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Corporate financial performance and corporate environmental performance: A perfect match?

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Abstract:

Corporate financial performance (CFP) is determined by many factors. One of those factors, which has been subject to much attention in research, is corporate environmental performance (CEP). Moreover, CEP is influenced by CFP as well. The relationship between CFP and CEP has been studied for almost 40 years leading to a vast number of empirical studies and reviews. This paper aims at providing an overview of studies on the focal relationship and summarizing their findings in a quantitative way, employing the methodology of a systematic review and a vote-counting approach. First, there is an assessment of the state of research including an examination of 30 review studies, showing that the findings are far from conclusive enough to be considered satisfactory. Second, 274 empirical studies are analyzed regarding characteristics such as measurement constructs and findings.

1 Introduction

The relationship between corporate environmental performance (CEP) and corporate financial performance (CFP) has been analyzed for almost 40 years. While many scholars state that there is a positive relationship, the whole picture is not yet clear. The number of empirical studies on the relationship is substantial – the authors have collected 465 studies – and their number is continuously growing. Because of the vast amount of material related to the topic, many scholars have summarized the empirical research in reviews. The most comprehensive syntheses of empirical results on the relationship between CEP and CFP were done by Margolis & Walsh (2001), continued in Margolis & Walsh (2003), Orlitzky, Schmidt, & Rynes (2003), Allouche & Laroche (2005), Ambec & Lanoie (2008), Dixon-Fowler et al. (2009), Molina-Azorín et al. (2009), Vishwanathan (2010) and Horváthová (2010). These works often primarily review the relationship between corporate social performance (CSP) and CFP. Due to the conceptual relation, CEP can be considered as a subset of CSP and therefore a number of empirical studies dealing with CEP are included in those reviews.

In general, all reviews find a positive relationship between CSP and CFP. However, while most of these reviews are focusing on CSP, they fail to provide further insight into the mechanics behind the relationship between CEP and CFP and consider only a limited sample of the available evidence on the regarded relationship. Furthermore,

the review results point out that there is not only one possible relationship, as both CEP and CFP are multidimensional constructs – diverse causal effects are at play between the two performances and various moderating and mediating variables exist. Hence, the need for further research on the multidimensionality of the nexus between CEP and CFP is stressed.

The aim of the paper is to provide a sound basis for the understanding of the research field as well as a methodology to establish a starting point for a continuous review procedure on the topic. In this regard the paper is motivated and inspired by the compendium on the relationship between CFP and CSP provided by Margolis & Walsh (2001) and seeks to answer the research question: ***"What is the evidence provided by empirical studies on the relationship between CFP and CEP?"***

The paper is organized as follows: Chapter 2 describes the basics of the relationship and defines the constructs of CEP and CFP. In the next section of the paper the findings of existing reviews are assessed and summarized. The fourth chapter describes the methodology used to assess single empirical studies and the results of the assessment of empirical studies. The paper closes with a discussion and summary of the findings.

2 The basics of the relationship: categories and possible relationships

Both the EMAS III and the series of ISO 14000, particularly ISO 14031, define CEP as "results of an organization's management of its environmental aspects" (International Organization for Standardization (ISO), 1999; The European parliament and the Council of the European Union, 2010). Environmental performance is to be considered as the absolute performance of a company with regard to the environment, i. e. its environmental impact. The multi-dimensional structure of CEP has been summarized and empirically tested in a thorough model by Günther, Hoppe & Poser (2008). Based on this model, CEP consists of three dimensions: strategic CEP, operational CEP and corporate environmental reporting (CER). The operational dimension comprises the aspects of inputs, outputs, compliance for inputs or outputs and liabilities. An environmental management system (EMS) and its components – environmental policy; environmental expenditures; environmental objectives; environmental program; organization and audit – form the strategic dimension. CER, not always considered as part of CEP but clearly related with it, forms the third dimension of the model.

CFP, the other construct of the focal relationship is the result of a company's activities regarding its targets: liquidity, profit and strategic profit potential. Therefore a strategic level (strategic profit potential) and an operational level (profit and liquidity)

can be distinguished. CFP may be drafted from stock market based measures (SM), e. g. stock price; stock price plus dividends; price earnings ratio; risk associated with a share (beta), etc. Accounting based measures (ACC) assess the financial performance such as net earnings, return on assets, return on equity, etc. Such measures are predominantly used to determine the company's operational performance. Value oriented methods like shareholder value (SHV) may also be used to measure CFP. In this method, emphasis is laid on the strategic financial performance and its target figure: strategic profit potential. Moreover, value-oriented methods are future-oriented and long-term assessment methods, and are therefore adequate for the assessment of environmental aspects. In addition to stock market, accounting and value-oriented methods, perceived performance, and a combination of accounting and stock market based measures are also included.

There are various theoretical frameworks arguing for different configurations of the relationship between CEP and CFP. The "Instrumental stakeholder" (Cornell & Shapiro, 1987; Orlitzky, 2007; Waddock & Graves, 1997), the "Natural Resource based view" (Hart, 1995; Hart & Dowell, 2010) and the "It pays hypothesis" (Schaltegger & Synnestved, 2002; Bhat, 1999; Clelland, 2000; Céspedes-Lorente & Galdeano-Gómez, 2004) provide theoretical arguments for the existence of a positive relationship. Frameworks such as the "Trade off hypothesis" (Allouche & Laroche, 2007; Friedman, 1962; Friedman, 1970) and the "Managerial opportunism hypothesis" (Preston & O'Bannon, 1997; Freedman & Jaggi, 1982) support a negative relationship. The "Slack resources theory" (Preston & O'Bannon, 1997; Waddock & Graves, 1997; Schaltegger & Synnestved, 2002), arguing for a positive relationship between CEP and CFP, implies the need of resources for increasing CEP. McWilliams & Siegel (2000) argue, limiting their argument to a product-based view, that considering the theory of the firm there should be no relationship between CSP and CFP (Orlitzky, Siegel & Waldman, 2011). Empirical studies provide evidence for a curve-linear relationship (Wagner, Schaltegger, & Wehrmeyer, 2001; Moore, 2001; Bragdon & Marlin, 1972; Stanwick & Stanwick, 2000) in line with arguments for the existence of win-win situations but also detrimental relationships. The evidence provided by meta-analyses (Margolis & Walsh, 2001; Allouche & Laroche, 2005; Orlitzky et al., 2003; Wu, 2006) indicates the existence of a synergetic relationship, with CEP and CFP enhancing each other. Based on those theoretical frameworks hypotheses can be derived comprising three dimensions: the type of the relationship, either positive, negative or not existing; and the type of causality, running from CEP to CFP or vice versa. The third possibility addresses the existence of a synergetic, interdependent relationship between CEP and CFP.

3 Existing review articles and meta-analyses relevant for the relationship

We start our examination by analyzing reviews which can be considered as state-of-the-art literature and provide the best source to consider, in order to gain an overview over the topic and to assess the relevant accumulated knowledge.

Lankoski (2000) discusses the results of 34 studies in a detailed way and concludes that no overall picture has emerged so far. 15 years after the conclusion by Ullmann describing the research field as "empirical data in search of a history" (Ullmann, 1985), Lankoski still comes to the same conclusion (Lankoski, 2000). One possible explanation offered for the inconsistency is the fact that the size of environmental costs is very small, probably too small to observe the effect on overall economic performance empirically. Therefore, it is suggested to focus further research on the relationship between CEP and "environmental profit" itself.

In a compendium dedicated to the relationship between CSP and corporate financial performance (CFP) Margolis and Walsh review 95 studies (Margolis & Walsh, 2001). The review is one of the most comprehensive as not only all studies are summarized applying a vote-counting method but also a detailed review sheet for every study is provided. One drawback of their approach is the fact that also theoretical papers like the one from Porter and van der Linde (Porter & van der Linde, 1995b) are included. Based on Margolis & Walsh (2001), Margolis & Walsh (2003) extend their sample of studies, on the relationship between CSP and CFP, reviewing an impressive number of 127 papers. Overall, 53 % (68 %) of the analyzed studies point to a positive relationship, when corporate social performance is treated as a dependent (independent) variable. The conclusion drawn from their analyses implies a stop on the research on the focal relationship and calls for a new focus on other problems in the social field. "The clear signal that emerges from thirty years of academic research – indicating that a positive relationship exists between social performance and financial performance – must be treated with care." (Margolis & Walsh, 2001)

Wagner (2003) undertakes a narrative review of 28 studies on the CEP-CFP link. Distinguishing between earlier studies (1972 – 1992) and more recent studies the relationship is described as inconclusive. On the one hand, a variety of methodological and data restraints in studies are identified as potential causes for the variability of the research findings. On the other hand, the relationship itself is identified as being very complex. The strategy of a company related to CEP is proposed as an important factor for the relationship.

In their comprehensive and influential review Orlitzky et al. (2003) overcome the limitation of a vote-counting-method and apply an effect-size (r) meta-analysis including 52 studies that are analyzing the relationship between CSP and CFP. In a subset

on CEP and CFP it is found out that there is a positive relationship and that "[…] environmental responsibility is rewarding in more ways than one." (Orlitzky et al., 2003) They also highlight the importance of the measurement strategy as an important variable influencing the results of empirical studies. They differentiate for their sample on CSP-studies among (1) CSP disclosure, (2) CSP reputation ratings, (3) social audits, CSP processes, and observable outcome and (4) managerial CSP principles and values.

The meta-analytic review by (Allouche & Laroche, 2005) synthesizes 79 studies describing the relationship between CSP and CFP using partial correlations. The findings show an overall positive relationship between CSP and CFP and also for a subsample of CEP and CFP in line with (Orlitzky et al., 2003). Interestingly, despite numerous theoretical arguments risk and size of a company seem not to influence the relationship.

A review by Wu (2006) also applies the method of meta-analysis in order to investigate the relationship between CFP, CSP and size with a sample of 121 studies out of which 39 are on the relationship between financial and social performance. In general, a positive relationship between both types of performances is found, strengthening the former results.

Dixon-Fowler et al. (2009) cover 37 studies in their meta-analysis exclusively based on studies that considered the causal direction of environmental performance on financial performance.

Including the already discussed reviews we identified 30 reviews (Allouche & Laroche, 2005; Ambec & Lanoie, 2008; Arlow & Cannon, 1982; Aupperle, Carroll & Hatfield, 1985; Blanco, Rey-Maquieira & Lozano, 2009; Boyd et al., 2006; Cochran & Wood, 1984; Dixon-Fowler et al., 2009; Etzion, 2007; Griffin & Mahon, 1997; Havemann & Webster, 1999; Horváthová, 2010; Lankoski, 2000; Margolis & Walsh, 2001; Margolis & Walsh, 2003; Margolis, Elfenbein & Walsh, 2007; Molina-Azorín et al., 2009; Murphy, 2002; Orlitzky et al., 2003; Pava & Krausz, 1996; Roman, Haybor & Agle, 1999; Salzmann, Ionescu-Somers & Steger, 2005; Ullmann, 1985; Van Beurden & Gössling, 2008; Vishwanathan, 2010; Wagner et al., 2001; Wagner & Wehrmeyer, 2002; Wagner, 2003; Wood & Jones, 1995; Wu, 2006) discussing the empirical research on the CEP-CFP link or the related CSP-CFP link.

Overall, on the one hand, a part of the reviews conclude that the evidence of the relationship between CEP and CFP is inconclusive. On the other hand, most of the reviews find a positive relationship. Meta-analytic reviews, offering the most methodological rigor and the most trustworthy results, generally support a positive relationship. All reviews criticize, or at least point to, the influence of methodological and data problems, as exemplarily formulated by Margolis and Walsh: "Serious methodological concerns have been raised about many of the studies and about

efforts to aggregate these results. […] Questions arise about the connection between the underlying CSP construct and efforts to measure it; the validity of the measures used to assess social performance; the diversity of measures used to assess financial performance; and the direction and mechanism of causation, given the heavy reliance on correlation analyses and contemporaneous financial and social data." (Margolis & Walsh, 2001) Also theoretical challenges hamper an easy assessment of the relationship as it is "*[…]* complex and contingent on situational, company- and plant-specific factors that are difficult to detect through most analytical approaches." Often, inappropriate statistical methods and measurement strategies are mentioned in reviews as shortcomings of the empirical research on the CEP-CFP link. In addition, the evident problem of the identification of causality has been addressed continuously since the 1970s. As existing reviews are not conclusive and most often do not focus on the CEP-CFP link specifically, the following sections derive a deeper understanding of the empirical research on the relationship based on single studies.

4 Review of empirical studies

For our synthesizing review we rely on a sample of 274 empirical works on the relationship between CEP and CFP. In order to be included into the review, studies had to fulfill the following criteria:

1. The study was prepared/published up to and including 2010.
2. The study is written in English or German.
3. The study is situated on the level of the single company or production facility.
4. The study contains at least one variable which covers CEP.
5. The study contains at least one variable which covers CFP.
6. The study uses a statistical method to test the relationship between a variable measuring CEP and a variable measuring CFP.
7. The study does not use a qualitative and/or case-study design.
8. It is not necessary that a study has its main focus on the research of the relationship between the financial and environmental variables. For example, there are studies included in the analysis which research the relationship between social and financial performance, but an environmental variable is used.

By applying these criteria we reduced the collected 465 studies to a list of 274 studies from 251 publications. The included studies were coded in terms of the following information: author, source and year of publication; CEP measures; CFP measures; control variables; hypotheses; statistical method; the use of lagged variables; relationships, representing the overall result; the measurement category, allowing for the

assessment of the influence of the measurement approach on results; and finally on the level of variable correlations to provide a detailed description of each study. In addition, the results as expressed by the authors of the study, and further interesting points, are summarized in a coding sheet. For analyzing the data and summarizing the findings a vote counting (Cooper, 1998) is used. Some proponents of meta-analytic methods stress that the results from vote-counting procedures may lead to invalid conclusions (Orlitzky, et al., 2003; Hunter, 2004; Hedges & Olkin, 1980). The main problems are that for a large number of studies, vote-counting procedures may tend to show a zero instead of true effect (Cooper, 1998) and that study characteristics such as sample size and effect size are not considered. Though those shortcomings are acknowledged and kept in mind, the benefits of the vote-counting method are its ability to map the empirical research and to enable subsample analyses, as well as its merit of easily illustrating the summarized findings, outweigh the concerns raised. For these reasons the method is also widely applied by other scholars in this field (Margolis & Walsh, 2001; Margolis & Walsh, 2003; Van Beurden & Gössling, 2008).

The relationships found in a study are distinguished in terms of their direction, i. e. if the relationship between financial performance and environmental performance is negative or positive. If the relationship found reaches a level of significance of at least 10 %, it is counted as a significant relationship. All relationships that do not reach this level of significance are regarded as not being significant. Hence, a relationship might be significantly positive (++), indicating a positive relationship between CEP and CFP, significantly negative (––), indicating a negative relationship between CEP and CFP, or not significant (o), indicating no relationship between CEP and CFP. Due to missing causalities in the primary studies, it is not taken into account whether a measure functions as an independent or dependent variable in a particular study. Therefore, the results found in this paper do not address the question of causality between CEP and CFP.

An underlying assumption in choosing a vote counting is that every result has already been proven statistically and therefore can be used as a valid investigation basis for the relationship between the two types of performance. The integration of the findings of different studies allows us to provide a conclusion about the empirical research on the whole, and a mapping of the result variety.

Another objective of this analysis (besides investigating the direction of the relationship between the two performances) is the identification of relevant determinants influencing the relationships identified in studies. This objective is based on the consideration that CEP cannot be measured with a single variable, with the same being true for CFP. Therefore, the existence of different determinants is assumed depending on the study and its specific characteristics. It is therefore necessary to analyze those determinants. The necessary information for such an analysis is drawn from the coding sheets.

The combined results of all studies analyzed serve as a basis for further research steps. The results of a study are drawn based on all results (e. g. four bivariate relationships found in one study indicating a significant positive relationship and one relationship a non-significant relationship are combined to an overall significant positive finding of a study) presented in a study and are therefore subjective. The combined results do not have to be univocal allowing for example for an "++/––" interpretation if a u-curve is identified in a study. This approach allows for expressing the complexity of the findings of empirical studies itself and also confirms conflicting theoretical hypotheses about the relationship. In order to identify important determinants, the results are broken down on the level of environmental and financial measures applied in studies. We assume that if the use of a specific measure affects the established relationship, the same applies for the category level the measure belongs to and not only for the single measure. Hence, we sort the results of the studies regarding categories (financial and environmental) to a combination of both types of categories. If a study comprises more than one relationship, e. g. by having different findings for different measures, then all relationships are counted separately. When a study applies more than one category of measures, the relationships are counted for every category respectively. For that reason, the number of studies does not equal the number of relationships counted. If more than one measure from a category is applied in a study, the interpretation of the direction and significance level might be even more complicated; as the relationship for one measure might be significantly positive and for the second, from the same category, not significant. In such a case both relationships are considered. However, if a specific relationship, for example ++, occurs several times for a variable combination (e. g. ROA-TRI), it is only counted once. The results are also grouped in regard to the different groups of variables e. g. measures of profit or measures based on the Toxic Release Inventory (TRI).

4.1 Characteristics of the studies and measurement categories

The publication date of the first studies in the 1970s coincides with the general rise in interest in environmental aspects. The steady increase in publications parallels the increasing public discussion. The increase in efforts to study the relationship in the 1990s can be related to a larger movement in academia concerning business and environment related research potentially triggered by the Rio de Janeiro Earth Summit (Etzion, 2007). As for the geographical distribution of the studies, most of the studies are based on US-American data (153) whereas 54 (67) studies apply European (other) data. Because of different regulatory frameworks in different countries, the empirically measured relationships between variables might be influenced. Concerning the industries the majority of studies include multiple industries in their analysis. In general three methods that are applied in the studies can be distinguished: regression, models, benchmarks and event studies.

The environmental variables used by the studies can be grouped into six categories (see Table 1 and 2): (1) Strategic environmental performance, (2) Operational environmental performance, (3) Questionnaire based measures (perceived performance), (4) Rating and ranking, (5) Environment related events, (6) Environmental reporting. Operational measures and Rating and Ranking measures are the most frequently applied ones. The applied financial measures can be allocated to five financial categories: (1) Stock market performance, (2) Accounting performance, (3) Measures based on stock market and accounting information, (4) Questionnaire-based measures (perceived performance) and (5) Other measures. Stock market and accounting based measures are clearly the most applied ones in the studies on the relationship between CEP and CFP that can be associated to the US-American focus of the studies. In the whole sample of 274 studies no measure based on Economic Value Added or Shareholder Value was identified.

4.2 Relationships overall and grouped by measurement categories and variables

Considering all significant results in a ratio of 175:27 for positive to negative results (statistically significant) can be calculated from the 321 analyzed relationships on the category level. This equals a relative frequency of 86 % for statistically significant positive results. The ratio changes dramatically if non-significant results are considered simultaneously. A spreading of 175 significant positive to 119 non-significant and 27 significant negative results arises. Based on this it can be concluded that the majority of results indicate a significantly positive (54.52 %) and a non-significant (37.07 %) relationship between CEP and CFP respectively.

In order to break the results even further down and to identify the potential influence of the use of different variables within a category, results are also analyzed at the level of variable groups. Each category of environmental and economic measures is divided into variable groups based on the variables used in the empirical studies. The result and the number of application of each variable group are presented in Table 1 and Table 2.

The 274 studies included in the analysis provide 721 separate results on the variable level. Despite all of the differences between the analyzed studies, the already identified relationship between statistically significant positive and negative results is also proven on the level of the single environmental categories. The overall results indicate that 44.52 % of all relationships found in 274 empirical studies between CEP at large and CFP are significantly positive, at a significance level of 10 %. Significant negative relationships on average are at a level of 11.79 %.

Table 1: Results for grouped CEP variables

CEP category	CEP variable group	Number of relationships	Identified relationships		
			++ in %	o in %	–– in %
Operational measures OP	toxic release inventory	70	41.43 %	41.43 %	17.14 %
	water pollution	24	33.33 %	45.83 %	20.84 %
	legal actions	15	33.33 %	60.00 %	6.67 %
	spills	7	28.57 %	71.43 %	0.00 %
	Superfund sites	20	55.00 %	40.00 %	5.00 %
	expenditures	21	42.86 %	42.86 %	14.28 %
	other	23	34.78 %	56.52 %	8.70 %
Environmental events EE	positive events	29	20.69 %	48.28 %	31.03 %
	negative events	34	47.06 %	44.12 %	8.82 %
	other events	21	42.86 %	47.62 %	9.52 %
Strategic measures STRAT	EMS	36	52.78 %	36.11 %	11.11 %
	environmental strategy	46	56.52 %	36.96 %	6.52 %
Perceived CEP PCEP	operational	15	46.67 %	46.67 %	6.66 %
	strategic	55	58.18 %	34.55 %	7.27 %
Rating and Ranking R/R	Fortune-Ranking	27	59.26 %	33.33 %	7.41 %
	CEP-Rating	41	46.34 %	41.46 %	12.20 %
	KLD-Rating	67	50.75 %	46.27 %	2.98 %
	other	118	41.53 %	42.37 %	16.10 %
Environmental Reporting ER	disclosure	52	30.77 %	55.77 %	13.46 %

With regard to the results grouped by CEP variables (Table 1) it can be found that in none of the groups significant negative relationships are predominant. Non-significant results are predominant for environmental reporting measures, environmental events and operational measures of CEP, while strategic measures and ratings and rankings tend to show a positive relationship.

We also grouped the studies in terms of the applied CFP variables (Table 2). While questionnaire based measures clearly tend to show significant positive results, for accounting based measures and stock market based measures non-significant results are predominant.

Table 2: Results grouped by CFP variables

CFP category	CFP variable group	Number of relationships	Identified relationships		
			++ in %	o in %	–– in %
Accounting measures ACC	ROA	162	40.74 %	50.62 %	8.64 %
	ROE	84	32.14 %	57.14 %	10.72 %
	ROS	52	32.69 %	51.92 %	15.39 %
	Profit	52	48.08 %	40.38 %	11.54 %
	ROCE	19	42.11 %	42.11 %	15.78 %
	ROI	11	36.36 %	54.55 %	9.09 %
	CF/E	8	25.00 %	50.00 %	25.00 %
	CF/A	11	27.27 %	54.55 %	18.18 %
	CF/S	1	0.00 %	0.00 %	100.00 %
	other	11	36.37 %	45.45 %	18.18 %
Stock market and Accounting measures SM ACC	PE Ratio	9	44.44 %	44.44 %	11.12 %
	Earnings per share	16	43.75 %	50.00 %	6.25 %
	Tobins q	59	50.85 %	35.59 %	13.56 %

Table 2: Results grouped by CFP variables (Fortsetzung)

CFP category	CFP variable group	Number of relationships	Identified relationships		
			++ in %	o in %	–– in %
Stock market based measures SM	Beta	34	47.06 %	38.24 %	14.70 %
	Jensens alpha	10	80.00 %	10.00 %	10.00 %
	AR	61	37.70 %	49.18 %	13.12 %
	CAR	46	39.13 %	43.48 %	17.39 %
	MV	35	54.29 %	31.43 %	14.28 %
	stock price	12	33.33 %	41.67 %	25.00 %
	stock return/ excess return	75	32.00 %	52.00 %	16.00 %
	Portfolio return	8	37.50 %	50.00 %	12.50 %
	Sharpe ratio	7	42.86 %	28.57 %	28.57 %
	other	30	33.33 %	43.33 %	23.34 %
Perceived CFP PCFP		83	66.27 %	28.92 %	4.82 %

Considering the results of all studies it can be concluded that the spread of the results related to the CEP and CFP variables differs across all combinations. The reason for this may be located in the sometimes small number of results per combination. A further examination reveals that the combinations "PCFP"-"STRAT" (66.67 %), "PCFP"-"PCEP" (66.67 %), "PCFP"-"OP" (60 %), "SM"-"STRAT" (57.14 %) show some of the highest relative frequencies of significant positive results. The combinations "SM"-"PCEP" (33.33 %) and "SM/ACC"-"ER" (25.0 %) show the highest frequency of significant negative results. So it gives clear proof for the existence of a relationship between environmental and financial performance.

5 Discussion and summary

This paper presents an analysis of 274 empirical studies on the relationship between CEP and CFP. As the existing reviews did not allow a comprehensive conclusion for the CEP-CFP link, we focused on the identification of the relationship between CEP and CFP as evidenced from available empirical studies. In the first part of the review, the application of environmental and financial measures in empirical studies is

described. In addition, the categorization scheme for the measures of financial performance is applied analyzing the application of economic measures by 274 studies on the relationship between CEP and CFP.

The results indicate that "stock Market" and "accounting Based" CFP measures as well as operational and "rating & ranking" based CEP measures are applied most often. Furthermore, the findings of empirical studies are analyzed and grouped according to the financial categorization scheme. Analyzing 274 studies, the overall result is clear – the majority of empirical research is in favor of a positive relationship between CEP and CFP and only a minority supports a negative relationship.

Overall, the results strongly support the hypotheses for a positive relationship between CEP and CFP. The evidence for a negative relationship, with approximately a tenth of that of positive frequency, is meager considering a significance level of 10 % a relationship had to reach at least in order to be considered as significant. However, the question of causality could not been adressed in this paper. Moreover, many different aspects determine the relationship between CEP and CFP, and therefore it might be reasonable to expect a varying, complex relationship. These results are in line with former reviews (e. g. Allouche & Laroche, 2005; Orlitzky et al., 2003; Margolis & Walsh, 2001).

The contribution of this study is that it systematically analyzes the results of a large sample of studies with a focus on the relationship between CEP and CFP. Although we do not systematically test hypotheses concerning the differences in studies, we descriptively consider differences between several study characteristics.

Two reasons for the varying results identified should be considered: sampling error and/or differences in the study design and differences in sample structure (Cooper, 1998).

Following Knudsen & Madsen (2001) it seems necessary to better combine theoretical and empirical research on the relationship between CEP and CFP. As identified, the results of studies support a variety of different relationships. Equally, theoretical research offers many different hypotheses for the relationship. However, a strict combination of empirical and theoretical research is for the most part absent.

There are several directions which future research should pursue. First, there are further possibilities for analyzing the sample e. g. by geographical distribution; years covered by studies; or by method or sample characteristics, etc. All these options had been beyond the scope of this paper. Second, the results presented indicate that study characteristics probably influence the relationship. Hence, the influence of study characteristics could be assessed with statistically more advanced methodologies, such as a quantitative meta-analysis; or single studies could try to identify the influence of those characteristics. This seems especially interesting as results that enable

clear answers to questions such as: "Do different relationships exist in different industries or do the relationship change over time?" are still unanswered. Finally, as different relationships between CEP and CFP might exist within one firm at the same time for different aspects or activities, an insight on a more detailed level should be pursued.

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Zusammenfassung:

Die finanzielle Leistung von Unternehmen wird von vielfältigen Größen determiniert. Eine dieser Größen, denen sich die betriebswirtschaftliche Forschung zunehmend widmet, ist die Umweltleistung. Umgekehrt beeinflusst auch die finanzielle Leistung die Umweltleistung der Unternehmen. Dieser wechselseitige Zusammenhang ist seit 40 Jahren Gegenstand empirischer Untersuchungen. Dieser Beitrag gibt einen systematischen Überblick über die Studien, die sich der ursächlichen Beziehung von Umweltleistung und finanzieller Leistung widmen. Als quantitative Methode dient das Vote Counting. Im ersten Schritt nehmen die Autoren eine Bewertung des Forschungsstandes vor, der eine Bewertung von 30 Überblicksartikeln umfassen und zeigen, dass die Frage nach Art und Richtung des Zusammenhangs noch nicht abschließend beantwortet ist. Im zweiten Schritt werden 274 empirische Studien, unterteilt nach den zugrundeliegenden Maßen und Ergebnissen, mit Hilfe des Vote Counting vorgestellt.