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The industry-specific relationships between corporate financial performance and 11 corporate social performance dimensions: Taking a more nuanced perspective

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THE INDUSTRY-SPECIFIC RELATIONSHIPS
BETWEEN CORPORATE FINANCIAL
PERFORMANCE AND 11 CORPORATE
SOCIAL PERFORMANCE DIMENSIONS:
TAKING A MORE NUANCED PERSPECTIVE

SEBASTIAN RATHNER

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WORKING PAPERS IN
ECONOMICS AND FINANCE

The industry-specific relationships between corporate financial performance and 11 corporate social performance dimensions: Taking a more nuanced perspective

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Abstract

The aim of this paper is to investigate the influence of corporate social performance (CSP) dimensions on corporate financial performance (CFP). It contributes to the literature by exploring a new CSP dataset, by using a more fine-grained CSP measure than prior studies, by explicitly taking industry-specific differences in the CFP-CSP relationship into account and by using an instrumental variable approach to account for endogeneity. 3772 companies out of 10 industry classes are included in the analysis. The results suggest that some CSP dimensions positively influence CFP (e.g. corporate governance) while others impact CFP negatively (e.g. operations). These results remain largely unchanged if endogeneity is taken into account by estimating instrumental variable regressions. Further results show, that the relationships between CSP dimensions and CFP differ by industry class membership.

Keywords: Corporate financial performance, Corporate social performance, Instrumental variable approach

JEL Codes: G12, M14

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1 Introduction

In the last decades it has become common for most (large) companies to engage – some more, some less seriously – in corporate social performance (CSP) initiatives (Callan and Thomas, 2009). In the prominent definition of Wood (1991, p. 693), CSP is defined as ‘a business organization's configuration of principles of social responsibility, processes of social responsiveness, and policies, programs, and observable outcomes as they relate to the firm's societal relationships’ . From a profit-seeking firm’s perspective it seems reasonable that managers started to think about the financial implications of CSP activities very early. Accordingly, researches recognized the interesting relationship between CSP and corporate financial performance (CFP) in the 1970s already (cf Bragdon and Marlin, 1972). In the last 40 years the relationship between CSP and CFP has by far become the most prominent research topic in the sustainability literature. Dozens of studies on the relationship between these two variables were published until 2003 (cf Margolis and Walsh, 2003). Van Beurden and Goessling (2008) include 34 studies which were published after 1990 in their literature review on the CSP-CFP relationship. Even though this large amount of studies has been conducted, several major issues have rarely been tackled.

First, exceptions notwithstanding, the vast majority of recent empirical papers use data of the rating agency Kinder, Lydenberg and Domini (KLD) (recent examples are Jo and Harjoto, 2012; Baird et al., 2012). The KLD data has been described as ‘the de facto research standard at the moment’ to measure CSP (Waddock, 2003, p. 369). Irrespective of the advantages of KLD data, some serious difficulties arise for researchers by using this rating agency’s data for studies on the CSP-CFP relationship (the difficulties will be discussed in more detail in the next chapter). Based on the criticism on KLD data, it is reasonable and promising ‘to explore the adequacy of alternative databases’ (Schreck, 2011, p. 168). Accordingly, the study at hand uses CSP data of the international rating

agency Sustainalytics which, to the best of my knowledge, has not been used in a study on the CSP-CFP relationship in the present form.

Second, CSP is seen as a multidimensional construct which contains diverse activities in several areas (Inoue und Lee, 2010; Godfrey und Hatch, 2007). For example, a donation to the local nursery school must be distinguished from the implementation of a supplier monitoring system concerning labour rights. If a study uses an aggregated CSP score, it masks CSP dimension-specific effects on CFP. Therefore, the study at hand uses a more fine-grained perspective than previous papers and divides CSP into 11 dimensions.

Third, one of the most important control variables in CFP-CSP related studies is the industry classification of the companies. It is reasonable to assume that the financial returns, which a company gains from activities in single dimensions of CSP, may be sensitive to the industry membership of the company (Inoue und Lee, 2010; Chand, 2006). For example, the impact of activities to protect the natural environment on CFP may be completely different for a company which operates in the gas industry in comparison to a financial service provider. Most prior studies, which included industry classification as a control variable, did not report industry-specific effects. The present study reports these industry-specific effects for 10 industry-classes. Therefore, it investigates which CSP dimensions can be considered as the most important ones (for CFP) in the various industries.

Fourth, most prior studies ignore the possibility of a simultaneous causality between CFP and CSP although several papers (Waddock and Graves, 1997; Orlitzky et al., 2003) provide good reasons to believe in a simultaneous causality. A simultaneous causality between CSP and CFP would lead to endogeneity problems for all studies which use OLS-regression. Therefore, the present study uses an instrumental variable regression approach to investigate the causal influence of CSP on CFP and to take endogeneity issues into account.

The aim of the study at hand is to investigate the CSP-CFP relationship by explicitly addressing the four aspects mentioned above. By addressing these aspects, the analysis shifts from the question ‘if’ to the more fine-grained question ‘under which circumstances’ does the relationship between CFP and CSP exist and hence, responds to the call of several researchers (e.g. Van Beurden and Goessling, 2008).

The remainder of this paper is organised as follows: Section 4.2 presents a literature overview of CFP-CSP studies which are of utmost importance for the study at hand. Furthermore, the hypotheses of the present study are developed. Section 4.3 describes the data and section 4.4 outlines the methods. Section 4.5 presents and discusses the empirical results. Section 4.6 provides a conclusion and suggestions for future research.

2 Literature overview and hypotheses

As mentioned above, a large amount of studies on the relationship between CSP and CFP has been conducted. It is beyond the scope of this paper to extensively review these studies. Instead, the following chapter focuses on studies which deal with the four issues raised in the introduction.

On the one hand, the rating agency KLD has become the most prominent source for CSP data in academic studies in the last few years (Callan and Thomas, 2009). On the other hand, several authors detect drawbacks in the KLD rating system or criticize specific issues towards the use of the database (by researchers). Schreck (2011) asserts that KLD ratings are exclusively based on binary variables. Using binary variables to indicate a ‘strength’ or a ‘weakness’ of a company concerning a certain CSP issue induces the problem of not being able to gradually rate companies. In other words, it is not possible to differentiate between inferior and superior performers gradually concerning a specific indicator. Furthermore, KLD does not apply an industry-specific weighting-scheme to aggregate single CSP issues to a joint CSP score (or joint CSP dimension score). Qualifying all CSP issues as equally important in every industry seems

inappropriate (Surroca et al., 2010). For example, the ecological dimension of CSP may be more important for an oil company than for a financial service provider. An additional disadvantage of the KLD data is that the dataset does not contain a CSP dimension for a company's relations with its suppliers - although suppliers are widely considered as a primary stakeholder (Inoue und Lee, 2010; Hillman and Keim, 2001). Based on this criticism, it seems reasonable and promising to use data of other CSP rating agencies to investigate the CSP-CFP relationship. Accordingly, the study at hand employs a dataset of Sustainalytics which offers solutions to the issues raised. To the best of my knowledge, this dataset has not been used to conduct a study on the CSP-CFP relationship with the time period 2009-2012. Sustainalytics data was used once before by Surroca et al. (2010), but the time period of their study was 2002-2004 (due to a methodology break in 2009 the data for the study at hand starts in this year).

The contrasting evidence of past studies suggests that *the* overall positive or negative relationship between CSP and CFP does not exist. This seems reasonable because CSP contains completely diverse activities in different areas, for instance, employee relations, philanthropy or corporate governance (Inoue and Lee, 2010; Godfrey and Hatch, 2007). Hence, the influence of these activities on CFP should be diverse as well. As a logical conclusion, I hypothesize, if all CSP activities are aggregated into a single CSP score, there is not any significant relationship between CFP and CSP (Hypothesis 1 (H1)). On the very contrary, it is promising to take a more nuanced perspective. Several scholars recommend to use a disaggregated measure of CSP because of the multidimensional nature of this construct (e.g. Inoue and Lee, 2010). If scholars decided to use disaggregated measures of CSP, they often divided CSP into five sub-dimensions (employees, customers, suppliers, community and environment). This separation of CSP into single dimensions allows investigating disentangled effects of CSP components on CFP (e.g. Schreck, 2011). The study at hand divides CSP into 11 dimensions which represent all primary stakeholders. As a result, this analysis is even more fine-grained

than the one of past studies and offers the possibility to investigate which dimensions of CSP influence CFP in greater level of detail. The results of past studies indicate that the influence of single dimensions of CSP on CFP is diverse. However, these studies did not establish a homogenous picture of the most important dimensions of CSP. Schreck (2011), for example, investigates the influence of several CSP dimensions on CFP (Tobin's q) by analysing 300 listed companies from 13 industries and 24 different countries. He finds a statistically significant and positive relationship between CFP and the CSP dimensions corporate governance and environmental management and a significantly negative relationship with the dimension product & customer responsibility. There is no significant relationship between CFP and the dimensions society & community and employees in his study. Baird et al. (2012) investigate 1153 firms from 2001-2008. Their findings are partially not in accordance with the ones of Schreck (2011). For example, they find a significant and negative influence of their corporate governance score on CFP in several industries (e.g. containers & packaging or gas utilities) and a significantly positive influence of their product responsibility score on CFP in the gas utilities and thrifts & mortgage finance sector. Based on the results of these studies, it is difficult to predict which CSP dimensions have a significantly positive/negative influence on CFP. In contrast, it seems appropriate to assume that some CSP dimensions are positively related to CFP while other dimensions are negatively related to CFP (H2).

Most studies use multi-industry datasets; but even if they acknowledge the industry membership as an important control variable, they rarely report industry-specific results (Inoue and Lee, 2010; van Beurden and Goessling, 2008; Godfrey and Hatch, 2007; Chand, 2006; Griffin and Mahon, 1997). This is surprising because the industry membership may influence the relationship between CSP dimensions and CFP. It is reasonable that the ecological dimension of CSP is more important for an oil company than for a financial service provider. Therefore, the financial benefit of ecological

activities could be different as well. To cut short, prior multi-industry studies tend to mask industry-specific effects. One of the rare exceptions is the study of Baird et al. (2012) which shows that the influence of CSP dimensions on CFP differs per industry. Inoue and Lee (2010) report diverse relationships between CFP and CSP dimensions in the airline, casino, hotel and restaurant sector. To expand their analysis the present study focuses on industry-specific effects between CSP dimensions and CFP by estimating separate models for each of 10 industry classes. In contrast to the study at hand, both mentioned papers' analyses are based on KLD data. Therefore, the study at hand uses a dataset which has not been used for the investigation of industry-specific effects. Based on the results of the two mentioned studies, I hypothesize, that differing CSP dimensions have a significantly positive/negative influence on CFP in single industry classes (H3).

Margolis and Walsh (2003) point out that more than 80% of the studies included in their CFP-CSP literature review treat CSP as an independent variable, predicting CFP. By estimating an ordinary least squares (OLS) regression model, it is assumed that the causality runs from CSP to CFP. This is surprising because alternative assumptions about the causal effects between CSP and CFP were expressed very early. Waddock und Graves (1997) are often mentioned for being amongst the first scholars who acknowledged that there may be a simultaneous causality between CSP and CFP. The 'good management' hypothesis suggests that a sound CSP leads to a better financial performance. The 'slack resources' hypothesis assumes that financially successful companies are able to spend more financial resources on CSP activities and reach higher levels of CSP. A simultaneous causality between CFP and CSP leads to endogeneity problems as well as biased results of studies which use an OLS regression framework. Schreck (2011) uses an instrumental variable (IV) approach to account for endogeneity issues. He uses lagged values of the CSP variables as instruments. His results suggest that there is not any causal effect of CSP variables on CFP. However, it must be admitted that due to data availability, the number of observations, which are included in his IV regression, is very

low (128 observations). The present study follows his approach but builds its analysis on a considerably larger dataset.

3 Data

The study at hand consciously utilises an unused dataset to measure CSP in order to complement the findings of past studies which are mainly based on KLD data. This seems promising because KLD data is exposed to some criticism (cf section 4.2) and the enormous spread of the KLD data among researchers may synchronize the recent studies' results to some degree. The present study uses the dataset of an alternative rating agency, namely, Sustainalytics. Sustainalytics is an independent international rating agency which assesses the social performance of companies and countries. The assessment of Sustainalytics is based on several primary and secondary sources (e.g. sustainability reports, NGO data or sector studies) and on information of specialized third-party data providers.

The overall company ratings of Sustainalytics are divided into an environmental, a social and a governance (ESG) dimension. These dimensions are further divided into 11 sub-dimensions (three governance-related, five social and three environmental sub-dimensions) as can be observed by looking at Table 1. A short description of the 11 sub-dimensions is provided in Appendix 1 (the description is based on an unpublished information document from Sustainalytics; Sustainalytics, 2013). The study at hand focuses on the 11 sub-dimension scores.

Table 1
Sustainalytics rating

CSP total score		
Governance score	Social score	Environmental score
Business ethics score	Employees score	Operations score
Corporate governance score	Contractors & supply chain score	Contractors & supply chain score
Public policy score	Customer score	Products & services score
	Society & community score	
	Philanthropy score	

This table shows the 3 dimensions and the 11 sub-dimensions of the Sustainalytics rating.

To create the total score, the dimension scores and the sub-dimension scores, 60-100 indicators are assessed on a scale from 0-100. The indicators focus on sustainability policies, management systems and performance outcomes. After assessing each indicator, the scores are aggregated according to industry-specific weighting schemes.

Sustainalytics did a ‘methodology break’ in their rating system in 2009. Therefore, data from 2009 until 2012 can be used in this study. The rating universe of Sustainalytics covers the ‘MSCI Developed Market Standard Index’, the ‘Emerging Markets Standard Index’ and additional companies which Sustainalytics’ clients were interested in. The yearly financial data of the present study was gathered from Bloomberg (it ends in 2012). In accordance with recent studies, *Tobin’s q* serves as a measure of CFP (Schreck, 2011; Wagner, 2010). In their recent literature review, Fu and Jia (2011) name firm size, risk and industry as the most important control variables in studies which investigate the CFP-CSP relationship. Hence, I gathered information on the variables *total assets* (size), *total debt to total assets* (risk) from Bloomberg. The industry membership of the companies was provided by Sustainalytics. My final dataset contains CSP ratings as well as further company characteristics on 3772 listed firms from 58 countries at two points of time (for each company) between 2009 and 2012.¹ The companies represent 42 industries and 10 industry classes (cf Appendix 2). Table 2 shows descriptive statistics (the values are based on the second entry (most closely related date to December 2012) of each company in my dataset).

¹ I dropped 1% of the companies from the original dataset which showed the highest values of *Tobin’s q* because otherwise, their unreasonably high values of *Tobin’s q* (up to 36) might have biased the results.

Table 2
Descriptive statistics

	Obs	Mean	SD	Min	Max
Panel A: CSP total score					
CSP total score	3772	52.70	9.46	26.50	85.28
Panel B: CSP dimension scores					
Governance score	3772	60.57	11.09	26.29	100.00
Social score	3772	53.16	11.02	22.50	91.75
Environmental score	3772	47.13	12.98	15.00	100.00
Panel C: Sub-dimension scores					
Business ethics score	3772	54.47	15.85	0.00	100.00
Corporate governance score	3772	59.25	14.67	17.50	100.00
Public policy score	3772	83.16	17.96	12.22	100.00
Employees score	3772	44.76	14.86	6.25	100.00
Contractors & supply chain score	3772	53.42	18.03	16.00	100.00
Customers score	3772	75.49	22.99	8.57	100.00
Society & community score	3772	73.09	20.88	0.00	100.00
Philanthropy score	3772	22.20	28.77	0.00	100.00
Operations score	3772	44.90	16.11	0.00	100.00
Contractors & supply chain score	3772	56.25	17.20	25.00	100.00
Products & services score	3772	55.41	25.55	7.50	100.00
Panel D: Further company characteristics					
Tobin's q	3772	1.54	0.84	0.45	6.57
Total debt to total assets (in %)	3772	24.79	19.28	0.00	213.95
Total assets (in mln €)	3772	34119.75	186703.10	16.84	7255197

This table presents data on the company ratings of Sustainalytics on three levels of aggregation (Panel A – Panel C). The study at hand uses the 11 sub-dimension scores for further analysis. Panel D presents financial data and company characteristics (control variables).

As can be observed from Table 2 (Panel A), the scores of the included companies vary considerably. The *CSP total score* varies from 26.50 to 85.28. This suggests that poor as well as superior performers are rated by Sustainalytics. Furthermore, Panel C shows that the averages concerning the sub-dimensions vary as well. Companies perform best in the *public policy score* and worst in the *philanthropy score*. Panel D exhibits that the included companies are large because the average of the variable *total assets* amounts to €34.12 billion.

Table 3 presents a correlation matrix of all 11 CSP sub-dimension scores and *Tobin's q*. It shows descriptive evidence that some sub-dimensions are positively related to *Tobin's q* (e.g. *corporate governance*), while others are negatively related (e.g. *operations*). These diverse relationships confirm this paper's approach to divide CSP into separate components.

Table 3
Correlation matrix

	Log Tobin's q	Business ethics score	Corporate governance score	Public policy score	Employees score	S_Contractors & supply chain score	Customers score	Society & community score	Philanthropy score	Operations score	E_Contractors & supply chain score	Products & services score
Log Tobin's q	1.00											
Business ethics score	0.09	1.00										
Corporate governance score	0.11	0.43	1.00									
Public policy score	0.01	-0.11	-0.07	1.00								
Employees score	-0.06	0.38	0.39	0.02	1.00							
S_Contractors & supply chain score	-0.08	0.23	0.25	-0.14	0.26	1.00						
Customers score	-0.12	-0.10	-0.08	-0.11	0.14	-0.08	1.00					
Society & community score	0.02	0.11	0.06	0.20	0.02	0.03	0.05	1.00				
Philanthropy score	-0.06	0.17	0.20	-0.25	0.07	0.43	-0.12	0.18	1.00			
Operations score	-0.08	0.25	0.33	0.16	0.49	0.26	0.05	0.22	0.17	1.00		
E_Contractors & supply chain score	-0.10	0.17	0.17	-0.12	0.18	0.48	0.04	0.05	0.38	0.30	1.00	
Products & services score	0.11	0.23	0.22	-0.26	0.10	0.14	-0.17	-0.22	0.14	0.12	0.11	1.00

This table shows the correlations between CSP variables and CFP.

4 Methods

I first estimate a model with the aggregated *CSP total score* to relate the present study to other papers which focused on aggregated CSP data. As mentioned in section 4.2, I expect the relationship between aggregated CSP and CFP to be insignificant.

$$\text{Log}(\text{Tobin's } q_i) = \alpha_0 + \beta_1 \text{Log}(\text{Total assets}_i) + \beta_2 \text{Total debt to totals assets}_i + \beta_3 \text{CSP total score}_i + \beta_{4-6} \text{Year dummies}_i + \beta_{7-15} \text{Industry dummies}_i$$

The aim of the study is to take a more nuanced perspective on the CFP/CSP link and therefore, the following model with the 11 disaggregated CSP sub-dimension scores is estimated (please recall H2 which suggests that the influence of single CSP dimensions on CFP is diverse):

$$\text{Log}(\text{Tobin's } q_i) = \alpha_0 + \beta_1 \text{Log}(\text{Total assets}_i) + \beta_2 \text{Total debt to totals assets}_i + \beta_{3-13} \text{CSP dimension scores}_i + \beta_{14-16} \text{Year dummies}_i + \beta_{17-25} \text{Industry dummies}_i$$

Based on the substantial sample of the study, it is possible to estimate the model for each industry class separately. This approach addresses H3 which points out that the CSP dimensions are not equally important for CFP in each industry. Formally, the following model is estimated for each of 10 industry classes:

$$\text{Log}(\text{Tobin's } q_i) = \alpha_0 + \beta_1 \text{Log}(\text{Total assets}_i) + \beta_2 \text{Total debt to totals assets}_i + \beta_{3-13} \text{CSP dimension scores}_i + \beta_{14-16} \text{Year dummies}_i$$

As stated before, endogeneity could be present in studies which estimate their models by OLS, if there is a simultaneous causality between CSP and CFP. An instrumental variable approach is one of the most prominent solutions to solve endogeneity problems (Wooldridge, 2009). An IV approach divides the variation of the endogenous independent variables (the CSP variables in Schreck (2011) and in the present study) into endogenous and exogenous parts. This is achieved by using instrumental variables which satisfy two criteria: First, instruments must be correlated with the endogenous independent variables (in other words, the instrumental variables must be relevant). Second, the instruments

must be uncorrelated with the dependent variable – apart from the indirect effect through the endogenous explanatory variables (in other words, the instrumental variables must be exogenous). Relevance can easily be tested by running regressions which use the endogenous variables as dependent variables and the instruments and the other exogenous variables as independent variables (first-stage regression in the two-stage least squares approach). If the F-statistic of the first-stage regression is below ten, a rule of thumb suggests that the instruments are weak (Staiger and Stock, 1997). Unfortunately, exogeneity cannot be tested if the number of instruments equals the number of potential endogenous variables (in other words, the model is ‘just-identified’). Obviously, this is a limitation of (just-identified) IV methods in general.

The present study uses lagged values of the CSP variables as instruments. First stage regressions are not reported in this paper for the sake of brevity but are available upon request. The lowest F-statistic of the present study amounts up to 67.76. Therefore, the criterion ‘relevance’ is met.

The aim of the paper is to investigate the influence of several CSP dimensions on CFP in a more fine-grained approach. Therefore, it would be necessary to find, at least, 11 instrumental variables for the 11 CSP dimensions. This seems unachievable, apart from the possibility to use lagged CSP variables as suggested by Schreck (2011). Thus, I follow the approach of Schreck (2011) and use lagged CSP sub-dimension scores as instruments. This approach results in a just-identified IV model in which exogeneity cannot be tested. In line with Schreck (2011), the requirement of exogeneity shall be satisfied, if there is a considerably long time period between the current CFP measure and the lagged CSP ratings. In this case, the past CSP activities are too long ago to have a direct influence on current CFP. Basically, the dataset of the present study contains lagged CSP dimension values for all 3772 included companies. To satisfy the criterion of exogeneity I only include companies which have two or more years between their lagged CSP rating and their current CSP rating in the IV model (similar to Schreck (2011)).

5 Results

5.1 Results based on OLS-regressions

Table 4 reports the results of the OLS models with the dependent variable *Tobin's q*. H1 suggests that the relationship between the aggregated *CSP total score* and CFP is insignificant. As can be observed from model (1), the coefficient of the variable *CSP total score* is small (0.0001) and insignificant and therefore, in accordance with H1.

A potential cause for the result of model (1) may be found in H2 which predicts that the influence of single CSP sub-dimensions on CFP is diverse. The differing influence of CSP dimensions on CFP is reasoned by the heterogeneity of CSP activities. These diverse financial impacts of CSP dimensions may cancel each other out and lead to the insignificant coefficient of the variable *CSP total score*. In accordance with H2, model (2) shows some insignificant, some significantly positive as well as some significantly negative relationships between single CSP sub-dimensions and CFP. The CSP components *business ethics score*, *corporate governance score*, *contractors & supply chain score* (social dimension) and the *philanthropy score* are positively related to *Tobin's q*. *Corporate governance* seems to be the most influential dimension because a marginal increase in the corporate governance score of one point (on the scale from 0-100) leads, on average, to a 0.25% higher value of *Tobin's q*. The sub-dimensions *society & community score*, *operations score* and the *products & services score* exhibit a significantly negative relationship with CFP. For example, a marginal increase in the *operations score* results in a decrease of approximately 0.2% in *Tobin's q*. Finally, the sub-dimensions *public policy score*, *employees score*, *customers score* and *contractors & supply chain score* (environmental dimension) show insignificant relationships with CFP.

This analysis confirms theoretical arguments that CSP is a multidimensional construct (with heterogeneous activities) which should not be measured in empirical studies by a single aggregated score.

Table 4
Regression results

Model Dependent Variable	(1)		(2)	
	Log Tobin's q		Log Tobin's q	
	Coeff.	St.Err.	Coeff.	St.Err.
CSP total score	0.0001	0.0007		
Business ethics score			0.0021***	0.0005
Corporate governance score			0.0025***	0.0005
Public policy score			0.0003	0.0004
Employees score			-0.0009	0.0006
S_Contractors & supply chain score			0.0008*	0.0004
Customers score			-0.0003	0.0004
Society & community score			-0.0007*	0.0004
Philanthropy score			0.0010***	0.0003
Operations score			-0.0019***	0.0005
E_Contractors & supply chain score			0.0000	0.0005
Products & services score			-0.0011***	0.0003
Log Total asset	-0.0789***	0.0046	-0.0893***	0.0053
Total debt to total asset	-0.0003	0.0003	-0.0004	0.0003
Constant	1.2219***	0.0990	1.2214***	0.1148
Year Dummies	Yes		Yes	
Industry Dummies	Yes		Yes	
Observations/Companies	3772		3772	
R ²	0.2198		0.2407	

* Coefficient is statistically significant at the 10% level.
** Coefficient is statistically significant at the 5% level.
*** Coefficient is statistically significant at the 1% level.

Table 5 contributes to the aim of the paper, namely, to take a more nuanced perspective on the CSP-CFP relationship, by estimating separate regressions for the 10 included industry classes: consumer discretionary, consumer staples, energy, financials, industrials, information technology, materials, telecommunication services, utilities and healthcare. It can be observed from Table 5 that a single CSP sub-dimension's relationship to *Tobin's q* is sensitive to the industry class.² For instance, the *operations score* is negatively associated with CFP in the industry classes consumer discretionary, industrials, materials and utilities at least at the 10% significance level. In contrast, there is a positive relationship in the consumer staples industry class and no significant

² In the sake of clarity, the standard errors are not reported in Table 5 but certainly available upon request.

association in the other five industry classes (energy, financials, information technology, telecommunication services and healthcare).

The consumer discretionary industry exhibits the most statistically significant relationships between single CSP dimensions and *Tobin's q*. While *corporate governance* and *philanthropy* are positively related to CFP, *public policy*, *society and community*, *operations* and *products and services* show a negative association with *Tobin's q*.

To sum up, the results of Table 5 are in accordance with H3. Furthermore, the insights of Table 4 and 5 can be used by managers to identify those CSP activities which have a value for the society and promise financial benefits for the company as well. This is in line with, for example, Porter and Kramer (2006) who label activities, which create value for companies and for the society at the same time, as 'shared value' or as 'strategic corporate social responsibility' activities.

Table 5
OLS regression by industry class

	Consumer discretionary	Consumer staples	Energy	Financials	Industrials	Information technology	Materials	Telecommunication services	Utilities	Healthcare
Business ethics score	0.0011	-0.0001	0.0007	0.0036***	0.0032***	0.0036*	0.0029**	-0.0035	-0.0002	-0.0018
Corporate governance score	0.0046***	0.0062**	-0.0020	0.0015	0.0026**	0.0018	0.0009	0.0015	0.0006	0.0066***
Public policy score	-0.0056**	-0.0029	0.0016	-0.0016	-0.0013	-0.0033	0.0022*	0.0024	0.0021	0.0002
Employees score	-0.0012	0.0011	0.0008	0.0003	-0.0001	-0.0036	0.0008	-0.0010	0.0042**	-0.0011
S_Contractors & supply chain score	-0.0007	0.0020	0.0031	-0.0024**	0.0024**	0.0032	-0.0006	-0.0068*	0.0004	0.0068***
Customers score	0.0013	-0.0005	0.0019	0.0008	-0.0008	-0.0048***	-0.0033**	0.0029	0.0019	0.0024
Society & community score	-0.0035*	-0.0022	-0.0011	0.0012	-0.0010	-0.0005	-0.0012	-0.0023	-0.0006	0.0021
Philanthropy score	0.0020**	0.0009	0.0001	0.0008*	0.0003	0.0004	0.0013	0.0028	0.0006	0.0014
Operations score	-0.0034**	0.0046*	-0.0016	-0.0006	-0.0031***	-0.0014	-0.0030*	0.0041	-0.0044**	-0.0006
E_Contractors & supply chain score	0.0002	-0.0043	-0.0026	0.0008	-0.0010	0.0022	-0.0018	-0.0025	0.0006	0.0008
Products & services score	-0.0036***	-0.0041	-0.0010	-0.0009	0.0008	-0.0013	-0.0004	0.0004	-0.0010	-0.0029
Log Total asset	-0.1552***	-0.1200***	-0.0639***	-0.0591***	-0.1144***	-0.0787***	-0.1067***	-0.0865***	-0.1190***	-0.1569***
Total debt to total asset	0.0018**	0.0004	0.0001	0.0005	-0.0017*	-0.0013	-0.0022	0.0013	0.0023**	-0.0015
Constant	2.0070***	1.6549***	0.8655**	0.0391	1.2513***	1.5797***	1.7354***	1.1161**	0.8472**	0.9735
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	No	No	No	No	No	No	No	No	No	No
Obs./Companies	522	227	292	766	611	378	434	112	208	222
R ²	0.2249	0.1209	0.0940	0.1761	0.2065	0.1900	0.1655	0.2196	0.2961	0.2654

This table reports the coefficients of the CSP and the control variables in 10 industry classes. *Log Tobin's q* is used as dependent variable.

* Coefficient is statistically significant at the 10% level.

** Coefficient is statistically significant at the 5% level.

*** Coefficient is statistically significant at the 1% level.

5.2 Results based on instrumental variable regressions

This chapter uses an instrumental variable approach to address the problem of endogeneity, respectively, simultaneous causality between the CSP variables and CFP. Lagged CSP variables are used as instruments. To satisfy the IV requirement of exogeneity, I only include the companies which have two or more years between their lagged CSP rating and their current CSP rating in the IV model.³ This procedure reduces the sample to 2190 (from 3772) observations. The sample reduction may influence the OLS results and therefore, Table 6 reports the results of the OLS model with the reduced sample. The results are comparable to the results of Table 4 but some differences occur. Four out of seven significant relationships between CSP dimensions and CFP still exist. The coefficient on the variable *business ethics score* is barely not significant at the 10% level (p-value: 0.129) in the OLS model with the reduced sample (it is significant in the model with the full sample of 3772 observations). While the *products & services score* and the *society & community score* still show a negative relationship with CFP in the OLS model of Table 6, the relationships are statistically not significant, whereas they are in Table 4.

The results of the instrumental variable approach of Table 6, which allow for a causal interpretation of the results, show two differences to the OLS results. First, the *employee dimension* exhibits a negative influence on *Tobin's q* (on the 10% significance level). Second, the other coefficients are slightly less significant than the OLS results. Apart from these differences, the results are, in general, similar to the ones which are obtained from OLS. An interesting result is that the two CSP dimensions *corporate governance* (with a positive influence on CFP) and *operations* (with a negative influence on CFP) are

³ I estimated the model with those observations which have at least 3 years between their lagged and current CSP rating as well. This procedure further reduces the sample to 1617 observations and yields comparable results to the ones of Table 6.

again the most influential CSP components. These particular results seem to be robust throughout all models of the present study.

Table 6
Regression results

Model Dependent Variable	OLS		IV	
	Log Tobin's q		Log Tobin's q	
	Coeff.	St.Err.	Coeff.	St.Err.
Business ethics score	0.0010	0.0006	-0.0005	0.0017
Corporate governance score	0.0051***	0.0007	0.0082***	0.0019
Public policy score	-0.0008	0.0006	0.0014	0.0009
Employees score	-0.0010	0.0007	-0.0028*	0.0014
S_Contractors & supply chain score	0.0013**	0.0005	0.0014*	0.0008
Customers score	-0.0002	0.0004	-0.0004	0.0008
Society & community score	-0.0002	0.0005	0.0001	0.0007
Philanthropy score	0.0008**	0.0003	0.0010*	0.0005
Operations score	-0.0022***	0.0007	-0.0034**	0.0015
E_Contractors & supply chain score	0.0000	0.0006	-0.0004	0.0008
Products & services score	-0.0005	0.0004	-0.0006	0.0006
Log Total asset	-0.0963***	0.0071	-0.0853***	0.0085
Total debt to total asset	0.0005	0.0004	0.0005	0.0004
Constant	1.1698***	0.0997	0.9219***	0.1464
Year Dummies	Yes		Yes	
Industry Dummies	Yes		Yes	
Observations/Companies	2190		2190	
R ²	0.2622		0.2455	

Lagged CSP sub-dimension scores are used as instruments for the 11 current CSP sub-dimension variables in the IV model.

* Coefficient is statistically significant at the 10% level.
** Coefficient is statistically significant at the 5% level.
*** Coefficient is statistically significant at the 1% level.

Table 7 estimates the instrumental variable regression model for the 10 industry classes separately.⁴ Again, it is obvious that the influence of single CSP dimensions on CFP differs between industries. This conclusion confirms the results of Table 5 and is in accordance with H3. However, it must be acknowledged that the models of Table 7 suffer from small sample sizes due to the restriction of the sample to companies which have at least two years between their current and the lagged CSP sub-dimension scores.

⁴ For some industries the R² value is negative and therefore, suppressed in Table 7. The variable *products & services score* could not be included in the model for the healthcare sector due to a collinearity between the lagged and the recent *products & services score*. These problems are caused by the sample reduction of the IV approach.

Table 7
IV regression by industry class

	Consumer discretionary	Consumer staples	Energy	Financials	Industrials	Information technology	Materials	Telecommunication services	Utilities	Healthcare
Business ethics score	-0.0031	-0.0133	0.0547	0.0056	0.0002	-0.0015	0.0038	0.0013	-0.0140	-0.0186
Corporate governance score	0.0118*	-0.0016	-0.0974	-0.0007	0.0076*	0.0096	0.0086*	0.0124	-0.0056	0.0259
Public policy score	-0.0034	-0.0368	0.0225	0.0013	-0.0034	-0.0042	0.0057*	0.0014	-0.0473	-0.0559
Employees score	-0.0049	-0.0226	0.0795	0.0003	-0.0017	-0.0053	-0.0079	-0.0016	0.0260	0.0347
S_Contractors & supply chain score	-0.0011	0.0140**	-0.0261	-0.0026	0.0032	0.0080	-0.0002	-0.0140	-0.0071	-0.0253
Customers score	0.0024	0.0079	-0.0191	-0.0026	0.0018	-0.0070*	-0.0004	0.0052	0.0137	-0.0021
Society & community score	-0.0027	-0.0051	-0.0065	-0.0033	0.0014	0.0076**	-0.0060**	-0.0140	0.0002	0.0106
Philanthropy score	0.0013	0.0009	0.0134	0.0009	-0.0016	0.0005	0.0018	0.0047	-0.0109	-0.0071
Operations score	-0.0033	0.0123	-0.0149	-0.0027	-0.0051*	-0.0094	-0.0049	0.0022	0.0004	-0.0044
E_Contractors & supply chain score	-0.0001	0.0250	-0.0519	0.0057***	-0.0026	0.0032	-0.0088**	0.0092	-0.0205	0.0104
Products & services score	-0.0024	-0.0148	-0.0203	-0.0013	0.0028	-0.0012	-0.0030	0.0008	0.0094	
Log Total asset	-0.0935***	-0.4313*	-0.0316	-0.0875***	-0.1107***	-0.0380	-0.0528	-0.1337*	-0.1362	-0.3291
Total debt to total asset	0.0030***	0.0018	0.0009	0.0008	-0.0020	-0.0025	-0.0033	0.0024	-0.0002	-0.0020
Constant	1.5003**	7.1845	6.0972	1.0445**	1.1415**	0.6847	1.3371***	0.6553	6.1075	6.7612
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	No	No	No	No	No	No	No	No	No	No
Obs./Companies	320	138	165	458	361	216	215	58	114	145
R ²	0.2245			0.2070	0.1860	0.1127	0.0052	0.0432		

This table reports the coefficients of the CSP and the control variables in 10 industry classes. *Log Tobin's q* is used as dependent variable. Lagged CSP sub-dimension scores are used as instruments for the 11 current CSP dimension variables.

* Coefficient is statistically significant at the 10% level.

** Coefficient is statistically significant at the 5% level.

*** Coefficient is statistically significant at the 1% level.

Supposedly, the sample restriction and the small sample sizes in some industry classes can be regarded as the decisive reasons for the differences between Table 5 and 7.

6 Conclusion

The aim of this paper is to investigate the relationship between CSP and CFP by taking a more nuanced perspective than prior studies. The present study contributes to this large body of literature by considering the following four aspects. First, it explores a new CSP dataset from Sustainalytics which contrasts most of the other recent studies that use KLD data. Second, the study at hand measures CSP in a more fine-grained way than prior studies by dividing the construct into 11 sub-dimensions. Third, the study explicitly takes industry-specific differences in the CFP-CSP relationship into account by estimating separate models for 10 industry classes. Fourth, an instrumental variable approach is used to account for endogeneity (respectively, simultaneous causality between CSP sub-dimensions and CFP). The present study follows the approach of Schreck (2011) who uses lagged CSP variables as instruments.

Based on a sample of 3772 companies, the results confirm that *the* overall relationship between a highly aggregated CSP score and CFP does not exist. In contrast, CSP sub-dimensions address completely diverse topics and therefore, the financial benefits for companies from CSP sub-dimensions are diverse as well. The CSP sub-dimensions *corporate governance* and *operations* seem to be the most influential CSP components for CFP in the OLS and instrumental variable regression models. A marginal increase in the dimension *corporate governance* enhances *Tobin's q* by 0.25-0.82%. An increase of one point in the dimension *operations* lowers CFP by 0.19-0.34%. Furthermore, it could be demonstrated that the relationships between CSP sub-dimensions and CFP are industry-specific. In single industries different CSP sub-dimensions impact CFP significantly. The results of this paper may be used by managers in order to select CSP activities which promise benefits for the society as well as enhance CFP. In my opinion

future research on this body of literature should continue to explore the circumstances under which a significant relationship between CFP and CSP exists.

Appendix

Appendix 1

Description of the 11 CSP sub-dimensions

CSP sub-dimension	Dimension description
Business ethics score	Business ethics is a system of moral principles applied in the commercial world. Business ethics indicators focus on: <ul style="list-style-type: none"> • Certain forms of financial crimes (ethics of finance): bribery, corruption, and money laundering • Global strategic commitments: UN related initiatives such as the UN Global Compact, UN PRI, UNEP FI • Tax issues • Animal testing/animal welfare/genetic engineering/clinical trials (ethics of production)
Corporate governance score	Corporate governance is the framework of rules and practices by which a board of directors ensures accountability, fairness, and transparency in a company's relationship with all its stakeholders (financiers, customers, management, employees, government and the community). The corporate governance framework consists of (1) explicit and implicit contracts between the company and the stakeholders for distribution of responsibilities, rights, and rewards, (2) procedures for reconciling the sometimes conflicting interests of stakeholders in accordance with their duties, privileges, and roles, and (3) procedures for proper supervision, control, and information-flows to serve as a system of checks-and-balances. The indicators focus on: <ul style="list-style-type: none"> • Degree of transparency • Accounting and Audit • Board and executive compensation • Board structure • Shareholders' rights
Public policy score	Sustainalytics evaluates the manner by which a company has attempted or succeeded in influencing public policy. The most common ways to influence public policy are: <ul style="list-style-type: none"> • Direct/indirect political donations (political contributions) • Lobbying expenditures (political spending)
Employees score	Sustainalytics assesses if companies have implemented policies, programmes and management systems to safeguard their employees' welfare. Labour disputes and class action lawsuits over compensation, overtime pay and employment agreements often lead to long-lasting and/or recurring strikes. Job security and labour conditions (wages, benefits, and insurance) are often particularly unfavourable for temporary employees. On the job health and safety incidents, and even fatalities, related to machinery and the working environment may lead to high fines.
S_Contractors & supply chain score	Sustainalytics evaluates whether or not companies apply social standards to their supply chain, as well as enforce and monitor compliance with their standards. Specifically, Sustainalytics looks into policies that underpin the company's commitment to ensure human rights throughout their supply chains, as well as into monitoring activities such as audits.
Customers score	Sustainalytics looks at policies and programmes on product quality and safety, responsible marketing, advertising ethics, privacy of data etc. (depending on peer group).
Society & community score	Sustainalytics evaluates the company's commitment to ensure social standards in local communities or society in general. The section covers, for example, controversies or incidents related to human rights, collaboration with repressive regimes, conflicts with local communities and programmes to address societal issues (depending on peer group).
Philanthropy score	Sustainalytics evaluates the companies' guidelines for philanthropic activities, its established corporate foundation and the percentage share of its donations to its income before tax/earnings before tax (NEBT).
Operations score	Sustainalytics evaluates policies, programmes and management systems aimed at mitigating the environmental impact for its own operations. Key environmental impacts vary between peer groups; however, generally Sustainalytics is looking at greenhouse gas and other air emissions, water use or waste and especially hazardous waste.
E_Contractors & supply chain score	Companies are expected to demand compliance with environmental best practices from their suppliers. Sustainalytics evaluates the quality of procurement policies, programmes to improve the environmental performance of suppliers or external environmental certifications of suppliers.
Products & services score	Sustainalytics evaluates the environmental footprint of the company's products and services, and the measures it takes to mitigate the negative impacts. Sustainalytics also evaluates a company's contribution to promote products and services that have clear environmental benefits.

This table describes the 11 CSP sub-dimensions based on an unpublished information document which was provided by Sustainalytics (2013). Apart from small modifications, the information in the table is provided as I originally received it.

Appendix 2

Industry class composition

Industry class	Industry	Obs.	Percent
Consumer discretionary	Auto components	48	1.27
Consumer discretionary	Automobiles	39	1.03
Consumer discretionary	Consumer durables ex homebuilders	47	1.25
Consumer discretionary	Consumer services	95	2.52
Consumer discretionary	Homebuilders	26	0.69
Consumer discretionary	Media	93	2.47
Consumer discretionary	Retailing	138	3.66
Consumer discretionary	Textiles, apparel & luxury goods	36	0.95
Consumer staples	Food & staples retailing	62	1.64
Consumer staples	Food, beverage & tobacco	140	3.71
Consumer staples	Household & personal products	25	0.66
Energy	Energy equipment & services	67	1.78
Energy	Oil & gas refining, marketing, storage & transportation	50	1.33
Energy	Oil, gas, coals & consumable fuels producers	175	4.64
Financials	Banks	257	6.81
Financials	Diversified financial services	243	6.44
Financials	Insurance	135	3.58
Financials	Real estate	131	3.47
Healthcare	Health care providers, equipment & services	112	2.97
Healthcare	Pharmaceuticals, biotechnology & life sciences	110	2.92
Industrials	Aerospace & defense	37	0.98
Industrials	Building products	25	0.66
Industrials	Commercial and professional services	80	2.12
Industrials	Construction & engineering	77	2.04
Industrials	Electrical equipment	47	1.25
Industrials	Industrial conglomerates	40	1.06
Industrials	Machinery	130	3.45
Industrials	Trading companies & distributors	33	0.87
Industrials	Transportation	94	2.49
Industrials	Transportation infrastructure	48	1.27
Information technology	Semiconductors & semiconductor equipment	93	2.47
Information technology	Software & services	136	3.61
Information technology	Technology hardware & equipment	149	3.95
Materials	Chemicals	130	3.45
Materials	Construction materials	38	1.01
Materials	Containers & packaging	23	0.61
Materials	Diversified metals & mining (incl. aluminum)	83	2.20
Materials	Gold and precious metals	84	2.23
Materials	Paper & forest products	20	0.53
Materials	Steel	56	1.48
Telecommunication services	Telecommunication services	112	2.97
Utilities	Utilities	208	5.51
Total		3772	100.00

This table shows the distribution of companies to the 42 industries and 10 industry classes of the present study.

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