National culture and environmental responsibility research revisited

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A R T I C L E I N F O

1. Introduction

While environmentally responsible corporate strategies become increasingly mainstream (Lacy, Cooper, Hayward, & Neuberger, 2010), there are noteworthy international differences in the extent to which companies have embraced practices reflecting Corporate Environmental Responsibility (CER) (e.g., Wiengarten, Pagell, & Fynes, 2013). These differences can in part be explained on the basis of the level of economic and social development of nations (Baughn, Bodie & McIntosh, 2007). Business strategies are not developed in a vacuum, but are influenced by the societal context of companies, and recently researchers have started to uncover the societal roots of attitudes towards CER. Two different aspects of national societal contexts can be distinguished: the institutional environment and the cultural environment (Ioannou & Serafeim, 2012). It stands to reason that the formal institutional environment impacts on CER policies of firms, as this environment includes regulative elements like rules, sanctions and regulations (Scott, 2001). These formal institutional elements are likely to alter the cost-benefit analysis of environmental policies (Palmer, Oates, & Portney, 1995) and hence directly influence decisions with regard to CER. The cultural environment, including informal institutional elements like values and norms, in contrast, is likely to exert a more indirect influence on CER policies.

We focus in this paper on this second aspect, and investigate how values, norms and beliefs embedded in the national culture of a country (Doney, Cannon, & Mullen, 1998) impact on CER. In doing so we pursue three aims. Firstly, we want to extend theory by articulating expectations about how different dimensions of national culture impact on CER, over and above what has been done in previous work. Secondly, we seek to provide a strong empirical basis for cumulative knowledge about the national culture − CER relation by investigating

multiple data bases of CER. And thirdly, we strive to provide robust results by comparing outcomes of different estimation techniques.

For this purpose we build on work on the national culture – CER relation that has focused on Hofstede's dimensions of national culture. Hofstede's (1980, 2011); indices of country-level cultural characteristics have been widely used in management research (for an overview, see Kirkman, Lowe, & Gibson, 2006). Recently Hofstede's work has evoked criticism, e.g., regarding the validity of Hofstede's measures and the use of the nation state as the level of analysis (see, e.g., McSweeney, 2002; Smith, 2002). However, in order to allow us to compare our study with those previously done in this field we look at national culture as measured by Hofstede.

A few empirical studies have investigated how (a subset of) Hofstede's indices impact on CER (Cox, Friedman, & Tribunella, 2011; Gallego-Álvarez & Ortas, 2017; Husted, 2005; Park, Russell, & Lee, 2007; Thanetsunthorn, 2015; Tsoy & Yongqiang, 2016). More studies have looked at the influences of national culture on the broader concept of Corporate Social Responsibility (CSR), which includes CER (e.g., Halkos & Skouloudis, 2016; Ho, Wang, & Vitell, 2012; Ioannou & Serafeim, 2012; Peng, Dashdeleg, & Chih, 2014; Ringov & Zollo, 2007). However, the various dimensions of CSR are fundamentally different (Inoue & Lee, 2011), and lumping together the environmental with other aspects of CSR makes it difficult to judge in how far findings of these studies also apply to the more restricted concept of CER.

Moreover, the limited empirical work that has been done lacks in comparability because of the use of different, and often small samples of countries, different operationalizations of CER, different indicators of national cultures and different estimation techniques. This is regrettable, because understanding the influence of national culture on CER practices of firms is of considerable theoretical and practical importance. From a theoretical perspective it is interesting to understand

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how the culture of the country of origin of a company impacts on CER policies, because this increases our insights in how business strategy is influenced by the social environment of firms (Dacin, Ventresca, & Beal, 1999). Practically, understanding better the influence of the national cultural environment on firms' decisions with regard to CER enables governments and other parties interested in increasing CER to tailor their policies to the local circumstances, rather than copying what is done in other countries.

Given the present state of research, we set out in this study to provide robust insights into the relations between cultural dimensions and CER. Our research makes three types of contributions to the literature: theoretical, empirical and methodological. First, rather than just replicating what previous studies have done, we will not only analyze Hofstede's well-known dimensions of individualism-collectivism, power distance, uncertainty avoidance and masculinity-femininity (Hofstede, 2001), but also look at the effects of two more recently identified cultural dimensions: long-term orientation and indulgence-restraint (Hofstede, 2011).

Empirically, our study contributes by drawing on three different datasets measuring CER (Sustainalytics, ASSET4 and Vigeo) rather than just one source of data. Whereas ASSET4 has been used in previous research into the relationship between national culture and CSR, no previous research has used Sustainalytics or Vigeo. Together, these datasets cover CER policies of over 3000 firms (correcting for overlap between the datasets) in 41 countries, spanning five continents. Findings that converge across these three datasets may be taken to provide a robust assessment of the relationship between national culture and CER.

Methodologically our research contributes to existing literature by employing three different econometric techniques to estimate the relationship between national culture and CER: Ordinary Least Squares (OLS), OLS with clustered standard errors, and mixed linear (multilevel) modeling. It is well known that standard regression analysis leads to an overestimation of the significance of the coefficient estimates, especially of the variables at the macro level, because the assumption that the errors are independently and identically distributed is violated (Arregle, Hebert, & Beamish, 2006; Primo, Jacobsmeijer & Milyo, 2007; Peterson, Arregle, & Martin, 2012). One method to overcome this problem is using clustered standard errors (Primo, Jacobsmeijer, & Milyo, 2007). An even more discriminating method is multilevel modeling (Peterson, Arregle, & Martin, 2012). Most previous research on CER and CSR applied OLS (or binary logistic regression), only Ioannou and Serafeim (2012) used clustered standard errors to take account of the nested data structure of firms in countries. No research so far has used multilevel modeling. Our aim is to study how robust previous results obtained with OLS or OLS with clustered standard errors are against the more advanced method of mixed linear multilevel modeling.

Below we first present an overview of previous research on the effects on CER of individualism-collectivism, power distance, uncertainty avoidance and masculinity-femininity. After that we focus on the long-term orientation and indulgence-restraint dimensions, and theorize how these aspects of national culture might impact on CER. Subsequently, we describe our data sources and the model specification, followed by the presentation of our empirical findings. We conclude with a discussion of the main findings and their implications.

2. Literature overview

Interest in the relationship between national culture and CER started off about a decade ago (Husted, 2005), and a series of studies have been published since (for an overview, see Table 1). The majority of the studies have relied on s work (1980, 2001); for the operationalization of national culture, and we will concentrate on these studies.

Hofstede's dimensions have become the de-facto standard in cross-

Table 1
Overview of Previous Findings Regarding Effects of National Culture on CER in Literature.

Source	Sample	Measure of CER	Hofstede dimensions included	Other country-level cultural or institutional characteristics included	Estimation method	Significant findings regarding Hofstede dimensions
Husted (2005)	Country-level data from 52 countries; CER data from 2001	ESI subscale social and situational capacity	IDV; PDI; UAI; MAS	None	OLS	PDI; MAS; IDV +;
Park et al. (2007)	Country-level data from 43 countries; CER data from 2001	ESI overall scale	IDV; PDI; UAI; MAS	Level of education	OLS	PDI; MAS-
Cox et al. (2011)	Country-level data from 69 countries; CER data from 2004.	ESI overall scale	IDV; PDI; UAI; MAS	None	OLS	PDI; MAS-; UAI+;
Ioannou and Serafeim (2012)	Firm-level data from 930–2391 firms; 42 countries; CER data from 2002 to 2008	ASSET4 composite index of environmental performance	IDV; PDI	Indicators of political systems, education and labor systems, and financial systems	OLS with clustered and robust standard errors	PDI+; IDV +
Thanetsunthorn (2015)	Country-level data from 28 countries in Eastern Asia and Europe; CER data from 2013	Environmental performance category of the CSRHub database	IDV; PDI; UAI; MAS	Economic risk; country risk; life expectancy; human development index	OLS; TOBIT	PDI; IDV; UAI +
Tsoy and Yongqiang (2016)	Country-level data from 41 countries; CER data from 2015	Sustainability-adjusted Global Competitiveness Index.	IDV; PDI; UAI; MAS	Sustainable governance (Bertelsmann Foundation)	OLS	MAS +
Gallego-Álvarez and Ortas (2017)	Firm level data from 3917 companies; 59 countries; CER data from "2010 period"	Composite index based on GRI core indicators	IDV; PDI; UAI; MAS plus long-term orientation (labeled "pragmatism") and indulgence-restraint	Size; leverage; ROA; R&D spending; total market return; market capitalization; industry	Quantile regression analysis	PDI; MAS; UAI+; long-term orientation +; indulgence-restraint- (all effects only for companies in the higher quantiles of CER)