Knowledge as a Moderator of the Relationship between Environmental CSR and Financial Performance

ABSTRACT

We address the widely studied question of 'When does it pay to be green?' by theorizing that environmental corporate social responsibility (CSR) is a specific form of knowledgeable decision-making. Elaborating on stakeholder theory and the knowledge-based view of the firm, we hypothesize that knowledge on three different levels – board, workforce and institutional environment – moderates the relationship between environmental CSR and corporate financial performance. Using a global sample of 1,665 firms for the years 2010 to 2014, our empirical investigation reveals that more extensive knowledge bases (containing the existing knowledge stock and the existing conditions for knowledge flow) of the board and the workforce tend to enable firms to financially benefit from environmental CSR. In contrast to our theoretical model, we find negative effects of strong knowledge bases on the level of the institutional environment. Furthermore, we identify that the global results appear to be shaped by partly varying effects within the three regions North America, Europe and Asia. These findings suggest that knowledge-based moderators are to be considered to better understand the complex relationship between environmental CSR and financial performance.

INTRODUCTION

The relationship between environmental corporate social responsibility (CSR) and corporate financial performance has been widely studied. However, extant wisdom is still equivocal about whether and when being green pays off. Theoretical models have been proposed that suggest neutral, linear negative, linear positive or even non-linear relationships (Endrikat, Guenther, & Hoppe, 2014; Porter & van der Linde, 1995; Ramanathan, 2018; Schaltegger & Synnestvedt, 2002; Wagner & Schaltegger, 2004). The vast number of empirical studies dealing with the link of environmental CSR and financial performance remains inconclusive as well (Dixon-Fowler, Slater, Johnson, Ellstrand, & Romi, 2013; Endrikat, 2016; Endrikat et al., 2014; Guenther et al., 2014). These inconclusive and partly competing rather than converging findings indicate that this relationship may be more complex and depend on specific conditions that need to be taken into consideration. In this regard, previous research has started to discover the importance of moderators and mediators to better capture the complexity of the relationship between environmental CSR and firm performance (Dixon-Fowler et al., 2013; Grewatsch & Kleindienst, 2017; Guenther & Hoppe, 2014; Tang, Hull, & Rothenberg, 2012; Wang, Dou, & Jia, 2016) and highlighted intangible resources as an influencing factor (Hawn & Ioannou, 2016; Surroca, Tribó, & Waddock, 2010; Vilanova, Lozano, & Arenas, 2009). In the present paper, we contribute to this nascent but growing stream of research by focusing the intangible resources of knowledge as they are available within the firm and its environment. More specifically, we study the moderating effects of knowledge on three different levels – board, workforce and institutional environment – in the relationship between environmental CSR and corporate financial performance. We demonstrate conceptually and provide empirical evidence how knowledge bases on these three levels tend to influence the relationship between environmental CSR and firm performance.

Elaborating on stakeholder theory (Freeman, 1984) and the knowledge-based view of the firm (Grant, 1996), we conceptualize environmental CSR as knowledgeable decision-making. The performance consequences of these decisions depend largely on their substantiation and their adequacy to consider and balance multiple and partly competing interests of various stakeholders of the company. We argue that these decisions tend to be better substantiated and balanced with regard to the multiplicity of firm-related interests when the company is able to build on larger knowledge bases within the firm and its environment. Knowledge tends to be particularly relevant when it comes to developing and implementing novel solutions to non-routine and complex problems like in the case of environmental CSR. We therefore argue that certain knowledge management conditions are essential to benefit from and to utilize this knowledge. In line with the knowledge-based view, these knowledge management conditions include an adequate stock of knowledge on which decisions can be substantiated as well as the existence of transmission channels that ensure that knowledge is shared within the firm and flows to those actors who have to substantiate and make the decisions on the firm's engagement in environmental CSR. As we will explain in more detail, these conditions of more or less extensive or favorable knowledge bases exert their influence on multiple levels, i.e., the levels of the board, the workforce and the institutional environment of the firm.

Our empirical results are based on a global sample of 1,665 companies and show that favorable knowledge management conditions, or more extensive knowledge bases, on the board and the workforce level tend to enable firms to benefit from their engagements in environmental CSR in terms of financial success. Whereas no significant effects of environmental CSR on financial performance are to be identified without including knowledge-based moderators, the interaction terms between environmental CSR and the knowledge management conditions on the board and the workforce turn out to be positive. We therefore reveal *under which conditions* environmental

CSR tends to be favorable to the financial success instead of focusing on the question *whether or not* it is beneficial to the firm's success. Notably, and in contrast to our theoretical model, we find that the extent of the knowledge bases within the institutional environment level tends to weaken the link between environmental CSR and corporate financial performance. We furthermore show that these global results appear to be shaped by regional results of the regions North America, Europe and Asia. Thus, we may conclude that regional differences deserve more attention to illuminate the effects of various knowledge bases and more precisely their moderation of the association between environmental CSR and financial performance.

The main and pioneering contribution of this study is to identify and substantiate knowledge-based moderators on multiple levels in the relationship between environmental CSR and financial performance. By this means, we open the black box between environmental CSR and firm performance and increase the understanding of how environmental CSR can strengthen financial performance. Furthermore, the present study is responsive to recent calls about how to move this field of research forward (Wang, Tong, Takeuchi, & George, 2016): 1. Rather than having CSR as an aggregate dimension, we focus on the environmental dimension of CSR. 2. Rather than asking "Does it pay to be green?", we are more interested in the underlying conditions and processes and seek for an answer to the question "When and how does it pay to be green?". 3. Rather than examining only corporations based in the United States of America (U.S.), we see CSR as a global challenge and examine also non-U.S.-based corporations. We therefore consider that environmental CSR and its association with financial performance can occur in various institutional environments that vary considerably across countries.

THEORY AND HYPOTHESES

Environmental CSR and Firm Performance

A plethora of theoretical approaches to the relationship of (environmental) CSR and firm performance has been developed during the last decades. Initially, the relationship between CSR and firm performance has frequently been seen as a conflicting one as CSR related activities are supposed to increase the costs of a company and may thus compromise its financial success. This trade-off hypothesis has also been shared by Friedman (1970) who emphasized the view that companies have to consider their owners as the primary interest group of all organizational actions including the engagement in CSR. According to this doctrine of owner or shareholder primacy (Fisch, 2006), firms have to refrain from CSR if it is costly and detrimental to the returns to their owners.

However, there is by no means consensus that environmental CSR has necessarily a deleterious effect on financial performance. Carroll (1979), for instance, has proposed a model according to which financial and non-financial goals are not mutually exclusive and can rather be aligned with each other. Relatedly, Freeman (1984) has developed the stakeholder approach and established the notion that the firm has various constituents whose interests have to be considered when corporate decisions are made. These stakeholders comprise all groups that have a relationship to the company and either can affect or are affected by the company (for a review of stakeholder theories, see Agle, Donaldson, Freeman, Jensen, Mitchell, & Wood, 2008; Laplume, Sonpar, & Litz, 2008; Lee, 2008). The firm, and most notably its board at the apex of the organization, therefore has to coordinate these relationships and to balance the partly competing rather than converging interests of the various stakeholders well, so that the firm creates value that is subsequently to be distributed to, or shared with, its stakeholders (including owners or sharehold-

ers, respectively). According to this perspective, value creation tends to be the more successful, the better or the more satisfying the various and partly conflicting interests of stakeholders are managed (Harrison, Bosse, & Phillips, 2010).

With a special emphasis on the environmental dimension of CSR, Porter (1991) and Porter and van der Linde (1995) have provided an additional rationale why pursuing CSR and its environmental dimension can be expected to foster value creation and firm performance. According to this rationale, pollution is tantamount to waste of resources. The reduction of this waste of resources would have an effect on both, the environmental as well as the financial performance of the firm. Porter (1991) as well as Porter and van der Linde (1995) have theorized that well designed institutions like environmental regulations to reduce pollution can stimulate innovations that, in turn, may constitute competitive advantages and lead eventually to higher levels of financial success of the firm. Besides this so called "Porter-Hypothesis", other theoretical models have been proposed to substantiate a positive relationship between environmental CSR and firm performance such as the natural-resource-based view (Hart, 1995; Hart & Dowell, 2010) and the instrumental stakeholder theory (Jones, 1995). All these approaches have in common that they share the notion of stakeholder theory (Freeman, 1984) that firms have multiple stakeholders whose partly competing interests need to be considered and balanced in order to ensure the firm's value creation and its overall financial performance (cf. Trumpp & Guenther, 2017).

The present study elaborates on these research streams of stakeholder theory. Accordingly, we also suggest that various constituencies need to be considered when corporate decisions are made in order to maintain and foster financial performance. Furthermore, we add and argue that these considerations and a successful balancing of conflicting stakeholder interests tend to be better substantiated and more successful when more extensive knowledge is available to prepare and inform these decisions. While we acknowledge that overall a positive link between CSR and

corporate financial performance may empirically prevail (e.g., Friede, Busch, & Bassen, 2015), we therefore expect that environmental CSR is not necessarily, or by all means, conducive to corporate financial performance (cf. Zhao & Murrell, 2016). Rather, we expect this effect to be contingent on the extent of knowledge that is available to inform the decisions about which courses of action the firm pursues with regard to its engagement in environmental CSR. While this knowledge may also be beneficial to other purposes beyond profitability for which firms may be inclined to engage in environmental CSR (cf. Dowell & Muthulingam, 2017), we focus on the knowledge-based implications for financial performance. Consequently, we expand our analysis by including the role of knowledge as it is present on various levels within the firm and its environment and complement our theoretical underpinning with references to the knowledge-based view of the firm.

<u>The Moderating Role of Knowledge</u>

Our theoretical framework builds on and integrates the research streams of stakeholder theory and the knowledge-based view of the firm. According to this framework, environmental CSR is a specific form of knowledgeable decision-making as both concepts – CSR and knowledgeable decision-making – and their requisites converge: As outlined above, general requirements of CSR include considering multiple stakeholders, ascertaining and attending to competing interests as well as balancing and aligning multiple concerns. General requirements of knowledgeable decision-making include gathering and processing comprehensive information, developing and evaluating multiple courses of action as well as balancing pros and cons of complex decision alternatives. Due to this convergence, we draw on the knowledge-based view and adopt its general insights to environmental CSR and environmentally responsible decision making. Incorporating the

knowledge-based view provides a lens to better explain the relationship between environmental CSR and financial performance.

The knowledge-based view, which is a derivation (Conner & Prahalad, 1996) or an extension (DeCarolis & Deeds, 1999) of the resource-based view of the firm, captures knowledge as an intangible resource of the firm (DeCarolis & Deeds, 1999; Grant, 1996; Surroca et al., 2010). This intangible resource is particularly relevant when novel solutions to non-routine and complex problems are to be developed. Moreover, this resource tends to be difficult to imitate or substitute and can consequently lead to competitive advantages due to the unique and valuable knowledge base of the firm. To take advantage of the resource, the firm needs to be able to gain and utilize sufficiently substantial knowledge bases (Barney, 1991; Coff & Kryscynski, 2011; DeCarolis & Deeds, 1999; Grant, 1996; Peteraf, 1993).

The knowledge-based view distinguishes between (static) knowledge stock and (dynamic) knowledge flow (Dierickx & Cool, 1989; Hargadon & Fanelli, 2002; Wu & Shanley, 2009). Whereas the knowledge stock captures the sum of knowledge assets, knowledge flow refers to streams of knowledge that allow knowledge transmission and result into stock of knowledge again (DeCarolis & Deeds, 1999). Knowledge flow – or synonymously: knowledge transfer (Gupta & Govindarajan, 2000) – is hence essential to create new knowledge that stems from bringing together and recombining existing knowledge resources and capabilities of the firm (Kogut & Zander, 1992). Two channels that have been shown to be favorable conditions to enable knowledge flow are communication and training (Argote & Ingram, 2000; Argote, Ingram, Levine, & Moreland, 2000; Gupta & Govindarajan, 2000; Smith, Collins, & Clark, 2005).

Based on the above considerations, the extent of these knowledge bases, consisting of the knowledge stock as well as the transmission channels as necessary prerequisites of knowledge flow, can be expected to have an impact on the firm's capacity to financially benefit from its en-

gagement in environmental CSR. Since knowledge bases may coexist on multiple levels (Judge et al., 2015), we theorize that knowledge conditions on the three different levels of the board, the workforce and the institutional environment of the firm tend to influence the relationship between environmental CSR and financial performance. Hence, our analysis does not only consider knowledge bases within the firm, but also incorporates knowledge within the firm's environment (or 'public' knowledge bases, cf. Nelson, 1982).

Board. Connecting the institutional environment with the organization, the board of directors at the apex of the organization is of high importance. When it comes to changing the organizational strategy due to changes in the environment, Hillman, Cannella and Paetzold (2000) argue that the directors of the board can directly influence and shape this decision process. The argumentation is based on Goodstein and Boeker (1991), Mizruchi (1983) and Tushman and Romanelli (1985): The board creates the boundaries for managers and thus defines the discretionary area in which managers are allowed to develop and pursue their courses of action. Following this, the board induces managers to decide for a specific strategy and has moreover an active role in the deci-sion-making process about the firm's strategy and its revision, including decisions about the firm's CSR (Rao & Tilt, 2016). In line with that, the environmental CSR strategy of a firm has been shown to largely depend on the board of directors (Fuente, García-Sánchez, & Lozano, 2017; Shaukat, Qiu, & Trojanowski, 2016; Walls & Hoffman, 2013). The direction of the board though is very much influenced by the resources available to the board and therefore by the re-sources of the board members. The decisions of the board can hence be expected to vary depend-ing on the knowledge that the directors are able to utilize when they prepare and substantiate their decisions.

As Hillman et al. (2000) point out, the directors of the board bring their own resources in-to the board. The knowledge base of the board therefore rests to a large extent on the (sum of the)

knowledge stock of the individual directors. In addition, this knowledge needs to be shared within the board and transferred between the individual directors. The board knowledge management conditions are therefore stronger when the directors bring in more knowledge resources and are able to utilize various means of knowledge flow or transfer that allow to acquire and utilize larger pools of knowledge (cf. Huber, 1991; Kayes, 2002; Levitt & March, 1988).

More extensive knowledge bases can be expected to enable the board to better handle and solve novel and complex tasks (Fuentes-Henríquez & Del Sol, 2012). Relating this to complex decision problems of environmental CSR that tend to be non-routine and cannot be addressed by standardized programs, we propose that larger knowledge bases can be used by the board to make decisions beneficial for superior outcomes and to suffer less likely from irresponsible decisions due to ignoring, or misunderstanding, interdependencies and concerns by various stakeholders of the firm.

Following this, we argue that boards tend to make better substantiated decisions with regard to environmental CSR and their financial impact when they rest on lager knowledge bases, i.e., face stronger knowledge management conditions, on the level of the board. Based on this notion, we formulate the first hypothesis as follows:

Hypothesis 1. The positive relationship between environmental CSR and financial performance tends to be strengthened, when the knowledge bases of the board are larger.

Workforce. Besides the decisions that are made at the top of the organization, environmental CSR and corporate performance also largely depend on decentralized decision-making (Wong, Ormiston, & Tetlock, 2011). Generic human capital of a unit, which basically refers to general knowledge, skills and abilities of its members, tends to be beneficial to solve non-routine and complex tasks of balancing competing concerns and interests. Unit's specific human capital, which is peculiar to the setting of the unit or the firm, is reached through related experience and

advanced training. Specific human capital tends to allow to ascertain and to attend to more idio-syncratic concerns raised by selected constituents and to be, at the same time, also aware of firm peculiarities (cf. Crook, Todd, Combs, Woehr, & Ketchen, 2011). Understanding and evaluating certain stakeholders' perspectives and interests may require specific expertise of employees inter-acting with these stakeholders (Wong et al., 2011).

Following this, we argue that larger knowledge bases of the workforce in terms of its generic and specific human capital (i.e.: stronger knowledge management conditions of the workforce in terms of its knowledge stock and flow) tend to be advantageous to the performance consequences of environmental CSR. Decentralized decision-making in environmental CSR tends to be better substantiated when there are more extensive knowledge bases available to the workforce. The more knowledgeable decisions may better reflect the interests and concerns of various stakehold-ers as well as the financial implications of alternative courses of action to engage in environmen-tal CSR. Stated more formally, we expect:

Hypothesis 2. The positive relationship between environmental CSR and financial per-formance tends to be strengthened, when the knowledge bases of the workforce are larg-er.

Institutional environment. Matten and Moon (2008) explain differences in CSR with references to institutional theory and the related framework by Aguilera and Jackson (2003) about cross-country variance of institutional environments. Stakeholder identities and interests vary across countries. Since CSR deals with identifying stakeholder concerns and balancing stakeholder in-terests, CSR can be expected to differ between countries due to differences of their institutional environments as well as the interests and influence that stakeholders may have (Matten & Moon, 2008).

Important constituents need to be aware of CSR activities as stakeholder awareness has been shown to be a precondition of the positive relationship between CSR and corporate financial performance (Servaes & Tamayo, 2013). The environment needs to recognize environmental CSR related activities of the firm (Stellner, Klein, & Zwergel, 2015). A more knowledgeable society within the country can be expected to be more alert to corporate activities and apt to interpret and evaluate the initiatives of firms with regard to environmental CSR. In a more knowledgeable society, there is also in general more knowledge available to prepare and inform decisions, including decision-making on the firm's engagement in environmental CSR.

In sum, we suggest that more extensive knowledge bases within the institutional environment, i.e. more extensive knowledge stock and flow within the economy, tend to be beneficial to the substantiation of environmental CSR with regard to its associated performance implications. We therefore propose:

Hypothesis 3. The positive relationship between environmental CSR and financial performance tends to be strengthened, when the knowledge bases of the institutional environment of the company are larger.

METHODS

Sample and Data Sources

We use a global sample of international companies for the years of 2010 to 2014 to test our hypotheses. The companies are included in the Asset4 database that is provided by Thomson Reuters and comprises reliable environmental, social and corporate governance (ESG) data for more than 5,000 global companies (Thomson Reuters, n.d.). The Asset4 database has therefore been utilized and valued as a reliable source for ESG data (Cheng, Ioannou, & Serafeim, 2014; Ferrell, Liang, & Renneboog, 2016; Hawn & Ioannou, 2016; Ioannou & Serafeim, 2012; Lee & Xiao,

2019; Liang & Renneboog, 2017; Luo, Wang, Raithel, & Zheng, 2015; Rees & Rodionova, 2015; Semenova & Hassel, 2015; Shaukat et al., 2016).

The decision to choose 2010 as a start year is based on the acquisition of Asset4 by Thomson Reuters in 2009 (Thomson Reuters, 2009). We retrieved data from the Asset4 database in 2017. Data on 2014 was then the last year included in the dataset and still lacked many entries. As a consequence, the number of observations for the year 2014 is much smaller (approximately a tenth) compared to the other years in the sample. Despite this imbalance of observations per year, we keep the observations for 2014 for enlarging our sample size (and control for potential time-specific effects in our analyses).

The final sample for all analyses after eliminating outliers contains 1,665 firms and 5,333 firm-year observations. The firms are headquartered in 49 countries from all continents. Most of the firms are based in North America, Europe and Asia. Table 1 shows in detail the global scope of our sample.

=== *Insert Table 1 about here* ===

Our data comes from different sources: Data for corporate financial performance and most control variables is gathered from the Worldscope database which is also provided by Thomson Reuters. Data for environmental CSR as well as for the extent of the knowledge bases on the level of the board and workforce are collected from the Asset4 and the Worldscope databases. Data on the extent of the knowledge bases within the institutional environment comes from databases compiled by the United Nations: UN Development Programme (Human Development Reports, Education Index), International Telecommunication Union (Measuring the Information Society Reports, Information and Communication Technologies – Access Index), and United Nations

Conference on Trade and Development (Foreign Direct Investment Inflow). Table 2 gives an overview and a short description of the variables used in this study that we will describe in more detail in the following paragraphs.

=== Insert Table 2 about here ===

Measures

Dependent variable: Financial performance. To measure corporate financial performance, we choose Tobin's Q which is a commonly used and reliable indicator involved in studying the relationship between (environmental) CSR and firm performance (Guenther & Hoppe, 2014; King & Lenox, 2001; Surroca et al., 2010; Wagner, 2010). Tobin's Q is a combined market- and accounting-based measure and is defined as the ratio between a firm's market value and its book value. In line with Hawn and Ioannou (2016), we use the natural logarithm of Tobin's Q. To further reduce potential skewness, we drop outlier observations before log-transforming the data.

Environmental CSR. A prevalent caveat of studies on the relationship between environmental CSR and firm performance is their usage of rather peculiar and less standardized measures of environmental CSR which compromises their replicability as well as the implications to be drawn from these studies (cf. Guenther & Hoppe, 2014). To address this potential concern, we measure environmental CSR by using the environmental pillar score provided by the Asset4 database. This score captures the impact of the firm on the natural systems, including the air, land and water, as well as complete ecosystems. Higher values of this score indicate that the firm is more environmentally responsible as it uses well-established practices to reduce its environmental risks. The firm's operations have hence less negative impact on the natural environment. The environmental pillar score has been successfully used in research to measure environmental CSR

(e.g., Lee & Xiao, 2019; Semenova & Hassel, 2015; Shaukat et al., 2016). To ensure comparability with other studies, we adopt this commonly used measure.

Knowledge bases. Knowledge bases are constituted by the sum of the available knowledge assets (knowledge stock) and the sum of existing transmission channels to transfer knowledge (knowledge flow). Measuring knowledge flow precisely requires measuring changes of knowledge (Argote & Ingram, 2000) which implies, in particular, multiple challenges. In line with prior research, we therefore focus on two channels as conditions to enable knowledge flow: communication and training (Argote & Ingram, 2000; Argote et al., 2000; Gupta & Govindarajan, 2000; Smith et al., 2005).

We measure the available knowledge bases on each level (i.e.: board, workforce and institutional environment of the firm) similarly by creating a variable containing the knowledge stock component and the two knowledge flow components (i.e.: communication and training) as follows: In a first step, all three sub-variables (components) of knowledge stock and knowledge flow that originally have another form are transformed into a dummy variable with a value of 1 if the value of the original sub-variable is higher or equal the median and zero if the value of the original sub-variable is smaller than the median. This procedure enables uniformity and comparability between the different levels. To avoid loss of information, we code missing values as zero.

In a second step, we sum-up all of the respective three components to create for each level a variable that captures the extent of the knowledge bases on the respective level. This results in an ordinal measurement of the extent of knowledge bases for each level with potential values of 0, 1, 2 or 3 with 0 being the lowest value (i.e., indicating the smallest knowledge bases) and 3 the highest one (i.e., indicating the largest knowledge bases). On all three levels, the knowledge base conditions can hence vary between 0 and 3.

Board conditions. The knowledge stock of a board depends on the knowledge of its directors. Thus, larger boards can be expected to be more knowledgeable due to the, ceteris paribus, larger knowledge bases of their directors (cf. Dalton, Daily, Johnson, & Ellstrand, 1999; Dwivedi & Jain, 2005; Larmou & Vafeas, 2010; Rindova, 1999). Accordingly, we measure the knowledge stock of the board via the board size (i.e., the number of directors). To account for the law of diminishing marginal utility, we use the natural logarithm of the board size. The communication component of the knowledge flow is measured by the number of board meetings held per year. The more often the board meets, the more opportunities the directors have to communicate with each other and share their knowledge. Thus, there are better conditions for knowledge flow if the number of board meetings is higher. As our measurements of the knowledge stock and the communication component of the knowledge flow are metric, we transform these sub-variables into dummy variables as described above. The training component of the knowledge flow is measured by a dummy variable that indicates if the board or board committees have the authority, without management's approval, to hire external advisers or consultants who may provide expertise and training to the board. The value of this dummy variable can be yes (1) or no (0) and indicates if the training conditions for knowledge flow are met or not. Finally, we sum-up the three (binary coded) components to create the variable capturing the extent of the knowledge bases available on the board level (Board Conditions).

Workforce conditions. The workforce of the firm can be more or less knowledgeable. With regard to the knowledge stock, the salary level within the workforce is widely used to indicate whether the firm pays more or less to utilize the knowledge of its employees (Cohen & Kaimenakis, 2007). The more generic and specific human capital the employees rent to their firm, the higher their salaries tend to be. Therefore, we measure the knowledge stock of the workforce with the staff costs of the company (i.e., total expenses for salaries and wages). We transform this

continuous measurement into a dummy variable, as described above, by median splitting. To measure the communication component of the knowledge flow, we create a new sub-variable by summing-up 13 binary coded indicators. These 13 indicators capture if the company has established specific communication tools (like a newsletter, suggestion box, whistle blower system or ombudsman) to disseminate knowledge among the workforce and to share knowledge between the workforce and the board. This newly created sub-variable can accordingly take values from 0 (no communication tools at all) to 13 (all of the communication tools available). Higher values of this sub-variable indicate better conditions for communication. Following the procedure described above, this ordinal sub-variable is transformed into a dummy variable based on the median. Finally, the training component of the knowledge flow is measured by a sub-variable indicating if the company has a policy that supports skills training or career development of its employees. This sub-variable showing if the necessary condition for knowledge flow via training is set, is already gathered as a binary coded variable. Like for the board conditions, we finally sum-up the three binary coded components to measure the extent of knowledge bases on the workforce level (Workforce Conditions).

Institutional environment conditions. The institutional environment of the company refers to the country where the company is headquartered. To measure the level of knowledge stock within the country, we apply the widely used measure of educational attainment (Barro & Lee, 1993; Barro & Lee, 2001; Barro & Lee, 2013; Lutz & Samir, 2011; Schoellman, 2012). Educational attainment refers to the quantity of formal education which can be measured as the highest level of attainment or the mean years of schooling (Lutz & Samir, 2011). We use a more advanced measure of the UN that is part of the Human Development Report and defined as the education index. This education index does not only include the mean years of schooling but also the expected years of schooling (UN Development Programme, n.d.). Median splitting is used to

transform this index into a dummy variable of knowledge stock within the institutional environment of the firm. Regarding knowledge flow within the country, information and communication technologies (ICT) facilitate communication and thus the flow of knowledge across long distances and with low costs (Lopez-Nicolas & Soto-Acosta, 2010; Roberts, 2000). The access level of ICT in a country therefore indicates the availability of these communication channels and thus the corresponding condition of knowledge flow. Inflow of new knowledge stems from technology and skill transfers to the host country. Foreign direct investments in the country tend to foster these transfers. Among other things, local companies can profit from the new knowledge they have not had access to before if they, for example, share new technologies or hire employees from the investing company (Blomström & Kokko, 1998). Again, both components of the knowledge flow are transformed to dummy variables by median splitting. After having summed-up the three components as described before, we obtain the extent of knowledge bases on the institutional environment level (Institutional Environment Conditions) whose overall logic very much follows the idea of the World Bank's knowledge economy index (World Bank Group, n.d.).

Control variables. To control for other factors that may have an effect on firm performance we select control variables commonly used in the related literature (e.g., Brammer & Millington, 2008; Endrikat et al., 2014; King & Lennox, 2001; McWilliams & Siegel, 2000; Wagner, 2010). More specifically, we include firm size measured as the natural logarithm of the total assets. Furthermore, we control for capital intensity by including the ratio of capital expenditures to sales. Additionally, we include a measure for research and development intensity by dividing research and development expenditures by sales (R&D Intensity). In line with Hawn and Ioannou (2016), we include a measure to capture a broader notion of advertising intensity that includes the sum of selling, general and administrative expenses divided by sales (SG&A Intensity). We further fol-

low Hawn and Ioannou (2016) and control for the firm's visibility (analyst coverage) and degree of diversification. Analyst Coverage is measured as the number of analysts that cover the firm. Diversification is measured as the natural logarithm of the total number of four-digit SIC codes that a firm operates in. Furthermore, we add a measure for the growth of the firm (sales growth (current versus prior year)), a measure for leverage (ratio of total debt to total assets) and a measure for industry membership (based on Thomson Reuters Business Classification). To control for country-specific influences, we include dummy variables for the region where the company is headquartered (Thomsen & Pedersen, 2000). Finally, we use year dummies to control for time-specific effects and checked all control variables for outliers.

Statistical Models

We choose generalized least squares (GLS) random effects models to analyze the panel data gathered on the board-, firm- and country-level. Causality could basically occur in both directions: An effect of environmental CSR on financial performance and an effect of financial performance on environmental CSR. To address this potential issue of endogeneity, we lag our dependent variable and use the corporate financial performance of the following year (t+1) and all right-hand-side variables of the present year (t).

   Besides that, we include dummies for year, region and industry to deal with unobserved heterogeneity (in line with, for instance, Battilana, Sengul, Pache, & Model, 2015). Therefore, we formed groups of the countries belonging to one of the six continents or regions: Africa, Asia, Australia, Europe, North America and South America. Our industry dummies are based on the Thomson Reuters Business Classification distinguishing the following ten economic sectors: Basic materials, consumer cyclicals, consumer non-cyclicals, energy, financials, healthcare, industrials, technology, telecommunication services, and utilities.

RESULTS

Summary Statistics

Tables 3 shows the descriptive statistics as well as correlations of the variables used in our regression analyses. To test for multicollinearity, we ran a regression model including all of these variables. The highest variance inflation factor is 1.96 and the mean variance inflation factor is 1.28. We therefore conclude that multicollinearity is not a source of concern in the present study.

=== Insert Table 3 about here ===

Global Results

Table 4 reports the results of the regression analyses to test our hypotheses. Model 0 is the basis model including only the control variables. Corporate financial performance tends to be higher in smaller firms with higher R&D intensity, less sales growth, less leverage and higher analyst coverage. In model 1, we added the direct effect of environmental CSR as well as the direct effects of the knowledge conditions on board level, workforce level and institutional environment level. The Wald $\chi 2$-value for model 1 increases. Besides that, model 1 indicates a significance of the institutional environment conditions. Surprisingly, more extensive knowledge bases in the institutional environment tend to have a negative effect on corporate financial performance. Noteworthy is also that the coefficient of environmental CSR turns out to be non-significant. In line with our arguments, interaction effects are to be considered to better unravel the complex relationship between environmental CSR and firm performance. To test the Hypotheses (1-3), we ran model 2 to 5.

=== *Insert Table 4 about here* ===

Model 2 contains the first interaction term (Board Conditions*Environmental CSR) and thus addresses Hypothesis 1. Hypothesis 1 states that the positive relationship between environmental CSR and financial performance tends to be strengthened, when there are more extensive knowledge bases available to the board. The coefficient of the interaction term is significant and positive. Besides that, the coefficient of the institutional environment conditions remains negative and significant, the one of environmental CSR is unaltered insignificant. Furthermore, the negative coefficient of board conditions becomes significant.

In model 3, we test Hypothesis 2 by adding the second interaction term (Workforce Conditions*Environmental CSR) to model 1. Hypothesis 2 states that the positive relationship between environmental CSR and financial performance tends to be stronger, when the extent of knowledge bases present in the workforce is larger. Our findings reveal a significant positive effect for this interaction term. Additionally, the negative coefficient of workforce conditions becomes significant. Again, the coefficient of environmental CSR remains insignificant.

The third interaction term included in model 4 (Institutional Environment Conditions*Environmental CSR) addresses Hypothesis 3: The positive relationship between environmental CSR and financial performance tends to be more pronounced, when the knowledge bases in the institutional environment are more extensive. Model 4 shows an unexpected insignificant (and negative) coefficient of the third interaction term. Remarkably, a significant negative coefficient is again to be observed for the institutional environment conditions. Notably, there is a positive significant result for the main effect of environmental CSR.

The full model 5 includes all variables. The effects of the interaction terms on the board and the workforce level remain positive and significant. However, the interaction term of the institu-

tional environment level turns out to be significant but, contrary to Hypothesis 3, negative. The Wald χ2-value increases for model 2, 3, 4 and 5 in comparison to model 1.

Although we cannot find completely unequivocal support for our Hypotheses 1 and 2, in sum these results indicate that more extensive knowledge bases present in the board and the workforce tend to enable firms to better use the potential of environmental CSR and to benefit financially from this engagement. Whereas more environmental CSR alone has no significant influence on the firm's financial performance, environmental CSR has a positive influence when there are stronger knowledge management conditions on the levels of the board and the workforce.

Regional Results

Besides analyzing the global sample, we further ran all regressions separately for the three regions North America, Europe and Asia where most of the firms are based (Tables 5-7).

=== Insert Tables 5-7 about here ===

These analyses reveal intriguing insights as the relationships vary, to some extent, across these regions. Therefore, the regional context appears to play an influential role with regard to the effects of the various knowledge conditions for managing environmental CSR and the related performance implications. Table 5 reports the results for all firms that are located in North America. More extensive knowledge bases of the board and the workforce tend to enable firms in North America to better realize the potential of environmental CSR and to finally increase their financial performance. These results differ to the ones of Europe reported in Table 6 where solely on the workforce level positive results of the interaction term are observable. The significant and negative coefficient of the interaction term for the institutional environment level reported in

model 5 (of Table 4) using the global sample appears to be largely driven by the region of Asia. As Table 7 indicates for the firms in Asia, more extensive knowledge available in the institutional environment does not support and rather hinders Asian firms in managing environmental CSR financially successful and finally reaching a superior financial performance from this engagement.

Robustness Checks

To check for the robustness of our findings, we include two alternative sets of control variables to the regression models. All our main results remain unaltered and do hence not depend on a specific set of controls. For reasons of parsimony we do not report further results here, but full details of these robustness tests are available upon request.

DISCUSSION AND CONCLUSION

When does it pay to be green? In order to develop a sharper answer to this question, we argued that environmental CSR can be seen as knowledgeable decision making and hypothesized that the extent of knowledge bases on the three levels of the firm's board, workforce and institutional environment tend to moderate the relationship between environmental CSR and financial performance. Based on a global sample of 1,665 firms, we found positive interaction effects on the board as well as the workforce level. Contrary to our hypothesis, the effect on the institutional environment level turned out to be significant but negative in the complete model of our global sample. Additional analyses after splitting up our global sample revealed that these results appear to be shaped and to vary by the regions where the firms are located. We therefore suggest that regional aspects deserve more attention in order to explain the effects of knowledge conditions for managing environmental CSR and its performance consequences in more depth.

Scholarly Implications

The question "Does it pay to be green?" has been widely studied but yielded inconclusive results: Prior studies suggested the relationship between environmental CSR and financial performance to be neutral, positive, negative or non-linear (Dixon-Fowler et al., 2013; Endrikat, 2016; Endrikat et al., 2014; Guenther & Hoppe, 2014). Researchers therefore started to ask the question "When does it pay to be green?" instead, by having a look at the underlying conditions and processes that my moderate or mediate this relationship (Dixon-Fowler et al., 2013; Guenther & Hoppe, 2014; Tang, et al., 2012). We follow this quest and open the black box of the relationship between environmental CSR and financial performance. More specifically, we identify knowledge-based moderators of the relationship between environmental CSR and financial performance on three different levels. Our analysis focusses on the environmental dimension of CSR and treats CSR as a global challenge examining companies from various regions around the world (Wang et al., 2016). This analysis reveals intriguing contributions to better understand the relationship between environmental CSR and financial performance both conceptually and empirically.

In terms of theory, we develop a conceptual framework that integrates the two highly relevant streams of stakeholder theory and the knowledge-based view of the firm. Based on this framework, we argue that environmental CSR is a specific form of knowledgeable decision-making on subjects of environmental management and related stakeholder issues. Furthermore, we distinguish between knowledge stock and knowledge flow on the three levels of the board, the workforce and the institutional environment of the firm. The knowledge conditions on these three levels have to be considered as they may enable firms to better substantiate their environmental CSR and, as a consequence, to better yield financial benefits from this engagement. Our compre-

hensive framework that combines knowledge bases within the firm and the firm's environment and encompasses multiple levels of analysis, establishes and explicates the moderating effect of various knowledge bases on the association between environmental CSR and corporate financial performance.

In terms of our empirical study, we found no direct effect of environmental CSR on financial performance. Effects only became significant when the interactions between environmental CSR and the extent of the available knowledge bases on the levels of the board, the workforce and the institutional environment were considered. This may, at least to some degree, explain the rather conflicting results of prior studies dealing with the question of "Does it pay to be green?" and implies that the relationship between environmental CSR and corporate financial performance is more complex and depends on certain circumstances. The moderators on the board and the workforce level turned out to have positive effects, whereas the extent of knowledge bases in the institutional environment negatively moderated the link between environmental CSR and financial performance.

Further research is needed to better illuminate the counterintuitive finding with regard to the effects of the extent of knowledge bases available in the institutional environment of the firm. Within a more knowledgeable society that is characterized by overall larger knowledge bases, there may be more demand for high quality policies and programs in environmental CSR and more skepticism that these engagements may be purely ceremonial (cf. Graafland & Smid, 2019) to greenwash corporate activities (Delmas & Burbano, 2011; Laufer, 2003; Marquis, Toffel, & Zhou, 2016). Stakeholders in these environments may expect high levels of engagement to address a multiplicity of concerns they are aware of and be more alert to assess whether CSR initiatives are implemented seriously to make substantial differences. Balancing and aligning these expectations may be particularly challenging and have equivocal consequences on the firm's fi-

nancial performance. As Garcia-Castro and Francoeur (2016) have shown, investing to address stakeholder concerns may, on the one hand, involve high costs. Nevertheless, (too) low levels of such investment in stakeholders may be detrimental to firm performance as basic requirements of the firm's constituencies are not sufficiently met. On the other hand, too much investments may lead to less financial performance as well as the costs of these high levels of engagements are not compensated by additional stakeholder support. Firms therefore need to manage and engage with their stakeholders wisely in order to benefit financially from their environmental CSR.

Our results furthermore highlight the importance of the regional context in which firms seek to manage their environmental CSR financially successful. Whereas in North America the moderators on the board as well as the workforce level have positive effects, in Europe positive results are only identified on the level of the workforce. The counterintuitive effect of the institutional environment is most pronounced in Asia. Future research will benefit from delving into these differences and incorporating additional dimensions to capture and distinguish the institutional environment across these regions. Various economic systems (or forms of capitalism), regulatory regimes as well cultural values may be promising to consider to better explain why the studied patterns differ globally.

We use Tobin's Q to measure financial performance. Therefore, an explanation for our findings could be different shareholders' valuation of environmental CSR activities in Asia compared to Europe and North America. As the Global Sustainable Investment Review of 2014 shows, sustainable investment is more widespread in North America and Europe than in Asia during the years included in our study (Global Sustainable Investment Alliance, 2014) although shareholders tend to become more alert to sustainability-oriented investments in Asia as well (Global Sustainable Investment Alliance, 2016). Accordingly, stronger knowledge conditions of the institutional environment in Asia that are related to conflicting stakeholder interests could be even counter-

productive for firms in terms of satisfying shareholder interests. Future research is needed to better illuminate when the institutional environment may substitute rather than complement utilization of knowledge within the firm and its decisions about environmental CSR. The direction giving role of the board level for environmental CSR in North America is in line with prior studies (i.e., Walls, Berrone, & Phan, 2012; Walls & Hoffman, 2013). The North American region is often associated with shareholder orientation which can be an explanation for the board level effects. In contrast, Europe tends to be more stakeholder oriented which particularly includes the employees and may have led to having only effects on the workforce level.

Noteworthy, our multi-level results differ from prior studies that were restricted to the influence of the institutional environment's characteristics on (environmental) CSR (Buysse & Verbeke, 2003; Christmann, 2004; Delmas & Toffel, 2004; Husted & de Sousa-Filho, 2017). Following Orlitzky, Louche, Gond and Chapple (2017) with our multi-level approach, we combine characteristics of the firm level (board and workforce) *and* the institutional environment level. We believe that our more comprehensive framework helps to better explain under which conditions environmental CSR may be beneficial to financial performance. Institutional effects may therefore be spurious if board and workforce level differences are not adequately taken into consideration. Future research may also deal with potential interactions among the various levels that were beyond the scope of the present study.

Practical Implications

Firms engage in environmental CSR to sustain their competitiveness due to widespread stakeholder expectations. This engagement in environmental CSR is by no means tantamount to generating negative impacts on financial performance. However, environmental CSR needs to be well substantiated and wisely managed to generate positive financial success. In the present

study, we demonstrate that knowledge conditions on the levels of the board and the workforce of the firm can be conducive to yield the financial benefits of environmental CSR. Influencing the knowledge management conditions on these two levels is, to a large extent, within the discretion of the firm. Companies are therefore well advised to consider the extent of their knowledge bases within their board of directors and their workforce.

Boards need to be of sufficient size to make well founded decisions on environmental CSR (cf. Liao, Luo, & Tang, 2015). Moreover, director recruitment should also consider which contributions a newly appointed individual may make to the knowledge stock of the board. Such assessment may rest on knowledge profiles that directors may be able to bring in or the board as a whole may benefit from (cf. Osagie, Wesselink, Blok, & Mulder, 2019). Board chairpersons should ensure that there are abundant occasions to share knowledge within the board and to incorporate new insights in order to reconfigure or enlarge the knowledge bases of the board. Similarly, the extent and design of knowledge bases within the workforce deserve attention. Firms may want to assess which knowledge, skills and abilities of incumbent and future employees are available and needed to deal with challenges in forming and implementing their environmental CSR. In addition, all firm members need to have ample opportunities to share their knowledge and to develop their knowledge further. Following the results of this study, it is not enough to solely increase environmental CSR. Firms also need to have knowledge management conditions that support and enable a transformation of environmental CSR into financial success. This may also help to overcome frequently observed tensions between sustainability and mainstream business strategies (Hengst, Jarzabkowski, Muethel, & Hoegl, 2019).

<u>Concluding Remarks</u>

Our study is the first to conceptualize knowledge on three different levels as a moderator in the relationship between environmental CSR and corporate financial performance. We identified the knowledge conditions of the board as well as the workforce as valuable resources for managing environmental CSR with financially positive results. Notably, the extent of the knowledge bases within the institutional environment may have a negative influence on turning environmental CSR into firm's financial success. We further revealed that the results appear to be shaped by the regions North America, Europe and Asia. The observed cross-regional differences need to be considered in more depth to better capture and illuminate the complex mechanisms about how managing environmental CSR is related to financial performance. Our results support the notion that future research in this field should address multi-level knowledge-based moderators and elaborate on regional differences of the link between environmental CSR and corporate financial performance.

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TABLE 1
Location of the Firms' Headquarters in the Sample

Continent	Country	Number of Firms	Observations per Firm (Mean)	Minimum	Maximum
Africa	Egypt	2	1.00	1	1
	South Africa	19	2.37	1	4
Asia	China	54	3.09	1	4
	Hong Kong	16	3.19	2	4
	India	4	2.25	1	5
	Indonesia	7	3.00	1	4
	Israel	7	3.00	1	4
	Japan	278	3.99	1	5
	Korea (South)	61	2.67	1	4
	Malaysia	13	2.46	1	5
	Papua New Guinea	1	2.00	2	2
	Philippines	5	2.20	1	3
	Russian Federation	10	2.30	1	4
	Saudi Arabia	1	4.00	4	4
	Singapore	7	3.00	1	4
	Taiwan	81	2.70	1	4
	Thailand	2	1.50	1	2
	Turkey	14	2.93	1	4
	United Arab Emirates	1	1.00	1	1
Australia	Australia	70	2.99	1	5
	New Zealand	3	3.67	3	5
Europe	Austria	9	3.33	1	4
	Belgium	7	3.00	1	4
	Denmark	14	3.93	2	5
	Finland	14	3.07	2	4
	France	34	3.76	1	5
	Germany	54	3.63	1	5
	Gibraltar	1	3.00	3	3
	Greece	3	2.33	1	4
	Hungary	1	3.00	3	3
	Ireland	15	3.40	1	4
	Italy	9	2.67	1	4
	Luxembourg	2	4.00	4	4
	Netherlands	21	3.05	1	4
	Norway	7	3.00	2	4
	Poland	2	3.50	3	4
	Portugal	1	1.00	1	1
	Spain	8	2.75	1	4
	Sweden	20	3.50	1	4
	Switzerland	38	3.55	1	5
	United Kingdom	88	3.47	1	5
North America	Bermuda	5	3.00	2	5
	Canada	89	2.28	1	4
	Cayman Islands	1	3.00	3	3
	United States	537	3.16	1	5
South America	Brazil	19	2.16	1	4
	Chile	1	1.00	1	1
	Colombia	4	1.75	1	4
	Mexico	5	1.60	1	3

TABLE 2

Descriptions of Variables

Variables	Description
Dependent variable:	
Tobin's Q (ln) (t+1)	Natural logarithm of the ratio of market value to book value (in period t+1)
Independent variables:	
Environmental CSR	Pillar Score provided by the Asset4 database (in period t)
Board Conditions	Ordered ordinal board knowledge conditions variable with potential values of 0, 1, 2 or 3 with 0 being the lowest value and 3 the highest that is created by summing-up three sub dummy variables: Board Stock Conditions, Board Communication Conditions and Board Training Conditions (in period t)
Workforce Conditions	Ordered ordinal workforce knowledge conditions variable with potential values of 0, 1, 2 or 3 with 0 being the lowest value and 3 the highest that is created by summing-up three sub dummy variables: Workforce Stock Conditions, Workforce Communication Conditions and Workforce Training Conditions (in period t)
Institutional Environment Conditions	Ordered ordinal institutional environment knowledge conditions variable with potential values of 0, 1, 2 or 3 with 0 being the lowest value and 3 the highest that is created by summing-up three sub dummy variables: Institutional Environment Stock Conditions, Institutional Environment Communication Conditions and Institutional Environment Training Conditions (in period t)
Interaction variables:	
Board Conditions * Environmental CSR	Interaction of the variables "Board Conditions" and "Environmental CSR" (in period t)
Workforce Conditions * Environmental CSR	Interaction of the variables "Workforce Conditions" and "Environmental CSR" (in period t)
Institutional Environment Conditions * Environmental CSR	Interaction of the variables "Institutional Environment Conditions" and "Environmental CSR" (in period t)
Control variables:	
Firm Size (ln)	Natural logarithm of the total assets (in period t)
R&D Intensity	Ratio of capital expenditures to sales (in period t)
Capital Intensity	Ratio of research and development expenditures to sales (in period t)
SG&A Intensity	Ratio of selling, general and administrative expenditures to sales (in period t)
Sales Growth	Sales growth (period t versus period t-1)
Leverage	Ratio of total debt to total assets (in period t)
Analyst Coverage	Number of analysts that cover the firm (in period t)
Diversification (ln)	Natural logarithm of the total number of four-digit SIC codes that a firm operates in with potential values of 1 to 8 (in period t)

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TABLE 3

Descriptive Statistics and Correlations

	Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	VIF
1	Tobin's Q (ln) (t+1)	0.44	0.50												
2	Environmental CSR	60.69	31.81	-0.17***											1.57
3	Board Conditions	1.69	0.86	0.04***	0.14***										1.25
4	Workforce Conditions	1.70	0.84	-0.30**	0.47***	0.26***									1.47
5	Institutional Environment Conditions	1.56	0.93	0.23***	-0.13***	0.32***	0.12***								1.24
6	Firm Size (ln)	15.57	1.44	-0.29***	0.50***	0.25***	0.40***	-0.11***							1.96
7	R&D Intensity	0.06	0.27	0.13***	-0.09***	-0.00	-0.07***	0.07***	-0.17***						1.08
8	Capital Intensity	0.11	0.70	-0.02	-0.08***	-0.01	-0.06***	0.03**	-0.08***	0.12***					1.03
9	SG&A Intensity	0.32	2.93	0.01	-0.03*	0.01	-0.02	0.04**	-0.05***	0.18***	0.05***				1.04
10	Sales Growth	0.17	6.98	0.01	-0.04***	0.00	-0.02	0.05***	-0.04***	0.07***	0.06***	0.03*			1.01
11	Leverage	0.23	0.17	-0.11***	0.10***	0.12***	0.09***	-0.02	0.22***	-0.07***	-0.02	-0.02	-0.01		1.09
12	Analyst Coverage	14.71	8.58	0.17***	0.30***	0.19***	0.35***	0.10***	0.45***	-0.02	-0.06***	-0.01	-0.03**	-0.04***	1.41
13	Diversification (ln)	1.40	0.59	-0.20***	0.28***	0.04***	0.18***	-0.14***	0.38***	-0.09***	-0.09***	-0.04***	-0.01	0.09***	1.23

Note: n = 5333; VIF: variance inflation factor.

* p < .10

** p < .05

*** p < .01

TABLE 4

Random-Effects Regressions Explaining Corporate Financial Performance, 2010-2014, Global

Variables	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
Environmental CSR		0.0004	-0.0003	-0.0004	0.0007*	-0.0005
		(0.0003)	(0.0004)	(0.0004)	(0.0004)	(0.0005)
Board Conditions		-0.0001	-0.0276**	-0.0001	-0.0003	-0.0277**
		(0.0058)	(0.0121)	(0.0058)	(0.0058)	(0.0123)
Workforce Conditions		-0.0046	-0.0044	-0.0374***	-0.0047	-0.0367**
		(0.0073)	(0.0073)	(0.0143)	(0.0073)	(0.0145)
Institutional Environment Conditions		-0.0476***	-0.0474***	-0.0480***	-0.0354***	-0.0281**
		(0.0061)	(0.0061)	(0.0061)	(0.0116)	(0.0117)
Board Conditions * Environmental CSR			0.0004***			0.0004**
			(0.0002)			(0.0002)
Workforce Conditions * Environmental CSR				0.0005***		0.0005**
				(0.0002)		(0.0002)
Institutional Environment Conditions * Environmental CSR					-0.0002	-0.0003*
					(0.0002)	(0.0002)
Firm Size (ln)	-0.1116***	-0.1163***	-0.1171***	-0.1162***	-0.1157***	-0.1161***
	(0.0076)	(0.0081)	(0.0081)	(0.0081)	(0.0081)	(0.0081)
R&D Intensity	0.0603***	0.0591***	0.0591***	0.0588***	0.0590***	0.0585***
	(0.0143)	(0.0142)	(0.0142)	(0.0142)	(0.0142)	(0.0142)
Capital Intensity	-0.0073	-0.0079	-0.0081	-0.0083	-0.0079	-0.0084
	(0.0059)	(0.0059)	(0.0059)	(0.0059)	(0.0059)	(0.0058)
SG&A Intensity	-0.0008	-0.0007	-0.0007	-0.0007	-0.0007	-0.0007
	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0012)
Sales Growth	-0.0008**	-0.0007*	-0.0008*	-0.0008*	-0.0008*	-0.0008**
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
Leverage	-0.1300***	-0.1454***	-0.1424***	-0.1435***	-0.1460***	-0.1417***
	(0.0353)	(0.0352)	(0.0352)	(0.0352)	(0.0352)	(0.0352)
Analyst Coverage	0.0031***	0.0028***	0.0029***	0.0027***	0.0028***	0.0028***
	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)
Diversification (ln)	0.0042	0.0087	0.0085	0.0079	0.0081	0.0069
	(0.0181)	(0.0182)	(0.0181)	(0.0181)	(0.0182)	(0.0181)
Constant	1.8658***	2.0543***	2.1107***	2.0906***	2.0250***	2.0996***
	(0.1295)	(0.1338)	(0.1353)	(0.1344)	(0.1359)	(0.1370)
Wald $\chi 2$	1140.58***	1212.03***	1224.07***	1221.29***	1213.83***	1234.40***
R^2 within	0.0949	0.1138	0.1126	0.1143	0.1148	0.1148
R^2 between	0.3070	0.3033	0.3076	0.3053	0.3024	0.3079
R^2 overall	0.3059	0.3036	0.3075	0.3053	0.3027	0.3075

Note: n = 5333; year, industry and region dummies included in all models; dependent variable: Tobin's Q (ln) (t+1) .

* $p < .10$

** $p < .05$

*** $p < .01$

TABLE 5

Random-Effects Regressions Explaining Corporate Financial Performance, 2010-2014, North America

Variables	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
Environmental CSR		0.0006	-0.0011	-0.0010	0.0011	-0.0020
		(0.0005)	(0.0008)	(0.0010)	(0.0008)	(0.0013)
Board Conditions		-0.0236**	-0.0699***	-0.0235**	-0.0237**	-0.0680***
		(0.0101)	(0.0194)	(0.0101)	(0.0101)	(0.0194)
Workforce Conditions		-0.0250	-0.0241	-0.0588**	-0.0255	-0.0555**
		(0.0168)	(0.0168)	(0.0251)	(0.0168)	(0.0252)
Institutional Environment Conditions		-0.1632***	-0.1644***	-0.1626***	-0.1512***	-0.1523***
		(0.0243)	(0.0242)	(0.0243)	(0.0287)	(0.0287)
Board Conditions * Environmental CSR			0.0008***			0.0008***
			(0.0003)			(0.0003)
Workforce Conditions * Environmental CSR				0.0010*		0.0009*
				(0.0005)		(0.0005)
Institutional Environment Conditions * Environmental CSR					-0.0002	-0.0002
					(0.0003)	(0.0003)
Firm Size (ln)	-0.1193***	-0.1148***	-0.1155***	-0.1162***	-0.1143***	-0.1163***
	(0.0131)	(0.0141)	(0.0141)	(0.0141)	(0.0141)	(0.0141)
R&D Intensity	0.0490	0.0421	0.0377	0.0430	0.0406	0.0372
	(0.0445)	(0.0440)	(0.0440)	(0.0439)	(0.0440)	(0.0440)
Capital Intensity	-0.1938***	-0.1728***	-0.1730***	-0.1726***	-0.1729***	-0.1730***
	(0.0364)	(0.0361)	(0.0360)	(0.0361)	(0.0361)	(0.0360)
SG&A Intensity	-0.0140	-0.0088	-0.0082	-0.0093	-0.0083	-0.0082
	(0.0171)	(0.0169)	(0.0169)	(0.0169)	(0.0169)	(0.0169)
Sales Growth	0.0008	0.0006	0.0006	0.0006	0.0006	0.0005
	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)
Leverage	0.0475	0.0303	0.0350	0.0305	0.0307	0.0355
	(0.0583)	(0.0576)	(0.0575)	(0.0576)	(0.0576)	(0.0575)
Analyst Coverage	0.0073***	0.0067***	0.0069***	0.0067***	0.0067***	0.0068***
	(0.0015)	(0.0015)	(0.0015)	(0.0015)	(0.0015)	(0.0015)
Diversification (ln)	0.0457	0.0579**	0.0559*	0.0568*	0.0573**	0.0544*
	(0.0294)	(0.0291)	(0.0290)	(0.0291)	(0.0291)	(0.0290)
Constant	2.0962***	2.3993***	2.4955***	2.4633***	2.3654***	2.5176***
	(0.2294)	(0.2372)	(0.2388)	(0.2396)	(0.2411)	(0.2450)
Wald χ2	485.06***	553.17***	563.30***	557.15***	553.65***	566.94***
R² within	0.1729	0.2054	0.2061	0.2060	0.2058	0.2070
R² between	0.2588	0.2650	0.2733	0.2682	0.2652	0.2760
R² overall	0.2528	0.2529	0.2587	0.2546	0.2530	0.2600

Note: n = 1917; year and industry dummies included in all models; dependent variable: Tobin's Q (ln) (t+1) .

* $p < .10$
** $p < .05$
*** $p < .01$

TABLE 6

Random-Effects Regressions Explaining the Corporate Financial Performance, 2010-2014, Europe

Variables	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
Environmental CSR		-0.0001	0.0003	-0.0036***	0.0010	-0.0018
		(0.0006)	(0.0010)	(0.0011)	(0.0010)	(0.0015)
Board Conditions		-0.0026	0.0136	-0.0013	-0.0034	0.0275
		(0.0119)	(0.0329)	(0.0118)	(0.0119)	(0.0328)
Workforce Conditions		0.0189	0.0186	-0.1268***	0.0196	-0.1315***
		(0.0156)	(0.0156)	(0.0429)	(0.0156)	(0.0432)
Institutional Environment Conditions		0.0049	0.0047	0.0042	0.0493	0.0486
		(0.0132)	(0.0132)	(0.0132)	(0.0312)	(0.0310)
Board Conditions * Environmental CSR			-0.0002			-0.0004
			(0.0004)			(0.0004)
Workforce Conditions * Environmental CSR				0.0020***		0.0020***
				(0.0005)		(0.0005)
Institutional Environment Conditions * Environmental CSR					-0.0006	-0.0006
					(0.0004)	(0.0004)
Firm Size (ln)	-0.1254***	-0.1283***	-0.1280***	-0.1295***	-0.1276***	-0.1282***
	(0.0162)	(0.0171)	(0.0172)	(0.0171)	(0.0171)	(0.0171)
R&D Intensity	0.0163	0.0199	0.0248	0.0374	0.0236	0.0506
	(0.1753)	(0.1761)	(0.1765)	(0.1755)	(0.1760)	(0.1757)
Capital Intensity	-0.2262	-0.2198	-0.2199	-0.2213	-0.2091	-0.2105
	(0.1393)	(0.1398)	(0.1399)	(0.1394)	(0.1398)	(0.1394)
SG&A Intensity	0.0909	0.0890	0.0887	0.0640	0.0976	0.0713
	(0.0929)	(0.0935)	(0.0936)	(0.0934)	(0.0936)	(0.0935)
Sales Growth	0.0053	0.0047	0.0051	0.0041	0.0051	0.0054
	(0.0172)	(0.0174)	(0.0175)	(0.0173)	(0.0174)	(0.0173)
Leverage	-0.4258***	-0.4206***	-0.4205***	-0.3947***	-0.4195***	-0.3926***
	(0.0922)	(0.0925)	(0.0925)	(0.0923)	(0.0924)	(0.0923)
Analyst Coverage	0.0039**	0.0038**	0.0038**	0.0037**	0.0038**	0.0037**
	(0.0017)	(0.0017)	(0.0017)	(0.0017)	(0.0017)	(0.0017)
Diversification (ln)	-0.0112	-0.0128	-0.0129	-0.0100	-0.0130	-0.0102
	(0.0397)	(0.0398)	(0.0398)	(0.0398)	(0.0397)	(0.0398)
Constant	2.4588***	2.4697***	2.4363***	2.7219***	2.3715***	2.5698***
	(0.2899)	(0.2952)	(0.3023)	(0.3028)	(0.3013)	(0.3139)
Wald χ2	386.73***	387.64***	387.58***	404.05***	390.75***	408.02***
R² within	0.2077	0.2092	0.2099	0.2226	0.2101	0.2249
R² between	0.3315	0.3317	0.3308	0.3295	0.3349	0.3317
R² overall	0.3119	0.3122	0.3120	0.3158	0.3144	0.3184

Note: n = 1194; year and industry dummies included in all models; dependent variable: Tobin's Q (ln) (t+1) .

*   p < .10

**   p < .05

*** p < .01

TABLE 7

Random-Effects Regressions Explaining Corporate Financial Performance, 2010-2014, Asia

Variables	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
Environmental CSR		0.0004	0.0002	0.0003	0.0009**	0.0006
		(0.0003)	(0.0004)	(0.0004)	(0.0004)	(0.0005)
Board Conditions		0.0264***	0.0182	0.0264***	0.0261***	0.0118
		(0.0076)	(0.0174)	(0.0076)	(0.0076)	(0.0176)
Workforce Conditions		0.0193**	0.0194**	0.0177	0.0204**	0.0153
		(0.0085)	(0.0085)	(0.0188)	(0.0085)	(0.0189)
Institutional Environment Conditions		-0.0237	-0.0238	-0.0238	0.0260	0.0283
		(0.0148)	(0.0148)	(0.0148)	(0.0234)	(0.0236)
Board Conditions * Environmental CSR			0.0001			0.0002
			(0.0002)			(0.0002)
Workforce Conditions * Environmental CSR				0.0000		0.0001
				(0.0002)		(0.0002)
Institutional Environment Conditions * Environmental CSR					-0.0008***	-0.0008***
					(0.0003)	(0.0003)
Firm Size (ln)	-0.1323***	-0.1451***	-0.1449***	-0.1450***	-0.1459***	-0.1456***
	(0.0128)	(0.0131)	(0.0131)	(0.0131)	(0.0131)	(0.0131)
R&D Intensity	-0.7895***	-0.7625***	-0.7603***	-0.7614***	-0.8185***	-0.8172***
	(0.2491)	(0.2481)	(0.2479)	(0.2483)	(0.2485)	(0.2486)
Capital Intensity	0.0773	0.0777	0.0780	0.0775	0.0850	0.0861
	(0.0658)	(0.0657)	(0.0657)	(0.0657)	(0.0656)	(0.0657)
SG&A Intensity	0.0492	0.0462	0.0465	0.0461	0.0475	0.0482
	(0.0448)	(0.0448)	(0.0449)	(0.0448)	(0.0447)	(0.0448)
Sales Growth	0.0376**	0.0452***	0.0453***	0.0453***	0.0450***	0.0453***
	(0.0165)	(0.0168)	(0.0168)	(0.0168)	(0.0167)	(0.0168)
Leverage	-0.1997***	-0.2169***	-0.2179***	-0.2169***	-0.2182***	-0.2197***
	(0.0649)	(0.0650)	(0.0649)	(0.0650)	(0.0649)	(0.0649)
Analyst Coverage	0.0013	0.0008	0.0009	0.0008	0.0008	0.0008
	(0.0008)	(0.0008)	(0.0008)	(0.0008)	(0.0008)	(0.0008)
Diversification (ln)	-0.0431	-0.0451	-0.0451	-0.0452	-0.0478*	-0.0481*
	(0.0286)	(0.0284)	(0.0283)	(0.0284)	(0.0285)	(0.0284)
Constant	2.4779***	2.6150***	2.6223***	2.6151***	2.5947***	2.6103***
	(0.2150)	(0.2161)	(0.2162)	(0.2161)	(0.2164)	(0.2166)
Wald χ2	310.52***	339.72***	341.18***	339.67***	347.47***	349.23***
R² within	0.0898	0.1010	0.0998	0.1009	0.1107	0.1091
R² between	0.2441	0.2520	0.2542	0.2522	0.2453	0.2487
R² overall	0.1963	0.2049	0.2070	0.2050	0.2000	0.2033

Note: n = 1898; year and industry dummies included in all models; dependent variable: Tobin's Q (ln) (t+1) .

*   p < .10
**   p < .05
***   p < .01