Which aspects of CSR predict firm market value?

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Abstract

Purpose – There is evidence that corporate social responsibility (CSR) practices predict higher firm value, but little evidence on which specific aspects of CSR drive this relationship. The purpose of this paper is to study this question in a sample drawn from 35 countries over 2003-2016.
Design/methodology/approach – The authors employ a research design that analyzes observational data with panel data methods including ordinary least squares, firm-random effects, and firm-fixed effects.
Findings – The authors find in a sample drawn from 35 countries over 2003-2016 an economically significant relationship between an overall CSR measure and firm value. The overall CSR score builds on data from Asset4 and is comprised of three indices for environmental, social, and corporate governance aspects of CSR. The authors find that the social index consistently predicts higher market value. The authors also show that the use of particular elements of CSR can lead to substantial omitted variables bias when predicting firm value. The results also suggest a similar bias in studies that focus on a single index, which captures a specific aspect of CSR, but omits the remaining aspects.
Research limitations/implications – The study is subject to limitations common to observational studies.
Practical implications – The authors find robust evidence that CSR predicts market value using a country-benchmarked overall CSR index. The power to predict firm value comes solely from the social dimension of this measure, which captures firm-level practices related to treatment of employees and stakeholder relations including those with customers and the broader community. Three elements drive the social index: customer/product responsibility, human rights, and employment quality. None of the remaining 12 elements significantly predicts firm vale in an empirical setting with firm-FE and extensive covariates. The authors also show that omitted aspects of CSR can easily lead to an omitted variable bias and that the magnitude of this bias is potentially greater with an OLS specification.
Social implications – Among the many dimensions of CSR, only a subset drives firm value. Policies that target to improve the CSR performance of firms adopt a broader definition of CSR.
Originality/value – The authors provide first-hand evidence on which specific aspects of CSR drive firm market value.

Keywords Corporate governance, Social performance, Corporate social responsibility, Firm value, Environmental performance, Omitted variables bias

Paper type Research paper

1. Introduction

The last decade has witnessed that corporate social responsibility (CSR) has become a significant theme in strategic business decisions (*The Economist*, 2008). In PwC's (2014) 17th Annual Global CEO Survey, 75 percent of CEOs suggest that satisfying societal needs, beyond those of investors, customers and employees, and protecting the interests of future generations is important. A similar view emerges from the Edelman Trust Barometer (2014) suggesting that 84 percent of responding consumers believe that business can pursue its self-interest while doing good work for society. While the emphasis on CSR is shaping the relationship between companies and their stakeholders, there is a lack of agreement on the antecedents and consequences of CSR, and perhaps more importantly, a unified

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definition of CSR (Griffin and Mahon, 1997; Orlitzky *et al.*, 2003; Margolis and Walsh, 2003; Margolis *et al.*, 2009).

CSR is a complex and multifaceted concept and comprises a broad range of activities of the firm with its various stakeholders. While for some companies, the social dimension of CSR (e.g. the treatment of employees) is important, other companies may care more about their relationship with suppliers and expect them to meet certain standards. Still for some others, environmental aspects (e.g. control of emissions) may be more relevant. Such CSR activities involve that companies go beyond country-level statutory requirements in the provision of goods and services with a public character and in internalizing the externalities they create. CSR can benefit firms through various channels. CSR may improve, for example, brand value, and enhance reputational effects (Baron, 2001). Some CSR activities can make the firm more attractive to employees (Turban and Greening, 1997), increase productivity (McGuire *et al.*, 1988; Waddock and Graves, 1997), contribute to smoother relationships with regulators, and help the firm meet the standards and expectations of its customers and thereby increase revenues (Teraji, 2009). Better CSR performance is also related to better stakeholder engagement and thereby reduce information asymmetries, agency problems, and other types of transaction costs. CSR can also be an insurance mechanism against reputational risks (Godfrey *et al.*, 2009; Koh *et al.*, 2014) and create intangible assets (Gardberg and Fombrun, 2006). This suggests that contracting with stakeholders takes place based on mutual trust and cooperation (Jones, 1995). However, some of these issues can be costly (Palmer *et al.*, 1995), both in terms of direct costs (e.g. when expenditures for charitable donations or environmental protection increase) and so reduce profits. CSR activities can also reduce firms' flexibilty by introducing additional constraints and thereby lead to lower operating efficiency, which contributes indirectly to the costs of the CSR activities (Claessens and Yurtoglu, 2013).

This paper builds on our previous work (Bajic and Yurtoglu, 2018) and suggests that observational CSR studies of whether CSR predicts higher shareholder value can be subject to omitted variable bias (OVB), which poses an important challenge to identification. While OVB is ubiquitous virtually in all studies that use observational research designs, its specific consequences in CSR research have not been studied extensively. Many studies of CSR use a single, specific CSR construct which is either not available (e.g. environmental disclosure) or not meaningful for firms in other industries (e.g. hazardous waste reduction). In their influential meta-analysis including 251 studies, Margolis *et al.* (2009) show that a substantial fraction of these studies use a specific CSR construct, which measures only a limited number of CSR practices. However, different aspects of CSR are often correlated. Firms with superior performance in one of these aspects, e.g., in reducing emissions, are likely to perform well also on other dimensions, e.g., reducing resources. A study, which analyzes the impact of only one of these aspects in isolation from other aspects may document a relationship between the included aspect and a measure of performance, however, the true driver of superior performance can be an omitted dimension of CSR. This raises concerns both for studies that use a broad measure of CSR and for studies that employ a specific measure. Using a broad measure of CSR raises the concern that the true driver(s) would remain hidden in the definition of the broad measure and using a specific measure might suggest a link between this measure and firm value due its correlation with other aspects omitted from the analysis. Both approaches can potentially deliver misleading policy recommendations.

We deal with this problem by using *ESG* measures of three different granularities. We first employ a broad measure of CSR, using data from ASSET4, reflecting firm-level choices and activities in dealing with *ESG* issues. One major advantage of using this broad index is that it captures the differences across many countries, but has sufficient commonality across countries to allow for generalization. Using this measure, we assess

whether CSR affects firm market value (proxied by Tobin's *q*) and how estimates from firm fixed effects (FE) or random effects (RE) with extensive covariates differ from pooled OLS results. In the second step, we analyze whether the components of this broad measure, comprised of environmental (*E*), social (*S*), and governance (*G*) indices matter for firm value. Then, in a third step, we employ 15 specific elements of these three *ESG* aspects using the same empirical setting. With the use of these three types of measures with increasing granularity, we document the following empirical regularities:

(1) the broad *ESG* measure captures an economically and statistically significant impact of CSR on firm value;

(2) the social aspect of this measure drives the relationship between CSR and firm value; and

(3) only a small subset of the 15 specific elements of the broad CSR measure predict firm value.

In the next part, we present a brief literature review of the relationship between CSR and firm value. Section 3 describes our data sources and details the definitions of the employed variables. Section 4 develops our empirical strategy. Section 5 presents our results. Section 6 concludes.

2. The relationship between CSR and corporate financial performance (CFP)

The empirical literature on CSR, especially in the US corporate context is vast. Three influential papers survey this literature (Margolis and Walsh, 2003; Orlitzky *et al.*, 2003; and Margolis *et al.*, 2009) and report a significantly positive, albeit quite small effect of CSR on CFP[1]. A large fraction of these studies use measures of CSR that specifically focus on environmental performance and self-reported social performance. With third-party audits used to assess CSR, one obtains usually a weaker association between CSR and corporate performance.

The studies included in the above-mentioned surveys use substantially different empirical strategies. Earlier studies (e.g. Spicer, 1978; Aupperle *et al.*, 1985; Spencer and Taylor, 1987) report pure associations of various measures of CSR and CFP. Other studies use a regression framework with limited controls for firm characteristics. These studies usually rely on cross-sectional data or cross-sectional methods (e.g. Waddock and Graves, 1997; Hillman and Keim, 2001) which gives rise to endogeneity concerns, including the potential for both reverse causation and OVB. Novel exceptions include Dowell *et al.* (2000) who analyze the environmental standards in a sample of US multinational companies using a RE specification. They report that adopting a single stringent environmental standard globally is associated with higher market valuations than adhering to local or US environmental standards. Berman *et al.* (1999) adopt a two-step GLS approach and identify which aspects of CSP matter for the firms in their sample. Garcia-Castro *et al.* (2010) employ panel data models using KLD data on US firms and show that CSR predicts higher performance in OLS equations, but not in FE specifications.

Sharfman and Fernando (2008) and El Ghoul *et al.* (2011) show that firms which display higher levels of CSR enjoy lower costs of equity capital. This findings is consistent with the notion that CSR performance can affect firm value by decreasing financial risk (Kim *et al.*, 2014; Orlitzky and Benjamin, 2001). Cheng *et al.* (2014) document that firms with better CSR performance face significantly lower capital constraints and have easier access to finance. More recently, Liang and Renneboog (2018) report a positive relationship between CSR and firm value in a sample of 4,700 large, public companies. A positive relationship between CSR and firm value is also reported by Lins *et al.* (2017) who study the 2008-2009 financial crisis period.

We provide a brief overview of studies that focus on the relationship between CSR and firm value, but not covered in the above-mentioned surveys, in Table I.

Table I. Overview of studies on CSR and firm value

Study	Sample period	Dependent variable	Measure of CSR: Overall	Social	Environmental	Overview
Albuquerque *et al.* (2014)	2003-2011	Firm value, firm risk, Tobin's *q*	+			CSR is considered as an investment in customer loyalty. Empirically, CSR reduces systematic risk on average and more strongly for firms producing differentiated goods and when consumers' expenditure share on CSR goods is small
Bouslah *et al.* (2013)	1991-2007	Firm risk	+	+	+	Firm risk for S&P500 index constituents is positively affected by employee, diversity, and governance concerns. Community (Diversity) strengths negatively (positively) affect firm risk. As to non-S&P500 members, firm risk is positively affected by employee concerns and diversity strengths. However, firm risk of non-S&P500 members is negatively affected by Environment strengths
Chava (2014)	1992-2007	Implied cost of equity			+	Investors demand significantly higher expected returns on stocks with environmental concerns compared to firms without such concerns. Lenders charge a significantly higher interest rate on bank loans issued to firms with these environmental concerns
Dhaliwal *et al.* (2014)	1992-2007	Implied cost of equity	+[a]			Negative association between CSR disclosure and the cost of equity capital; this relationship is more pronounced in stakeholder-oriented countries. There is also evidence that financial and CSR disclosures act as substitutes for each other in reducing the cost of equity capital
Dimson *et al.* (2015)	1999-2009	Firm value, Tobin's *q*	+	+	+	Successful CSR engagements with US public companies experience positive abnormal returns. Firms with reputational concerns and higher capacity to implement changes are more likely to experience positive abnormal returns
El Ghoul *et al.* (2011)	1992-2007	Implied cost of equity	+	+	+	Firms with better CSR rankings enjoy cheaper equity financing. Investment in improving CSR rating contributes substantially to reducing cost of equity. Participation in two "sin" industries, tobacco and nuclear power, increases firms' cost of equity
Flammer (2015)	1997-2012	Firm value	+[a]			One of the few papers using a quasi-natural experiment design (regression discontinuity design). The passage of "close-call" CSR-related shareholder proposals is similar to a random assignment of CSR to companies and leads to positive announcement returns and better accounting performance. The channels are higher labor productivity and sales growth

(*continued*)

Table I.

Study	Sample period	Dependent variable	Measure of CSR: Overall	Social	Environmental	Overview
Liang and Renneboog (2018)	2002-2013	Tobin's *q*	+[a]	+[a]	+[a]	CSR performance is higher when dividends are high, leverage is high, cash flows and cash holdings are low, and when there is a high managerial pay-for-performance sensitivity. There is a positive relation between CSR investments and Tobin's *q* (with instrumental variables) suggesting a causal link between good governance and high CSR and Tobin's *q* During the 2008-2009 financial crisis, firms with high CSR intensity had stock returns that were four to seven percentage points higher than firms with low social capital. High-CSR firms also experienced higher profitability, growth, and sales per employee relative to low-CSR firms, and they raised more debt. The evidence suggests that the trust between a firm and both its stakeholders and investors pays off when the overall level of trust in corporations and markets suffers a negative shock
Servaes and Tamayo (2013)	1991-2005	Firm value, Tobin's *q*	+			CSR has a small, negative impact on market value for firms with low advertising intensity, and a positive impact for firms with high advertising intensity. There is no effect with a firm fixed effects specification
Sharfman and Fernando (2008)	2002-2002	Cost of capital	+[a]			Firms benefit from better environmental risk management through a reduction in their cost of equity capital, a shift from equity to debt financing, and higher tax benefits which come with the ability to add more debt

Notes: This table presents an overview of selected papers on the relationship between CSR and firm value, including the authors, the sample period, the independent variable, and the CSR data used. The two most widely recognized *ESG* data sets are KLD and Asset4. All studies use KLD data, except [a]Indicates the use of other sources of CSR data

The analysis of the validity of constructs used to proxy for CSR practices in prior research is limited. Waddock and Graves (1997) criticize a wide range of CSR constructs used in prior research (see the references therein) and suggest that one needs a multidimensional measure of CSR which should be meaningful for a wide range of companies. Dowell *et al.* (2000) and Margolis *et al.* (2009) express similar concerns on the validity of CSR measures. Bajic and Yurtoglu (2018) study the validity of CSR constructs based on Asset4 data. To the best of our knowledge, no other paper studies the extent to which the use of specific CSR constructs can lead to a bias in predicting firm value.

3. Data sources and *ESG* scores

3.1 Data

We use the following data sources. CSR data is from Thomson Reuters ASSET4, which is specialized in disseminating socially responsible investment analysis. Financial data come from the WRDS Compustat North America and Compustat Global databases. We substitute missing financial data from Datastream. Information on cross-listed firms, including the foreign exchange(s) they are listed and listing level comes from databases maintained at the Bank of New York (www.adrbny.com) and JP Morgan (www.adr.com). We translate the variables into US dollars using the exchange rates obtained from Bloomberg at the fiscal year end.

3.2 ESG scores

Environmental, social and governance scores are from the ASSET4 database of Thomson Reuters[2]. ASSET4 specializes in providing systematic *ESG* information to professional investors who integrate *ESG* data into their investment analysis. Economist (2013) estimates that investors representing more than $3.3 trillion assets under management make use of ASSET4 data. ASSET4 transforms more than 900 evaluation points per firm into 250 key performance indicators. These indicators are organized into 18 categories within four pillars: environmental performance, social performance, corporate governance and economic performance. In a year *t,* firms receive a *z*-score for each of the four pillars, based on all the information available in fiscal $t-1$. Therefore, by construction, *ESG* scores are lagged by one year. A firm's performance in a pillar is benchmarked with all of the remaining firms, with the firms in the same country, or with the firms in the same business sector.

Environmental scores have three elements reflecting firm-level efforts to reduce resources and emissions as well as to increase performance in product innovation. Social scores use eight elements such as employment quality, health and safety, training and development, diversity, human rights, community, and product responsibility. Governance scores have five elements (board structure and functions, compensation policy, shareholder rights, and the firm's vision and strategy). Table II details these individual elements and reports descriptive statistics.

We use the annual environmental, social and corporate governance scores to construct a composite CSR measure for every year and each firm. We follow the convention established by previous studies and assign equal weights to each of the scores[3]. We call this overall CSR measure *ESG*. Since disclosure requirements as well as the strength and quality of institutions vary across countries, we benchmark the CSR measures with the firms in the same country.

Table III shows that the resulting sample is an unbalanced panel of 23,803 firm-years with CSR data during 2003-2016 from 35 countries. The majority of the observations (10,748) are from the USA, Japan, and the UK, however, we also have a large sample from European countries (5,155). On average, we have slightly less than seven observations per firm. For our empirical analysis, we exclude all firms in financial and regulated industries, because they are likely to be subject to different rules and regulations. The majority of firms in our sample is active in manufacturing industries, about 20 percent are from energy and basic materials, 13 percent from IT, and the remaining ones are in healthcare and telecommunications.

Table II.
CSR data

ESG measure	Description	Definition	Mean	SD	Min.	Max.
ESG	Overall CSR index	Equally weighted average of the environmental, social, and corporate governance indices	0.526	0.242	0.003	1
E	Subindex: environment	Equally weighted average of the three elements comprising the environment index	0.546	0.304	0.003	1
S	Subindex: social	Equally weighted average of the seven elements comprising the social index	0.550	0.302	0.003	1
G	Subindex: corporate governance (CG)	Equally weighted average of the five elements comprising the CG index	0.501	0.300	0.000	1
Resource reduction	Element 1: environment index	Measures a company's management commitment and effectiveness toward achieving an efficient use of natural resources in the production process and reflects the capacity to reduce the use of materials, energy or water, and to find more eco-efficient solutions by improving supply chain management	0.549	0.304	0.001	1
Emission reduction	Element 2: environment index	Measures a company's management commitment and effectiveness toward reducing environmental emission in the production and operational processes. It reflects a company's capacity to reduce air emissions (greenhouse gases, F- gases, ozone-depleting substances, NOx and SOx, etc.), waste, hazardous waste, water discharges, spills or its impacts on biodiversity and to partner with environmental organizations to reduce the environmental impact of the company in the local or broader community	0.546	0.307	0.003	1
Product innovation	Element 3: environment index	Measures a company's management commitment and effectiveness toward supporting the research and development of eco-efficient products or services. It reflects a company's capacity to reduce the environmental costs and burdens for its customers, and thereby creating new market opportunities through new environmental technologies and processes or eco-designed, dematerialized products with extended durability	0.516	0.306	0.028	1
Employment quality	Element 1: social index	Measures a company's management commitment and effectiveness toward providing high-quality employment benefits and job conditions. It reflects a company's capacity to increase its workforce loyalty and productivity by distributing rewarding and fair employment benefits, and by focusing on long-term employment growth and stability by promoting from within, avoiding lay-offs and maintaining relations with trade unions	0.530	0.300	0.000	1
Health and safety	Element 2: social index	Measures a company's management commitment and effectiveness toward providing a healthy and safe workplace. It reflects a company's capacity to increase its workforce loyalty and productivity by integrating into its day-to-day operations a concern for the physical and mental health, well-being and stress level of all employees	0.525	0.299	0.007	1
Training and development	Element 3: social index	Measures a company's management commitment and effectiveness toward providing training and development (education) for its workforce. It reflects a company's capacity to increase its intellectual capital, workforce	0.558	0.300	0.002	1

(*continued*)

Table II.

ESG measure	Description	Definition	Mean	SD	Min.	Max.
Diversity and opportunity	Element 4: social index	Measures a company's management commitment and effectiveness toward maintaining diversity and equal opportunities in its workforce. It reflects a company's capacity to increase its workforce loyalty and productivity by promoting an effective life-work balance, a family friendly environment and equal opportunities regardless of gender, age, ethnicity, religion or sexual orientation	0.523	0.310	0.009	1
Human rights	Element 5: social index	Measures a company's management commitment and effectiveness toward respecting the fundamental human rights conventions. It reflects a company's capacity to maintain its license to operate by guaranteeing the freedom of association and excluding child, forced or compulsory labor	0.503	0.302	0.000	1
Community	Element 6: social index	Measures a company's management commitment and effectiveness toward maintaining the company's reputation within the general community (local, national and global). It reflects a company's capacity to maintain its license to operate by being a good citizen (donations of cash, goods or staff time, etc.), protecting public health (avoidance of industrial accidents, etc.) and respecting business ethics (avoiding bribery and corruption, etc.)	0.550	0.300	0.001	1
Customer/Product responsibility	Element 7: social index	Measures a company's management commitment and effectiveness toward creating value-added products and services upholding the customer's security. It reflects a company's capacity to maintain its license to operate by producing quality goods and services integrating the customer's health and safety, and preserving its integrity and privacy also through accurate product information and labeling	0.537	0.307	0.001	1
Board structure	Element 1: CG index	Measures a company's management commitment and effectiveness toward following best practice corporate governance principles related to a well-balanced membership of the board. It reflects a company's capacity to ensure a critical exchange of ideas and an independent decision-making process through an experienced, diverse and independent board	0.474	0.294	0.000	1
Compensation policy	Element 2: CG index	Measures a company's management commitment and effectiveness toward following best practice corporate governance principles related to competitive and proportionate management compensation. It reflects a company's capacity to attract and retain executives and board members with the necessary skills by linking their compensation to individual or company-wide financial or extra- financial targets	0.478	0.300	0.000	1
Board functions	Element 3: CG index	Measures a company's management commitment and effectiveness toward following best practice corporate governance principles related to board activities and functions. It reflects a company's capacity to have an effective board by setting up the essential board committees with allocated tasks and responsibilities	0.478	0.287	0.000	1

(*continued*)

Table II.

ESG measure	Description	Definition	Mean	SD	Min.	Max.
Shareholder rights	Element 4: CG index	Measures a company's management commitment and effectiveness toward following best practice corporate governance principles related to a shareholder policy and equal treatment of shareholders. It reflects a company's capacity to be attractive to minority shareholders by ensuring equal rights and privileges and by limiting the use of anti-takeover devices	0.507	0.297	0.000	1
Vision and strategy	Element 5: CG index	Measures a company's management commitment and effectiveness toward the creation of an overarching vision and strategy integrating financial and extra-financial aspects. It reflects a company's capacity to convincingly show and communicate that it integrates the economic (financial), social and environmental dimensions into its day-to-day decision-making processes	0.551	0.305	0.007	1

Notes: This table shows summary statistics and definitions of the overall CSR measure (*ESG*), its indices (Environmenal, Social and Corporate Governance), and the index elements from Asset 4

			ESG			Environmental		Social		Governance	
	Period	*N*	Mean	Median	SD	Mean	SD	Mean	SD	Mean	SD
Australia	2003-2016	1,397	0.508	0.483	0.211	0.467	0.282	0.422	0.288	0.620	0.253
Austria	2003-2016	169	0.552	0.551	0.225	0.614	0.270	0.599	0.296	0.489	0.259
Belgium	2003-2016	232	0.516	0.543	0.221	0.565	0.269	0.573	0.281	0.559	0.252
Bermuda	2003-2016	117	0.474	0.451	0.303	0.521	0.298	0.457	0.291	0.445	0.305
Brazil	2008-2016	408	0.559	0.571	0.179	0.684	0.278	0.593	0.269	0.316	0.221
Canada	2003-2016	1,039	0.516	0.487	0.210	0.479	0.302	0.451	0.298	0.717	0.214
Cayman Islands	2005-2016	82	0.400	0.316	0.234	0.398	0.245	0.394	0.249	0.467	0.275
China	2009-2016	485	0.397	0.382	0.174	0.352	0.255	0.398	0.260	0.345	0.244
Denmark	2003-2016	227	0.554	0.573	0.217	0.621	0.287	0.629	0.292	0.561	0.259
Finland	2003-2016	262	0.538	0.560	0.222	0.629	0.282	0.656	0.295	0.559	0.263
France	2003-2016	889	0.590	0.644	0.237	0.685	0.286	0.672	0.285	0.579	0.265
Germany	2003-2016	800	0.563	0.604	0.249	0.618	0.296	0.600	0.304	0.442	0.266
Greece	2003-2016	163	0.526	0.524	0.267	0.574	0.333	0.533	0.318	0.421	0.304
Hong Kong	2003-2016	845	0.441	0.411	0.202	0.427	0.293	0.440	0.289	0.503	0.237
India	2008-2016	506	0.536	0.523	0.194	0.597	0.277	0.597	0.291	0.398	0.255
Ireland	2003-2016	141	0.501	0.480	0.265	0.485	0.292	0.512	0.303	0.640	0.271
Israel	2003-2016	90	0.496	0.543	0.220	0.524	0.323	0.508	0.309	0.448	0.270
Italy	2003-2016	391	0.552	0.588	0.254	0.613	0.311	0.575	0.328	0.548	0.276
Japan	2003-2016	3,072	0.533	0.562	0.251	0.544	0.319	0.608	0.322	0.300	0.300
Jersey	2005-2016	32	0.656	0.739	0.211	0.634	0.231	0.635	0.240	0.627	0.171
Korea	2005-2016	416	0.539	0.616	0.224	0.592	0.353	0.628	0.330	0.131	0.136
Malaysia	2009-2016	280	0.489	0.499	0.171	0.553	0.274	0.475	0.274	0.538	0.237
Mexico	2003-2016	154	0.471	0.498	0.229	0.513	0.351	0.492	0.310	0.219	0.240
The Netherlands	2003-2016	325	0.559	0.589	0.241	0.628	0.291	0.620	0.288	0.582	0.270
New Zealand	2005-2016	165	0.451	0.408	0.214	0.356	0.283	0.372	0.285	0.461	0.282
Norway	2003-2016	203	0.554	0.579	0.233	0.593	0.292	0.557	0.294	0.529	0.271
Portugal	2003-2016	101	0.560	0.623	0.220	0.594	0.290	0.606	0.263	0.553	0.277
Singapore	2005-2016	353	0.483	0.461	0.228	0.508	0.297	0.461	0.281	0.550	0.272
South Africa	2009-2016	603	0.548	0.561	0.162	0.706	0.243	0.564	0.260	0.637	0.202
Spain	2003-2016	423	0.608	0.660	0.223	0.688	0.285	0.669	0.271	0.563	0.250
Sweden	2003-2016	430	0.571	0.610	0.213	0.620	0.286	0.639	0.287	0.519	0.254
Switzerland	2003-2016	602	0.540	0.535	0.239	0.576	0.292	0.574	0.292	0.502	0.268
Taiwan	2003-2016	725	0.463	0.450	0.235	0.485	0.331	0.557	0.309	0.216	0.240
The UK	2003-2016	2,158	0.535	0.545	0.229	0.578	0.272	0.553	0.282	0.646	0.269
The USA	2003-2016	5,518	0.528	0.466	0.294	0.527	0.291	0.522	0.297	0.546	0.279
Total	2003-2016	23,803	0.526	0.525	0.242	0.550	0.302	0.546	0.304	0.501	0.300

Table III.
CSR data by country

Notes: This table presents the composition of the sample and the means, medians, and standard deviations of the overall *ESG* score and its Environmental, Social, and Governance components

4. Methodology

Next section details our empirical methods and Section 4.2 details control variables.

4.1 Empirical models

The natural logarithm of Tobin's q is our primary dependent variable. We take logs to reduce the influence of high-q outlier firms. In our base specification, all variables are winsorized at 1-99 percentiles. We use two different econometric models. The first model, pooled OLS, has the following specification:

$$\ln q_{i,t} = \beta_0 + \beta_1 \times \boldsymbol{X_i} + \beta_2 \times ESG_{i,t} + g_t + \varepsilon_{i,t} \quad (1)$$

where $\ln q_{i,t}$ is the natural logarithm of Tobin's q for firm i at time t; $\boldsymbol{X_i}$ a vector of firm characteristics; $ESG_{i,t}$ the *ESG* score; g_t a vector of year dummies; and $\varepsilon_{i,\,t}$ is an error term.

The second model, RE specification, adds f_i, firm-RE to Model (1). In the FE specification, the firm effects are assumed to be fixed instead of random:

$$\ln q_{i,t} = \beta_0 + \beta_1 \times \boldsymbol{X_i} + \beta_2 \times ESG_{i,t} + g_t + f_i + \varepsilon_{i,t} \quad (2)$$

The FE model provides unbiased estimates even if the firm effects are correlated with other covariates, but imposes a cost because many aspects of *ESG* scores are sticky. With FE, we can study only aspects with substantial within-firm time variation.

We also employ models where we replace *ESG* with its indices (*E*, *S*, and *G*) included separately:

$$\ln q_{i,t} = \beta_0 + \beta_1 \times \boldsymbol{X_i} + \beta_2 \times \mathrm{Sub}^{j}_{i,t} + g_t + f_i + \varepsilon_{i,t} \quad (3a)$$

where subscores are indexed by superscript j ($j = E$, S, *and* G).

Similarly, we also estimate models that replace the *E*, *S*, and *G* aspects with 15 individual elements that constitute them:

$$\ln q_{i,t} = \beta_0 + \beta_1 \times \boldsymbol{X_i} + \beta_2 \times \mathrm{Element}^{k}_{i,t} + f_i + g_t + \varepsilon_{i,t} \quad (3b)$$

where the individual elements (see Table II) are indexed by superscript k ($k = 1, 2, \ldots, 15$).

In studies which focus on a single aspect, the coefficient on an index (or more often an element in this index) using variants of Model (3a or 3b) can reflect the effect of another omitted index (or also other neglected elements) and can potentially lead to OVB. Therefore, while it is appropriate to use Models (1) and (2) to estimate the relationship between a broad *ESG* measure and firm value, Models (3a) and (3b) are likely to yield biased coefficients when assessing which aspect(s) of *ESG* matters. To account for this potential bias, we employ two additional models in which we consider all indices (4a) and elements (4b) together:

$$\ln q_{i,t} = \beta_0 + \beta_1 \boldsymbol{X_i} + \beta_{2,E}\mathrm{Sub}^{E}_{i,t} + \beta_{2,S}\mathrm{Sub}^{S}_{i,t} + \beta_{2,G}\mathrm{Sub}^{G}_{i,t} + f_i + g_t + \varepsilon_{i,t} \quad (4a)$$

$$\ln q_{i,t} = \beta_0 + \beta_1 \boldsymbol{X_i} + \sum_{k=1}^{15} \beta_{2,k}\mathrm{Element}^{k}_{i,t} + + f_i + g_t + \varepsilon_{i,t} \quad (4b)$$

4.2 Control variables

Many firm characteristics are potentially associated with both q and *ESG*. We therefore include the following extensive set of covariates to minimize OVB concerns. Firm size: ln (assets). Leverage: total debt/assets, because leverage can influence Tobin's q by providing tax benefits, affecting bankruptcy risk and reducing free cash flow problems. Leverage is also mechanically related to q, since both variables use the same denominator; Growth prospects: we control for growth prospects using three year geometric growth rate of sales (or two-year growth if the three year growth rate is missing). Firms with attractive opportunities to innovate are likely to spend more on R&D than other companies, and earn monopoly rents from their innovations. These firms will have relatively high returns on capital that will be reflected in higher qs. Since some countries in our sample do not require the disclosure of R&D expenditures, we employ a dummy variable for firms with positive R&D expenditures and obtain similar results with the R&D/Sales ratio[4]. We control for profitability using EBIT/Sales. Capital intensity: we use the ratio of capital expenditures (Capex) to property, plant and equipment (PPE) and the ratio of PPE to sales (PPE/Sales); Liquidity: we include share turnover (annual average of daily shares traded over shares outstanding), the fraction of freely trading shares (Free float) as measures of share liquidity, since share prices may be higher for firms with more liquid shares. Risk: we use

the standard deviation of monthly stock returns in year t as a measure of the total risk of the firm (Volatility). Cross-listing dummy: cross-listings may enhance liquidity, foreign investor interest, and also proxy for otherwise unobserved growth opportunities and governance effects (Doidge *et al.*, 2007). To control for these effects we include a dummy for firms cross-listed in US (at any level). We employ a dummy for firms, which report negative equity, because firms with negative equity are close to bankruptcy, show signs of financial distress, and are usually excluded from samples in empirical work. Industry and country: factors such asset structure, accounting practices, government regulation, and industry concentration may vary across industries and countries. They may affect both *ESG* practices and firm valuation. To account for these differences, we include a set of industry dummies defined at the 2-digit SIC level and country dummies. Industry and country dummies drop out in the FE specification, but they are relevant for OLS and RE specifications.

Table IV reports the descriptive statistics of Tobin's q and other covariates. Tobin's q for the full sample is 1.35 with a standard deviation of 1.61. The average company has a growth rate of around 6.3 percent, a mean leverage of 21.8 percent, and Capex in the order of 15.3 percent of fixed assets. The sample consists of large and highly traded companies, which have a large investor base (mean free float = 72.5 percent) and visible (~34 percent of them have a cross-listing in the USA). 45.5 percent of firms report R&D expenditures and a small fraction of them report negative equity. Overall, these statistics suggest that our sample contains mostly large, visible and liquid firms.

5. *ESG* scores and firm value

5.1 *The impact of overall ESG scores on firm value*

In Table V, we examine whether the overall *ESG* measure predicts Tobin's q. Columns 1-3 report the coefficients from OLS, firm-RE, and firm-FE specifications of ln (Tobin's q) on *ESG*. In columns 4-9 we study whether the environmental, social and governance indices predict firm value. In even (odd-)-numbered columns, we regress these three indices together (separately) on q[5]. All regressions use the full set of firm-level covariates, time, industry and country dummies (dropped for FE). The t-statistics use standard errors clustered on firm.

Variable	Definition	Mean	SD	Min.	Max.
ln (Tobin's q)	Natural logarithm of ((BV debt+MV of common stock)/BV of assets)	0.030	0.722	−3.926	4.523
Size	Natural logarithm of total assets	12.425	3.735	2.392	21.926
Leverage	Total debt/Total assets	0.218	0.167	0.000	0.998
Sales growth	Sales growth rate (3 or 2-year growth rate (if 3 year missing))	0.063	0.264	−0.942	1.967
EBIT/Sale	EBIT/Sales	0.643	2.321	−1.697	39.213
Capex/PPE	Capital Expenditures/(gross) fixed assets	0.153	0.130	0	1
Share turnover	Annual average shares traded (daily) over outstanding	1.558	0.987	0.000	5.294
PPE/Sales	PPE/Sales	2.730	7.309	−0.036	49.995
Stock volatility	SD of monthly stock returns in year t (annualized)	0.300	0.142	0.010	1.500
Free float	Fraction of shares excluding locked-in shares such as those held by insiders, or governments	0.725	0.236	0	1
Cross-listing dummy	Dummy, 1 if firm has a US cross-listing, 0 otherwise	0.342	0.474	0	1
R&D dummy	Dummy, 1 if firm reports R&D expenditures, 0 otherwise	0.455	0.498	0	1
Negative equity dummy	Dummy, 1 if firm reports negative equity, 0 otherwise	0.037	0.189	0	1

Note: This table provides definitions of the covariates and descriptive statistics for the samples used in Tables V and VI

Table IV.
Definitions and descriptive statistics of non-CSR variables

Table V.
Overall *ESG*, its indices, and firm value

				Indices included					
				Separate	Together	Separate	Together	Separate	Together
	OLS	RE	FE	OLS		RE		FE	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ESG	*0.246*** (7.02)*	*0.107*** (4.07)*	*0.064** (2.15)*						
Social index				*0.188*** (6.68)*	*0.160*** (4.17)*	*0.130*** (5.89)*	*0.098*** (3.55)*	*0.100*** (3.80)*	*0.075** (2.40)*
Environmental index				*0.145*** (4.82)*	−0.017 (−0.44)	*0.113*** (4.85)*	0.051* (1.74)	*0.093*** (3.44)*	0.057* (3.44)
Corporate governance index				*0.141*** (5.77)*	*0.077*** (2.99)*	*0.045** (2.49)*	0.002 (0.11)	0.015 (0.73)	−0.019 (−0.87)
Firm size	*−0.172*** (−22.56)*	*−0.180*** (−21.62)*	*−0.193*** (−10.23)*	*−0.170*** (−22.48)*	*−0.169*** (−21.63)*	*−0.182*** (−21.84)*	*−0.184*** (−21.71)*	*−0.193*** (−10.23)*	*−0.193*** (−10.25)*
Leverage	*0.333*** (6.11)*	*0.282*** (6.56)*	*0.272*** (5.50)*	*0.327*** (6.00)*	*0.325*** (5.96)*	*0.278*** (6.49)*	*0.279*** (6.52)*	*0.268*** (5.45)*	*0.267*** (5.43)*
Sales growth	*0.323*** (17.10)*	*0.204*** (17.16)*	*0.200*** (16.21)*	*0.326*** (17.23)*	*0.326*** (17.22)*	*0.204*** (17.19)*	*0.205*** (17.20)*	*0.199*** (16.15)*	*0.200*** (16.19)*
EBIT/Sale	0.001 (0.56)	−0.000 (−0.23)	−0.000 (−0.17)	0.000 (0.50)	0.000 (0.49)	−0.000 (−0.31)	−0.000 (−0.31)	−0.000 (−0.21)	−0.000 (−0.19)
Capex/PPE	*0.953*** (14.22)*	*0.516*** (11.66)*	*0.426*** (9.02)*	*0.957*** (14.20)*	*0.949*** (14.15)*	*0.513*** (11.60)*	*0.512*** (11.56)*	*0.422*** (8.94)*	*0.419*** (8.88)*
Turnover	*0.029*** (5.26)*	0.004 (1.22)	−0.001 (−0.31)	*0.029*** (5.28)*	*0.028*** (5.18)*	0.004 (1.25)	0.004 (1.24)	−0.001 (−0.30)	−0.001 (−0.27)
PPE/Sale	*−0.010*** (−11.90)*	*−0.002*** (−3.04)*	−0.001 (−0.78)	*−0.010*** (−11.76)*	*−0.010*** (−11.80)*	*−0.002*** (−3.11)*	*−0.002*** (−2.96)*	−0.001 (−0.97)	−0.000 (−0.44)
Volatility	*−0.811*** (−17.42)*	*−0.274*** (−10.61)*	*−0.232*** (−8.53)*	*−0.806*** (−17.35)*	*−0.802*** (−17.24)*	*−0.272*** (−10.52)*	*−0.272*** (−10.52)*	*−0.230*** (−8.48)*	*−0.231*** (−8.49)*
Free float	*−0.230*** (−6.78)*	−0.023 (−0.86)	0.024 (0.76)	*−0.213*** (−6.33)*	*−0.223*** (−6.58)*	−0.021 (−0.79)	−0.022 (−0.85)	0.025 (0.77)	0.025 (0.77)
Cross-listing	*0.115*** (6.60)*	0.023* (1.77)	−0.001 (−0.04)	*0.115*** (6.57)*	*0.112*** (6.40)*	0.022* (1.68)	0.021* (1.67)	−0.001 (−0.05)	−0.001 (−0.08)
Pos. R&D	*0.060*** (3.13)*	*0.051*** (3.19)*	0.020 (1.10)	*0.062*** (3.21)*	*0.067*** (3.47)*	*0.051*** (3.18)*	*0.050*** (3.12)*	0.020 (1.11)	0.019 (1.06)
Neg. equity	*−0.281*** (−12.00)*	*−0.240*** (−14.49)*	*−0.240*** (−13.77)*	*−0.279*** (−11.98)*	*−0.282*** (−12.04)*	*−0.238*** (−14.39)*	*−0.238*** (−14.39)*	*−0.239*** (−13.67)*	*−0.238*** (−13.64)*
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	–	Yes	Yes	Yes	Yes	–	–
Country dummies	Yes	Yes	–	Yes	Yes	Yes	Yes	–	–
Observations	23,352	23,352	23,352	23,352	23,352	23,352	23,352	23,352	23,352
Firms	3,844	3,844	3,844	3,844	3,844	3,844	3,844	3,844	3,844
R^2 (range)	0.456	0.404	0.200	(0.454-0.456)	0.456	(0.402-0.406)	0.406	(0.199-0.201)	0.201

Notes: OLS, firm random effects (RE), and firm fixed effects (FE) regressions of ln (Tobin's *q*) on *ESG* (its subindices) and control variables for 2003-2016. All variables are winsorized at 1 percent and 99 percent. *t*-values (in parentheses) use firm clusters. Significant results (at 5 percent level or better) are in italic. *,**,***Significant at 10, 5 and 1 percent level, respectively (suppressed for constant term)

Most firm-level covariates capture significant coefficients with a sign consistent with theoretical considerations. Size has a highly significant negative coefficient in OLS, RE and FE specifications. The coefficient on Leverage is consistently positive and significant. Firms growing (Sales growth) and investing at higher rates (Capex/PPE) have higher qs. The measure of total firm risk (volatility) is negatively associated with q. The PPE/sales ratio captures a small and negative coefficient. The remaining covariates tend to capture significant coefficients in the OLS and firm-RE specifications, but not with firm-FE.

We obtain a positive and highly significant coefficient on the overall *ESG* score ($\beta_2 = 0.246$) with OLS. With RE, *ESG* significantly predicts q ($\beta_2 = 0.107$). (Untabulated) Breusch-Pagan tests strongly reject the absence of firm effects and imply that pooled OLS coefficients will be biased. At the same time Hausman tests strongly reject the equivalence of RE and FE models[6]. Thus, if the FE specification is correct, RE results will be biased. The median RE λ, indicating whether RE results are closer to pooled OLS ($\lambda = 0$) or to FE ($\lambda = 1$) is relatively high ($\lambda \approx 0.75$). With firm-FE, the coefficient on overall *ESG* drops to 0.064 and remains significant at the 5 percent level. Tobin's q equations use 23,352 observations from 3,844 firms and explain 20 percent of the variation in q in the FE specification[7]. The coefficients have economically meaningful magnitudes. The coefficient on *ESG* in the FE specification implies that a one standard deviation increase in *ESG* predicts 6.6 percent higher Tobin's q.

5.2 The impact of environmental, social, and governance scores on firm value

In columns (4)-(9) of Table V we focus on the three indices of the overall *ESG* measure. As noted before, different aspects of CSR correlate. Therefore, separate estimates of their effect on firm value can be biased due to omitting other aspects of CSR. To address this bias, we use two different approaches. We first estimate separate coefficients on the *ESG* indices, then we include all subindices together in a single regression. In this specification, the coefficient on each index indicates the contribution of the part of each index that is orthogonal to the other indices. We start with OLS equations and regress the social (*S*), environmental (*E*), and governance indices (*G*) separately on q (reported in even numbered columns) and then regress them together on q (reported in odd-numbered columns). When we regress the *E*, *S*, and *G* indices separately on q, we obtain highly significant coefficients on all of them (except for the G index in the firm-FE specification reported in column 8). In the OLS specification (column 4) all three aspects are highly significant and their coefficients are relatively large: the social index captures a coefficient of 0.188 (t-value = 6.68), the coefficient on the environmental index is 0.145 (t-value = 4.82), and the coefficient on the governance index is 0.141 (t-value = 5.77). When we include all three aspects together in a single regression (column 5), the environmental aspect becomes insignificant, and the coefficients on the *S* and *G* indices drop in magnitude and lose some significance. In the remaining columns, we repeat the same exercise using firm-RE and firm-FE specifications and obtain qualitatively similar results. All three indices capture statistically and economically significant coefficients when regressed on firm value in isolation from other indices, but with the exception of the social aspect, fail to do so in the presence of the other indices.

The only aspect, which matters for firm value is the social aspect of the overall CSR measure. The other indices capturing environmental and governance aspects have no consistent predictive value. With OLS, RE or FE, none of the coefficients on these indices are significant, and the signs on the coefficients are mixed. This comparison suggests that omitting relevant aspects of CSR can lead to severe OVB bias and can falsely suggest that a specific aspect matters for firm value, while in fact, the significance is due to the omission of a relevant aspect of CSR.

5.3 The impact of specific CSR elements on firm value

In this section, we examine which individual elements that we used to define the *E*, *S*, and *G* indices predict firm value. These individual elements represent a much higher granularity than the indices they jointly form and accordingly capture much more specific dimensions of CSR. The environmental index has three elements, the social index has seven and the governance index consists of five different elements.

As noted before, there is a potential concern of OVB when a study focuses on one or few such aspects and omits the others. To show the consequences of omitting relevant aspects of CSR, we start focusing on a single element at a time and estimate separate coefficients on each of these elements. Then we include all elements together in a single regression. Table VI reports the results of this exercise. We report in columns 1, 3, and 5 the regression results when the elements are used separately[8] and in columns 2, 4, and 6, when all 15 elements are included together.

When we use the elements separately to predict Tobin's *q*, 13 out of 15 elements are highly significant in the OLS specification (column 1). When they are included together, the number of significant elements drops to 5 and we observe a substantial decrease in the magnitudes of the coefficient estimates. Importantly, some of the coefficients capture negatively significant coefficients. For example, the "Product Innovation" element which is part of the environment index captures a coefficient of 0.040 (t-value = 1.41) when included in isolation from the remaining elements (column 1). When it is regressed on Tobin's *q* together with the remaining 14 elements, the coefficient estimate becomes -0.071 (significant at the 5 percent level). Similarly, the "Health and Safety" element that is part of the social index, has a coefficient of 0.092 (t-value = 3.43) when used in isolation. This coefficient predicts higher Tobin's *q* in the order of 9.6 percent for a one standard deviation increase. However, when we control for the remaining elements (column 2), the estimated coefficients drops to an insignificantly negative 0.044. These examples demonstrate that omitting the remaining aspects of CSR can overstate the importance of a specific CSR practice and can lead to misleading policy implications.

The remaining columns in Table V demonstrate similar effects with firm-RE and firm-FE specifications. We note the following differences to OLS results. Only 9 of the 15 elements are significant predictors of firm value when we use a firm-FE specification where each element is estimated in isolation from the remaining elements, suggesting the importance of controlling for unobserved but fixed firm-level characteristics. When all 15 elements are included together, only 4 of them remain significant, 1 of them capturing a significantly negative coefficient (Shareholder rights). All of the three significantly positive elements are part of the social index. With the firm-RE specification, 11 of the 15 elements capture significant coefficients when they are estimated separately. The number of significant elements drops to four when they are estimated together in a single firm-RE regression (one of these elements captures a negative coefficient). The three elements, which capture significantly positive coefficients belong to the social index and they also coincide with the significant elements from the firm-FE specification in column 6. We conclude that the use firm-RE and firm-FE specifications reduce but do not eliminate the potential for OVB when one focuses on a single CSR element.

These results highlight the need to use a broadly defined CSR measure to assess the importance of CSR, and to control for the rest of this overall index when assessing a particular aspect. Studies, which focus on a specific aspect of CSR may find an association between this aspect (say employee treatment or emission reduction) and firm value, but it is important to note that exclusion of other aspects of CSR can lead to misleading inferences. The results in Table V suggest that even firm-RE and firm-FE specification can fail to reduce this source of OVB. The findings of predictive value for a single dimension of CSR can be the observed as consequence of this bias.

Table VI.
Aspects of *ESG* and firm value

	Subindices included					
	OLS		RE		FE	
	Separate (1)	Together (2)	Separate (3)	Together (4)	Separate (5)	Together (6)
Social index						
Training and development	*0.154*** (*6.01*)	0.033 (1.00)	*0.063*** (*3.56*)	−0.014 (−0.61)	0.036* (1.82)	−0.022 (−0.92)
Customer/Product responsibility	*0.075*** (*3.03*)	−0.005 (−0.17)	*0.085*** (*4.99*)	*0.049*** (*2.78*)	*0.081*** (*4.41*)	*0.057*** (*3.03*)
Human rights	*0.171*** (*6.82*)	*0.110*** (*4.05*)	*0.102*** (*5.40*)	*0.064*** (*3.24*)	*0.074*** (*3.54*)	*0.045*** (*2.13*)
Health and safety	*0.092*** (*3.43*)	−0.044 (−1.41)	0.019 (1.06)	*−0.050*** (*−2.55*)	−0.004 (−0.22)	−0.053** (−2.56)
Employment quality	*0.182*** (*7.66*)	*0.130*** (*4.89*)	*0.114*** (*7.04*)	*0.089*** (*5.21*)	*0.092*** (*5.23*)	*0.076*** (*4.19*)
Diversity and opportunity	*0.111*** (*4.34*)	−0.020 (−0.63)	*0.075*** (*3.94*)	0.007 (0.32)	0.050** (2.31)	−0.002 (−0.07)
Community	*0.116*** (*4.49*)	−0.002 (−0.06)	*0.063*** (*3.66*)	0.004 (0.18)	*0.048*** (*2.55*)	0.008 (0.40)
Environmental index						
Resource reduction	*0.189*** (*6.77*)	*0.191*** (*4.57*)	*0.110*** (*5.19*)	0.043 (1.46)	*0.081*** (*3.34*)	0.019 (0.64)
Product innovation	0.040 (1.41)	*−0.071*** (*−2.22*)	*0.048*** (*2.49*)	−0.019 (−0.86)	*0.044*** (*2.08*)	−0.007 (−0.29)
Emission reduction	*0.126*** (*4.42*)	−0.085* (−1.94)	*0.115*** (*5.16*)	0.034 (1.16)	*0.103*** (*4.05*)	0.054* (1.76)
Corporate governance index						
Shareholder rights	*0.119*** (*5.24*)	*0.087*** (*3.60*)	−0.005 (−0.31)	−0.016 (−1.02)	*−0.036*** (*−2.19*)	*−0.042*** (*−2.47*)
Vision and strategy	*0.137*** (*4.85*)	−0.013 (−0.36)	*0.093*** (*4.49*)	0.021 (0.89)	*0.073*** (*3.08*)	0.020 (0.79)
Compensation policy	*0.053*** (*2.44*)	−0.009 (−0.40)	*0.032*** (*2.32*)	0.025* (1.77)	0.024* (1.67)	0.026* (1.78)
Board structure	*0.076*** (*3.33*)	0.049* (1.94)	0.009 (0.57)	0.007 (0.42)	−0.004 (−0.25)	0.001 (0.04)
Board functions	0.043* (1.82)	−0.049* (−1.75)	−0.006 (−0.34)	−0.026 (−1.43)	−0.022 (−1.16)	−0.031 (−1.58)
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	–	–
Country dummies	Yes	Yes	Yes	Yes	–	–
Observations	23,352	23,352	23,352	23,352	23,352	23,352
Firms	3,844	3,844	3,844	3,844	3,844	3,844
R^2 (range)	(0.432-0.464)	0.463	(0.402-0.414)	0.412	(0.208-0.218)	0.218

Notes: OLS, firm random effects (RE), and firm fixed effects (FE) regressions of ln (Tobin's *q*) on aspects of *ESG* and control variables for 2003-2016. All variables are winsorized at 1 and 99 percent. *t*-values (in parentheses) use firm clusters. Significant results (at 5 percent level or better) are in italic. *,**,***Significant at 10, 5 and 1 percent level, respectively (suppressed for constant term)

6. Conclusions

Prior research provides evidence that CSR predicts firm market value. However, there is little evidence on which aspect(s) of CSR drives this result in a robust empirical setting with firm-FE and extensive covariates, including controls for other aspects of CSR. We seek here to begin to fill that gap.

We find robust evidence that CSR predicts market value using a country-benchmarked overall CSR index. The power to predict firm value comes solely from the social dimension of this measure, which captures firm-level practices related to treatment of employees and stakeholder relations including those with customers and the broader community. These results suggest that firms, in responding to investor pressure for better CSR; and investors, in assessing CSR, would do well to focus on the social aspect of CSR practices.

Three elements drive the social index: customer/product responsibility, human rights, and employment quality. None of the remaining 12 elements significantly predicts firm value in an empirical setting with firm-FE and extensive covariates. We also show that omitted aspects of CSR can easily lead to an OVB and that the magnitude of this bias is potentially greater with an OLS specification. When studying CSR, the approach of using a single construct, which omits a variety of other CSR aspects, is likely to work poorly.

Notes

1. The mean effect size emerging from the surveys suggests a partial correlation coefficient (accounting for the impact of employed covariates), which is around 0.13.
2. Many prior papers use the KLD (Kinder, Lydenberg, and Domini) database to study the link between CSR and firm value. This database provides CSR data only for large US companies and is not available on an international basis.
3. Prior studies mostly use equal weighting (see e.g. Hillman and Keim, 2001, Waldman *et al.*, 2006; Cheng *et al.*, 2014). Waddock and Graves (1997) criticize equal weights.
4. This is true both when we use a smaller sample with reported R&D/Sales and when we replace missing values with zeros.
5. The coefficients reported in in odd-numbered columns come from three separate regressions. To save space, we report the coefficients on the covariates obtained when using the social score. We present the range of R^2s obtained. The coefficient estimates from separate regression are available upon request.
6. For RE, p-values for Breusch-Pagan test for presence of firm effects and Hausman test for differences in coefficients between RE and FE are both $p = 0.000$.
7. We report the within R^2 for FE, the overall R^2 for RE, and the adjusted-R^2 for pooled OLS specifications.
8. Similar to Table V, columns 1, 3 and 5 summarize coefficients from 15 distinct regressions. The full results of element specific regressions are available upon request.

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