (−1.68)          |                   |                   |
| Country Governance | 2.10**                      | 1.34                         | 1.83**                       | 1.19                         | 1.06             | −0.49            | 0.65             | −0.58            |
| (2.52)           | (1.50)                       | (2.25)                       | (1.36)                       | (0.80)                       | (0.43)            | (0.59)           | (−0.69)          |                   |
| Board Size       | 0.77***                      | 0.49**                       | 0.67**                       | 0.41*                        | 1.87***           | 1.28***          | 1.28***          | 0.80***          |
| (3.50)           | (2.29)                       | (2.81)                       | (1.84)                       | (5.62)                       | (4.81)            | (3.86)           | (3.19)           |                   |
| ROA              | 0.19**                      | 0.25**                       | 0.24**                       | 0.29***                      | −0.10            | 0.11             | −0.03            | 0.15             |
| (2.25)           | (3.35)                       | (2.59)                       | (3.48)                       | (−0.59)                      | (0.79)            | (−0.18)          | (1.43)           |                   |
| Liquidity        | −3.81                       | −4.30                        | −2.02                        | −2.67                        | 7.62             | 2.72             | 19.42            | 11.06            |
| (−0.34)          | (−0.37)                      | (−0.18)                      | (−0.23)                      | (0.40)                       | (0.17)            | (1.15)           | (0.81)           |                   |
| Constant         | 30.95***                    | 29.86**                     | 24.97**                      | 28.44**                      | −25.86*           | −22.35*          | 26.95*           | 39.39***         |
| (4.59)           | (4.43)                       | (2.54)                       | (3.04)                       | (−2.12)                      | (−2.05)           | (2.07)           | (3.72)           |                   |
| Year FF          | Yes                         | Yes                          | Yes                          | Yes                          | Yes              | Yes              | Yes              | Yes              |
| Adj. R-sq.       | 16.87%                      | 19.27%                       | 17.23%                       | 19.45%                       | 13.98%           | 26.67%           | 20.10%           | 32.27%           |
| Obs.             | 12,218                      | 12,218                       | 12,218                       | 12,218                       | 12,218           | 12,218           | 12,218           | 12,218           |

This table presents the results of OLS regressions of the impacts of internal and external governance variables on environmental performance (columns 1–4) and CSR disclosure (columns 5–8) as robustness checks. The regressors are lagged by one year. All continuous variables are winsorized at the 1st and 99th percentiles. Detailed variable definitions can be found in Appendix A. Parenthetical values are t-statistics. Standard errors are clustered by SIC 2-digit industry. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels.
4.2. Results of cultural dimensions

Table 6 presents the univariate comparisons of average environmental performance and CSR disclosure between high/low culture scores on each of the six cultural dimensions. On average, firms in countries with high power distance have poor environmental performance and a lower level of CSR disclosure than those in low power distance countries. Firms in individualistic countries have better environmental performance but disclose less CSR information. Firms in feminine countries (with low masculinity scores) have better environmental performance and disclose more CSR information. Countries with high uncertainty avoidance and long-term oriented culture have better environmental performance and disclose more CSR information. We do not find a significant difference in environmental performance between indulgent and restrained countries. However, firms in restrained countries disclose more CSR information. Each test of differences, except the indulgence vs. restraint on environmental performance, are significant at the 1% level. The results are summarized in Fig. 2.

Table 7 Panel A displays regression results of the impact of culture background on environmental performance without the country level control variables. Among Hofstede’s six cultural dimensions, we find that Individualism, Uncertainty Avoidance and Long-Term Orientation are positively associated with better environmental performance, with significance levels ranging from 1% to 5%. Power Distance and Masculinity are both negatively and significantly associated with environmental performance (at 1% level). We do not find a significant link between Indulgence and environmental performance. The results are consistent with the comparison results reported in Table 6 and confirm that firms in low power distance, individualistic, feminine, high uncertainty avoidance and long-term oriented cultures have better environmental performance. Thus, H6.1a-H6.5a are supported but H6.6a is not supported. We repeat the tests in Panel A in Table 7 Panel B including country level control variables of GDP growth and country governance. The results are consistent and robust.

Table 8 Panel A presents regression results of the impact of culture background on CSR disclosure without country level control variables. We find that culture variables of Power Distance, Individualism, Masculinity and Indulgence are significantly and negatively related to a higher level of CSR disclosure at the 1% significance level. High Uncertainty Avoidance and Long-Term Orientation are both positively and significantly linked to more CSR disclosure at the 1% significance level. The results are consistent with the univariate tests in Table 6. This indicates that firms in low power distance, collectivistic, feminine, long-term oriented, high uncertainty avoidance and restrained countries disclose more CSR information. Thus, H6.1b-H6.6b are well supported. The results of Panel B with country level controls are consistent with Panel A, which indicate the results are robust.

### Table 6

| Cultural Dimension      | Low Power Distance | High Power Distance | Difference | t-stat  |
|-------------------------|--------------------|---------------------|------------|---------|
| Environmental Performance | 50.90              | 36.72               | −14.18     | −15.44*** |
| CSR Disclosure          | 42.52              | 29.33               | −13.19     | −18.00*** |

### Table 7 Panel A

| Cultural Dimension      | Low Uncertainty Avoidance | High Uncertainty Avoidance | Difference | t-stat  |
|-------------------------|---------------------------|---------------------------|------------|---------|
| Environmental Performance | 38.10                     | 40.62                     | 2.53       | 3.19*** |
| CSR Disclosure          | 34.90                     | 30.61                     | −4.29      | −6.77*** |

### Table 8 Panel A

| Cultural Dimension      | Restraint | Indulgence | Difference | t-stat  |
|-------------------------|-----------|------------|------------|---------|
| Environmental Performance | 40.10     | 39.50      | −0.60      | −0.77   |
| CSR Disclosure          | 36.13     | 29.72      | −6.41      | −10.27*** |

This table presents the tests of differences in environmental performance and CSR disclosure based on the six cultural dimensions (Hofstede et al., 2010). For each of the six cultural dimensions, we separate firms into two groups based on the median culture score, and test if those firms’ environmental performance and CSR disclosure are significantly different. Detailed variable definitions are presented in Appendix A. *, **, and *** denote statistical significance of the t-test at the 10%, 5%, and 1% levels, respectively.
Fig. 2. Culture, environmental performance and CSR disclosure. This figure summarizes the relationships between cultural dimensions, environmental performance and CSR disclosure based on the univariate tests in Table 6. The solid line represents a positive relationship and a dashed line represents a negative relationship.

Table 7
Results of culture and environmental performance.

|               | (1)     | (2)     | (3)     | (4)     | (5)     | (6)     |
|---------------|---------|---------|---------|---------|---------|---------|
| **Panel A: Dependent Variable Environmental Performance: Without country control variables** |         |         |         |         |         |         |
| CSR Disclosure| 0.28*** | 0.29*** | 0.28*** | 0.28*** | 0.27*** | 0.29*** |
|               | (24.04) | (24.49) | (23.04) | (23.56) | (23.02) | (24.36) |
| Power Distance| −6.60***| −6.86***|         |         |         |         |
|               | (−6.86) |          |         |         |         |         |
| Individualism |         | 2.30**  |         |         |         |         |
|               |         | (2.54)  |         |         |         |         |
| Masculinity   |         | −5.39***|         |         |         |         |
|               |         | (−5.26) |         |         |         |         |
| Uncertainty Avoidance |         | 2.98*** |         |         |         |         |
|               |         | (3.34)  |         |         |         |         |
| Long Term Orientation |       |         |         |         | 6.96*** |         |
|               |         |         |         |         | (8.33)  |         |
| Indulgence    |         |         |         |         | 1.17    |         |
|               |         |         |         |         | (1.30)  |         |
| Separation of Board Chair | 0.01*  | 0.03*** | 0.03*** | 0.03*** | 0.02*** | 4.06*** |
|               | (1.95)  | (4.07)  | (3.73)  | (4.51)  | (3.40)  | (4.06)  |
| Board Independence | −0.03** | −0.04***| −0.02** | −0.02*  | 0.00    | −0.03***|
|               | (−3.34) | (−4.05) | (−2.28) | (−1.76) | (0.24)  | (−3.64) |
| ESG Committees | 0.15*** | 0.15*** | 0.16*** | 0.15*** | 0.14*** | 0.15*** |
|               | (15.08) | (15.43) | (15.88) | (15.32) | (14.52) | (15.38) |
| Executive Compensation | 0.01 | 0.05    | 0.00    | 0.01    | 0.01    | 0.00    |
|               | (0.62)  | (0.05)  | (0.39)  | (0.61)  | (0.69)  | (0.25)  |
| Gender Diversity | 0.28*** | 0.76*** | 0.27*** | 0.34*** | 0.37*** | 0.30*** |
|               | (8.62)  | (7.61)  | (8.01)  | (10.06) | (11.13) | (8.86)  |
| Capital Structure | 4.38*** | 3.01*** | 4.24*** | 5.01*** | 5.35*** | 4.29*** |
|               | (3.23)  | (3.01)  | (3.12)  | (3.66)  | (3.94)  | (3.15)  |
|                  | (1)     | (2)     | (3)     | (4)     | (5)     | (6)     |
|------------------|---------|---------|---------|---------|---------|---------|
| Internationalization | 3.30*** | 5.41*** | 4.68*** | 4.88*** | 3.84*** | 5.90*** |
|                  | (2.79)  | (5.41)  | (4.08)  | (4.21)  | (3.33)  | (5.18)  |
| Board Size       | 0.38*** | 0.33*** | 0.34*** | 0.27*** | 0.30*** | 0.35*** |
|                  | (3.68)  | (3.27)  | (3.37)  | (2.66)  | (2.95)  | (3.40)  |
| ROA              | 0.25*** | 0.29*** | 0.27*** | 0.30*** | 0.27*** | 0.28*** |
|                  | (3.51)  | (3.96)  | (3.78)  | (4.09)  | (3.67)  | (3.90)  |
| Liquidity        | −2.10   | −5.08   | −2.35   | −2.57   | 2.57    | −4.32   |
|                  | (−0.30) | (−0.73) | (−0.34) | (−0.37) | (0.37)  | (−0.62) |
| Constant         | 48.45***| 41.59***| 46.95***| 40.31***| 37.22***| 41.68***|
|                  | (21.48) | (20.03) | (20.83) | (18.87) | (17.37) | (19.86) |
| Year FF          | Yes     | Yes     | Yes     | Yes     | Yes     | Yes     |
| Adj. R-sq.       | 19.42%  | 19.15%  | 19.29%  | 19.18%  | 19.56%  | 19.12%  |
|                  | 12,218  | 12,218  | 12,218  | 12,218  | 12,218  | 12,218  |

### Panel B: Dependent Variable Environmental Performance; With country control variables

|                  | (1)     | (2)     | (3)     | (4)     | (5)     | (6)     |
|------------------|---------|---------|---------|---------|---------|---------|
| CSR Disclosure   | 0.28*** | 0.29*** | 0.28*** | 0.28*** | 0.28*** | 0.29*** |
|                  | (23.81) | (24.53) | (22.93) | (23.64) | (23.09) | (24.23) |
| Power Distance   | −5.91   | (−5.65) | −5.40   | (−5.28) | −5.05   | (−4.89) |
| Individualism    | 3.17*** | (3.47)  |         |         |         |         |
| Masculinity      | −5.02   | (−4.92) |         |         |         |         |
| Uncertainty Avoidance | 2.71*** | (2.89)  |         |         |         |         |
| Long Term Orientation | 6.36*** | (7.46)  |         |         |         |         |
| Indulgence       | 0.02**  | 0.02*** | 0.02**  | 0.03*** | 0.02**  | 3.42*** |
|                  | (2.00)  | (3.21)  | (3.00)  | (3.61)  | (2.79)  | (3.42)  |
| Separation of Board Chair | −0.03*** | −0.04*** | −0.02** | −0.02** | 0.00    | −0.03*** |
|                  | (−3.09) | (−4.37) | (−2.31) | (−2.08) | (−0.20) | (−3.49) |
| Board Independence | 0.14*** | 0.14*** | 0.15*** | 0.14*** | 0.14*** | 0.14*** |
|                  | (14.69) | (14.73) | (15.2)  | (14.64) | (14.05) | (14.7)  |
| Executive Compensation | 0.01  | 0.06   | 0.01    | 0.01    | 0.01    | 0.00    |
|                  | (0.73)  | (0.06)  | (0.50)  | (0.64)  | (0.71)  | (0.38)  |
| Gender Diversity | 0.29*** | 7.36*** | 0.27*** | 0.34*** | 0.37*** | 0.31*** |
|                  | (8.91)  | (7.36)  | (8.15)  | (10.07) | (11.04) | (9.13)  |
| Capital Structure | 4.59*** | 3.02*** | 4.37*** | 5.02*** | 5.33*** | 4.49*** |
|                  | (3.38)  | (3.02)  | (3.22)  | (3.68)  | (3.93)  | (3.30)  |
| Internationalization | 2.81*** | 4.50*** | 3.60*** | 3.94*** | 3.19*** | 4.79*** |
|                  | (2.37)  | (4.51)  | (3.10)  | (3.37)  | (2.75)  | (4.14)  |
| GDP Growth       | −1.09***| −1.24***| −1.13***| −0.87***| −0.73***| −1.16***|
|                  | (−3.86) | (−4.34) | (−4.00) | (−2.93) | (−2.53) | (−4.04) |
| Country Governance | 0.59**  | 1.31*** | 1.19*** | 1.26*** | 1.00*** | 1.15*** |
|                  | (2.11)  | (5.06)  | (4.66)  | (4.91)  | (3.89)  | (4.36)  |
| Board Size       | 0.39*** | 0.42*** | 0.42*** | 0.38*** | 0.38*** | 0.42*** |
|                  | (3.73)  | (4.04)  | (4.05)  | (3.57)  | (3.61)  | (3.98)  |
| ROA              | 0.27*** | 0.29*** | 0.27*** | 0.29*** | 0.26*** | 0.29*** |
|                  | (3.66)  | (3.98)  | (3.79)  | (4.02)  | (3.65)  | (3.94)  |
| Liquidity        | −2.01   | −4.66   | −1.46   | −1.61   | 2.84    | −3.27   |
|                  | (−0.29) | (−0.67) | (−0.21) | (−0.23) | (0.41)  | (−0.47) |
| Constant         | 39.06***| 26.17***| 33.08***| 26.94***| 28.8***| 28.24***|
|                  | (10.41) | (7.95)  | (8.85)  | (8.25)  | (8.28)  | (8.72)  |
| Year FF          | Yes     | Yes     | Yes     | Yes     | Yes     | Yes     |
| Adj. R-sq.       | 19.52%  | 19.39%  | 19.49%  | 19.36%  | 19.67%  | 19.31%  |
| Obs.             | 12,218  | 12,218  | 12,218  | 12,218  | 12,218  | 12,218  |

This table presents the results of OLS regression, testing the impact of culture on environmental performance. Detailed variable definitions are presented in Appendix A. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels. Parenthetical values are t-statistics.
| (1) | (2) | (3) | (4) | (5) | (6) |
|-----|-----|-----|-----|-----|-----|
| Panel A: Dependent Variable CSR Disclosure; Without country control variables | | | | | |
| Environmental Performance | 0.15*** | 0.15*** | 0.14*** | 0.14*** | 0.14*** | 0.15*** |
| (20.80) | (21.21) | (19.99) | (20.42) | (19.86) | (21.21) |
| Power Distance | –2.98*** | | | | | |
| (-4.08) | | | | | |
| Individualism | –10.96*** | | | | | |
| (-16.34) | | | | | |
| Masculinity | | –15.67*** | | | | |
| | (-20.80) | | | | | |
| Uncertainty Avoidance | 10.99*** | | | | | |
| (16.62) | | | | | | |
| Long Term Orientation | 8.58*** | | | | | |
| (13.69) | | | | | | |
| Indulgence | | | | | | –9.28*** |
| | | | | | (-13.77) |
| Separation of Board Chair | 0.04*** | 0.06*** | 0.04*** | 0.06*** | 0.04*** | 0.04*** |
| (7.95) | (10.42) | (7.63) | (11.08) | (8.23) | (10.93) |
| Board Independence | –0.01 | 0.02*** | 0.02** | 0.04*** | 0.03*** | 0.03*** |
| (-1.61) | (3.58) | (2.49) | (5.15) | (3.95) | (4.46) |
| ESG Committees | 0.23*** | 0.22*** | 0.24*** | 0.22*** | 0.22*** | 0.22*** |
| (31.95) | (31.21) | (34.16) | (31.62) | (30.45) | (31.59) |
| Executive Compensation | 0.16*** | 18.56*** | 0.16*** | 0.17*** | 0.16*** | 0.16*** |
| (17.27) | (18.56) | (17.09) | (18.32) | (17.57) | (17.75) |
| Gender Diversity | 0.19*** | 14.20*** | 0.08*** | 0.31*** | 0.12*** | 0.12*** |
| (7.74) | (14.20) | (3.19) | (12.42) | (11.10) | (11.46) |
| Capital Structure | 5.55*** | 7.10*** | 4.81*** | 7.49*** | 6.64*** | 6.97*** |
| (5.40) | (7.10) | (4.76) | (7.32) | (6.48) | (6.80) |
| Internationalization | 11.48*** | 11.64*** | 9.19*** | 9.22*** | 10.10*** | 10.94*** |
| (12.87) | (11.64) | (10.80) | (10.66) | (11.71) | (12.84) |
| Board Size | 1.27*** | 1.20*** | 1.26*** | 1.03*** | 1.20*** | 1.05*** |
| (16.65) | (15.92) | (16.77) | (13.41) | (15.83) | (13.63) |
| ROA | 0.11* | 0.11** | 0.08 | 0.16*** | 0.09* | 0.14*** |
| (1.91) | (2.05) | (1.56) | (2.93) | (1.74) | (2.59) |
| Liquidity | 6.84 | 12.8** | 9.54* | 9.87* | 13.63*** | 11.36** |
| (1.29) | (2.44) | (1.84) | (1.89) | (2.58) | (2.16) |
| Constant | –20.29*** | –20.05*** | –8.31*** | –29.38*** | –28.65*** | –19.08*** |
| (–11.69) | (–12.75) | (–4.86) | (–18.33) | (–17.75) | (–11.97) |
| Year FF | Yes | Yes | Yes | Yes | Yes | Yes |
| Adj. R-sq. | 27.61% | 29.07% | 30.00% | 29.12% | 28.61% | 28.62% |
| Obs. | 12,218 | 12,218 | 12,218 | 12,218 | 12,218 | 12,218 |
| Panel B: Dependent Variable CSR Disclosure; with country level control variables | | | | | |
| Environmental Performance | 0.14*** | 0.15*** | 0.14*** | 0.14*** | 0.14*** | 0.15*** |
| (20.60) | (21.25) | (19.88) | (20.48) | (19.94) | (21.06) |
| Power Distance | –5.30*** | | | | | |
| (-6.72) | | | | | | |
| Individualism | –11.00*** | | | | | |
| (-16.24) | | | | | | |
| Masculinity | | –15.64*** | | | | |
| | (-20.83) | | | | | | |
| Uncertainty Avoidance | 10.22*** | | | | | |
| (14.61) | | | | | | |
| Long Term Orientation | 8.34*** | | | | | |
| (13.07) | | | | | | |
| Indulgence | | | | | | –8.36*** |
| | | | | | (-11.87) |
| Separation of Board Chair | 0.05*** | 0.06*** | 0.05*** | 0.06*** | 0.05*** | 0.05*** |
| (8.96) | (11.91) | (8.96) | (11.60) | (9.65) | (11.37) |
| Board Independence | 0.00 | 0.03*** | 0.03*** | 0.04*** | 0.03*** | 0.03*** |
| (0.20) | (4.90) | (3.87) | (5.31) | (4.94) | (4.65) |
| ESG Committees | 0.22*** | 0.22*** | 0.24*** | 0.22*** | 0.22*** | 0.22*** |
| (32.15) | (31.51) | (34.17) | (31.71) | (30.78) | (31.43) |
| Executive Compensation | 0.16*** | 18.84*** | 0.16*** | 0.17*** | 0.16*** | 0.17*** |
| (17.76) | (18.84) | (17.43) | (18.37) | (17.80) | (17.91) |
| Gender Diversity | 0.20*** | 14.69*** | 0.09*** | 0.31*** | 0.29*** | 0.29*** |
| (8.01) | (14.69) | (3.78) | (12.35) | (11.47) | (11.51) |
| Capital Structure | 6.01*** | 7.48*** | 5.24*** | 7.93*** | 6.94*** | 7.12*** |
| (5.86) | (7.48) | (5.20) | (7.37) | (6.79) | (6.95) |
5. Conclusions

Our research shows that common internal corporate governance best practices such as separation of board chair and CEO, establishing ESG committees and having gender diversified boards improve environmental performance and encourage firms to disclose more CSR related information. We find that linking executive compensations to ESG targets is positively related to higher levels of CSR disclosure but shows no evidence of environmental performance improvements. This suggests that executive compensation is not an effective incentive for sustainability and environmental protection purposes. We also find that capital structure, internationalization, law and culture are important factors for determining firms’ environmental performance and CSR disclosure. This indicates that investors should consider both firm internal governance factors as well as external and country level factors when comparing firms’ environmental performance and CSR disclosure in cross country studies. We find that firms in countries with low power distance, feminine, high uncertainty avoidance, and long-term oriented cultures have better environmental performance and disclose more CSR information; firms in individualistic cultures perform better environmentally, but firms in collectivistic cultures disclose more CSR information; firms in restrained countries disclose more CSR information but show no significant improvements on environmental performance. Our research also provides global evidence of a positive relationship between environmental performance and CSR disclosure, supporting the voluntary disclosure theory.

### Appendix A. Data construction and resources

| Variables                  | Definition                                                                 | Source                        |
|----------------------------|---------------------------------------------------------------------------|-------------------------------|
| Environmental Performance  | Carbon intensity (annual CO₂ equivalent emissions by annual sales) relative to its peers | Sustainalytics                |
| CSR Disclosure             | Level of application according to GRI guidelines                           | Sustainalytics                |
| Separation of Board Chair/CEO | Dummy variable: 1 if the roles of board chair and CEO are separated, 0 if the roles of board chair and CEO are not separated | Sustainalytics                |
| Board Independence         | The independence of Supervisory Board members for two-tier boards, or, the independence of Board of Directors members for one-tier boards | Sustainalytics                |
| ESG Committees             | How responsibilities for ESG issues are assigned within the company         | Eikon                         |
| Executive Compensation     | Whether a part of executive remuneration is explicitly linked to sustainability performance targets | Sustainalytics                |
| Gender Diversity           | Percentage of female directors on company boards                            | Eikon                         |
| Capital Structure          | Long term debt over long term debt plus equity                              | Eikon                         |
| Internationalization       | Dummy variable: 1 if the firm is listed on multiple stock exchanges, 0 otherwise | Sustainalytics                |
| Legal Environments         | Average of investor protection index and law enforcement index from La Porta et al. (1998) following Choi and Wong (2007) | La Porta et al. (1998)        |

This table presents the results of OLS regression, testing the impact of culture on CSR disclosure. Detailed variable definitions are presented in Appendix A. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels. Parenthetical values are t-statistics.
### Appendix A (continued)

| Variables                      | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Source                  |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Hofstede’s culture framework   | Six dimensions: power distance, individualism, masculinity, uncertainty avoidance, long-term orientation and indulgence. All six dimensions are coded as dummy variables. 1 if the country score is above or equal to the median of the sample countries, 0 otherwise.                                                                                                                     | Hofstede Culture Database |
| Board Size                     | Number of board members                                                                                                                                                                                                                                                                                                                                                                                                  | Eikon                   |
| ROA                            | Return on assets (as percentages): net income divided by total assets                                                                                                                                                                                                                                                                                                                                               | Eikon                   |
| Liquidity                      | Operating cashflow: operating cashflow divided by total assets                                                                                                                                                                                                                                                                                                                                                    | Eikon                   |
| GDP Growth                     | GDP annual growth percentage: annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars                                                                                                                                                                                                 | World Bank              |
| Country Governance             | Worldwide governance indicators: the sum of six dimensions of governance: voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law, control of corruption                                                                                                                                                                                                 | World Bank              |

### Appendix B. Classification based on Hofstede’s cultural dimension scores

This table presents our classifications for each of our sample countries based on Hofstede’s six cultural dimension scores. For the raw scores, please refer to Hofstede et al. (2010).

| Country         | Power Distance | Individualism/Collectivism | Masculinity/Femininity | Uncertainty Avoidance | Long/Short Term Orientation | Indulgence/Restraint |
|-----------------|-----------------|----------------------------|------------------------|-------------------------|-----------------------------|-----------------------|
| Australia       | High            | Individualism              | Masculinity            | Low                     | Short                        | Indulgence            |
| Austria         | Low             | Collectivism               | Masculinity            | High                    | Long                         | Indulgence            |
| Belgium         | High            | Individualism              | Masculinity            | High                    | Long                         | Indulgence            |
| Canada          | High            | Individualism              | Masculinity            | Low                     | Short                        | Indulgence            |
| Denmark         | Low             | Individualism              | Femininity             | Low                     | Short                        | Indulgence            |
| Finland         | Low             | Collectivism               | Femininity             | High                    | Short                        | Indulgence            |
| France          | High            | Individualism              | Femininity             | High                    | Long                         | Restraint             |
| Germany         | Low             | Collectivism               | Masculinity            | High                    | Long                         | Restraint             |
| Greece          | High            | Collectivism               | Masculinity            | High                    | Short                        | Restraint             |
| Ireland         | Low             | Individualism              | Masculinity            | Low                     | Short                        | Indulgence            |
| Israel          | Low             | Collectivism               | Femininity             | High                    | Short                        | Restraint             |
| Italy           | High            | Individualism              | Masculinity            | High                    | Long                         | Restraint             |
| Japan           | High            | Collectivism               | Masculinity            | High                    | Long                         | Restraint             |
| Malaysia        | High            | Collectivism               | Femininity             | Low                     | Short                        | Indulgence            |
| Netherlands     | High            | Individualism              | Femininity             | Low                     | Long                         | Indulgence            |
| New Zealand     | Low             | Individualism              | Masculinity            | Low                     | Short                        | Indulgence            |
| Norway          | Low             | Individualism              | Femininity             | Low                     | Short                        | Restraint             |
| Portugal        | High            | Collectivism               | Femininity             | High                    | Short                        | Restraint             |
| Singapore       | High            | Collectivism               | Femininity             | Low                     | Long                         | Restraint             |
| South Korea     | High            | Collectivism               | Femininity             | High                    | Long                         | Restraint             |
| Spain           | High            | Collectivism               | Femininity             | High                    | Long                         | Restraint             |
| Sweden          | Low             | Individualism              | Femininity             | Low                     | Long                         | Indulgence            |
| Switzerland     | Low             | Collectivism               | Masculinity            | High                    | Long                         | Indulgence            |
| United Kingdom  | Low             | Individualism              | Masculinity            | Low                     | Long                         | Indulgence            |
| United States   | High            | Individualism              | Masculinity            | Low                     | Short                        | Indulgence            |
