

ORIGINAL RESEARCH

## **Corporate leadership in sustainability: A green ranking performance-based approach to understanding corporate social responsibility (CSR) and positive marketing impact**

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**Abstract** This paper analyzes several foundational concepts and questions regarding corporate social responsibility (CSR). Its primary contribution is a statistical examination of relationships between CSR and *Newsweek's* 2012 Green Rankings using forensic-based financial and accounting measures. We also replicate a previous study and introduce new variables for looking at CSR from an economic perspective. The paper is interdisciplinary in that it synthesizes preceding studies' conceptions of CSR through finance, consumer behavior, branding, and ethics — a mix which has received minimal attention — in an attempt to better characterize and measure CSR.

**Keywords:** *leadership, sustainability, Corporate Social Responsibility, ethics, Quadruple Bottom Line*

### **Introduction**

The polarization between business relativism and idealism in business ethics is a consistent cause for debate in academia. Scholars inherently question the fundamental proposition regarding business ethics and whether the function of corporate social responsibility (CSR) serves to ensure the companies' financial success without making unethical choices. The concerns are involved as business ethics is not a single topic, but pertains to areas such as societal responsibility, answerability, transparency, and integrity of operations. Many of these issues are related to sociopolitical *theory*, making a physical and testable examination of such questions much more complicated.

The testing of the corporate role in sustainability seems to be the ongoing plague of the business ethicist — the inability to gauge, study and measure the absolute numbers that scientists look so fondly upon to confirm hypotheses and theories. Instead, the business ethicist is challenged with a seemingly emotionally-founded number of philosophical convictions and the ability to statistically analyze none of them. As a result, the issue of business ethics is left in a precarious and vulnerable position — it faces an uncertain, *social* confirmation of relativity. However, this conclusion is shortsighted, and, instead, should function as the catalyst for a continued and increased study of business ethics.

Business ethics is a term frequently used to describe distinct attitudes and behaviors within the workplace and organizations. The past decade, which some business ethicists describe as “the Decade from Hell” (Serwer, 2009) highlighted a need for stronger regulations and stricter legislation related to governing banking practices, corporate governance, and environmental responsibility (Ryan, Buchholtz, & Kolb, 2010). It has also shown us that the

practice of good business ethics is vital for the long-term well-being of our country. The 2007-2010 housing crisis brought about what is known now as the Great Recession — millions of bankruptcies, growing unemployment, and long-term intensified stratification of economic and social classes. Notwithstanding the heightened level of attention paid to business ethics by scholars and popular press alike, there is no conclusive definition as to what business ethics represents. Part of the problem stems from the competing sociopolitical views of the purpose of business, government regulation of it, and its environmental and social responsibility. The discrepancy between these perspectives raises the question of whether an approach should be taken from an absolutist sociopolitical perspective (e.g., humanitarian, fiscal, or moral lens, or a combination). The questions are regularly sought after in the study of business ethics, but there is limited agreement as to what points to a working definition and practice. Further, business ethics is a relatively novel field of academia. Ambiguity is often infused into the discussion about business ethics — its interdisciplinary nature provides conflicting perspectives throughout much of the material.

Consequently, there is an infinite number of socioeconomic and sociopolitical interpretations. One such explanation and a potential solution to corporate malfeasance manifests itself in the idea of corporate social responsibility (CSR). CSR has been defined in several ways. Keith Davis views it as “decisions and actions taken for reasons at least partially beyond the firm’s direct economic or technical interest” (Dennis, Neck, & Goldsby, 1998, p. 387). In 2001, the European Commission defined it as the “integration by companies of social and environmental concerns in their business operations and their interaction with their stakeholders on a voluntary basis” (Commission, 2001, p. 7). Moreover, CSR includes three “elements of corporate identity mix: behavior, symbolism, and communication” (Curras-Perez, Bigne-Alcaniz, & Alvarado-Herrera, 2009, p. 550).

In practice, CSR is the idea that corporations have a societal responsibility toward their communities, consumers, workers, and their environmental consequences in and for running their businesses operations. The increased responsibility of corporations for the ecological and social threats is amplified with the increasing evidence of climate change, and the role corporations play in addressing those threats (Alibašić, 2018a).

This paper will examine the nature of CSR, including 1) its essential constraints and definition, 2) its internal and external benefits, and 3) its complexity in measurement in business literature. After this theoretical aspect, we partially replicate the past research from Cochran and Wood (1984). Our findings confirm their results but are based on recent data and an updated CSR environmental ranking measure. We also determine if there have been substantial changes in firms’ asset age correlations to CSR rankings. Cochran and Wood’s (1984) research found a relationship between a CSR index (Moskowitz, 1972; Sturdivant & Ginter, 1977) and firm financial performance. Their seminal study has not been replicated or revised in any form since it was published in 1984. The current study examines the links between reported R&D spending, selling, general, and administrative (SG&A) expenditures of companies and the *Newsweek*’s 2012 Green Rankings. The results from these tests shed light on the nature of CSR indices and their construction.

### ***Essential constraints and definition of CSR***

CSR is the attempt for corporations to engage in actions that are not necessarily in “the firm’s direct economic or technical interest” with the connotation that it will also have some altruistic and positive purpose, as suggested through social or environmental actions or some form of communal welfare. Even so, there are many factors contributing to defining CSR. On a sociopolitical and organizational level, Epstein (1987) breaks CSR down into social responsibility and social responsiveness. Scerer and Plazzo (2007) view CSR from a measurable results perspective as social responses (pp. 1098-99). On a more reductive level, the fundamental structure of CSR is (1) society, (2) the company, and (3) delivery/actualization. A more refined, but still ambiguous definitional approach is “Carroll’s

Construct,” introduced in 1979, which views CSR through an economic, legal, ethical, and discretionary (philanthropic) framework.

Carroll’s (1991) definition signifies a step toward a better understanding of CSR since it involves somewhat measurable categories. Using this construct, Aupperle, Carroll, and Hatfield (1985) were able to conclude that CEOs are able to add more insight into the nature between CSR and corporate action. However, since decisions are made on fiscal grounds, the ethical and philanthropic sectors should be defined differently. The necessary components of CSR are: (1) a firm maintaining profitability so that it can be in business, (2) initiatives on social welfare and altruistic actions that get addressed and benefit the internal and external operations of the firm, and (3) marketing and branding.

Cultural definitional differences are also influential given that they largely stem from different sociopolitical viewpoints. Research conducted in Spain regarding telephone services found that companies are viewed as socially responsible if philanthropic and ethical-legal obligations are met (Garcia de los Salmones et al., 2005). On the other hand, CSR obligations to German and French consumers are considered to be legal, ethical, and philanthropic issues, while in the United States CSR models include economic issues (Maignan, 2001; Curras-Perez, Bigne-Alcaniz, & Alvarado-Herrera, 2009).

The models and definitions described above are the two dominant approaches used in academia for measuring CSR: a theoretical, ideal approach, and an empirical, measurable approach. This dichotomy is what separates many studies on CSR. Empirical research in CSR focuses on statistical analysis, usually using financial- and accounting-based variables. Frequently, some form of ranking or index is introduced as a normative control. A limitation to this approach is that the process of creating an adequate classification or index without bias is difficult. Empirical analyses of CSR can only measure relationships within indices and can “explain the status quo common to social systems,” not the normative criteria itself (Scherer & Palazzo, 2007, p. 1099). In contrast, alternative frameworks examine what corporations *should* do and often ignore real-world constraints. Thus, models such as “Carroll’s Construct” represent a practical compromise given their consideration of both ethics and real-world constraints, while also providing a measurement of CSR.

A primary objective of this research is to investigate a possible long-term proxy or correlation of CSR rankings (i.e. the retesting of Cochran and Wood’s variables) and other performance measures that influence index rankings and ratings. This approach utilizes financial- and accounting-based forensic correlations between indexes and firms to better examine economic patterns associated with CSR practices. While its applicability is more related to the public sector, a quadruple bottom line approach to sustainability is a potential framework for consideration in the private sector (Alibašić, 2017 & 2018b).

### ***Internal and External Benefits***

The financial successes of firms actively practicing corporate social responsibility have raised many questions about the ability of companies to “do well and be good” at the same time. These successes, such as Ben & Jerry’s and The Body Shop, have spurred much research into the idea of implementing socially responsible initiatives in organizations that initially assumed the idea counteractive to their business model. These successes are attributed to several differing and sometimes conflicting views about the function of CSR and are divided between socially-oriented and egoistically-oriented CSR initiatives. Even so, regardless of orientation and perhaps from the ambiguity of what CSR is, the internal and external effects of CSR have been the same.

The benefits of a firm marketing social responsibility are numerous. Lougee and Wallace (2008) suggested that CSR enhances recruitment, helps retain top talent, increases employee productivity, and creates or maintains an atmosphere of pride within the workplace. For example, a Netherlands-based company, Capgemini, rewarded survey respondents with housing and schooling funds for disadvantaged children in India, resulting in over 2,000

qualified applicants, a filling of 800 positions, and over 10,400 weeks of housing and education for children (Fox, 2007). Moreover, research suggests students would sacrifice financial rewards to work for socially responsible companies (Fox, 2007). Other research has found that environmental initiatives provide a cost-benefit relationship between operating overhead costs and employee productivity. A case study from researchers at Carnegie Mellon University's Intelligent Workplace found that lighting improvements increased employee productivity by 3.2 percent, amounting to \$1,600 per employee per year (Fox, 2007).

Outside of these benefits, CSR is thought to build a positive image, which is vital to consumer behavior because it prefaces "the consumers' impression of the corporation, corporate product marketing, and the [goods and] services provided by the corporation" (Keller, 1998). Further, Kreng and Huang (2011) found that CSR builds the overall assessment of the corporations. Researchers have shown that CSR has positive value creation potential and a positive impact on corporations (e.g., Denworth, 1989; Lai Chiu, Yang, & Pai, 2010; Fombrun and Shanley, 1990; Roberts and Dowling, 2002). In addition, several empirical studies have confirmed that CSR can positively influence branding (Lai, Chiu, Yang, & Pai, 2010). Building on these studies, CSR programs can act as an instrumental tool for building a positive corporate reputation, suggesting "other intangible variables that add to a company's value" (Blumenshine & Wunnava, 2010, p. 239).

### ***Complexity of Measurement in Business Literature***

Due to the ambiguity of CSR, there have been many attempts to standardize rankings through indices. Online sites such as "CorporateRegister" provide reports and statistics for over 9,000 companies and give awards for firms that exemplify the notion of corporate sustainability. Other sites are geared more toward environmental and green standards, such as *Newsweek's* Green Rankings, while still others focus on employee satisfaction ratings and benefits. In addition, there are many indices on public companies that provide multi-faceted CSR rankings, such as the Domini 400 Social Index, the Calvert Social Index, the Citizens Index, the KLD Research and Analytics database, and the Dow Jones Sustainability Index (Statman, 2005). For instance, the KLD Research and Analytics database contains quantitative measures of over 90 social and environmental indicators that are grouped into seven broad categories (Lougee & Wallace, 2008).

The first approach in ranking CSR is creating a reputational index. Establishing a reputation index involves one person or group creating standards to rank, such as omitting companies that sell tobacco or invest in public gambling companies (Cochran & Wood, 1984). The negatives of using a reputational index far outweigh the positives. For example, the rankings are highly subjective due to one person's or group's criteria. In addition, the size of a sample is often too small making it difficult to generalize findings (Cochran & Wood, 1984). Besides, this form of indexing has embedded bias based on that person or group's values and beliefs and assumes that corporations who sell socially-questionable products cannot exercise social responsibility outside their direct interests.

The second commonly used method for measuring CSR is through content analysis, which consists of noting particular items in reports (qualitatively or quantitatively) such as counting the number of times words come up (Cochran & Wood, 1984). The advantage of this method is that it leads to larger sample sizes. However, the choice of variables is subjective and only accounts for nominal word choice. Also, there is no measure as to what the firm may be doing — it does not consider action, only words (Cochran & Wood, 1984).

The third approach commonly used is surveying. The surveying technique seems to be the most ineffective; return rates are always low, the sample size is limited, it is very time consuming for the researcher, and it is still a highly subjective process for both the researchers to pick the firms and the firms themselves to answer the questions.

Due to these inefficiencies, there have been innovative attempts in trying to find a better method for accurately measuring socially responsible companies. Cochran and Wood (1984)

believed an immeasurable difficulty in measuring social responsibility through a financial lens is market efficiency. Therefore, using more broad financial performance variables that are related to CSR, such as asset-based measures, would be of relevance. To date, every study attempting to link profitability with CSR has either contradicted past studies or used flawed methodologies.

Cochran and Wood's (1984) work provided a benchmark for measuring an established CSR index and financial performance. The method employed combined reputational indices used in several of the previous studies so that their results could still be inspected within that field's paradigm (Moskowitz, 1972; Sturdivant & Ginter, 1977). The sampling approach is an improved technique, comparing various firms with different CSR scores to their respective industries before running two, five-year period cross-industry analyses, thus improving validity. It accounts for two different market shifts, as well as universalizes an accounting-based measure across industries. To date, their methodology represents the best validity in measuring a pre-established corporate social performance index and is why replicating several of these analytical techniques is crucial to CSR studies.

During the past two decades, there has been an emphasis by some researchers on understanding the role that CSR programs play regarding consumer behavior and perception. The conclusions have been similar in that CSR is either causal or significantly correlated with brand attractiveness and a positive corporate reputation. This section of the paper highlights the ideas and findings of this research, which are foundational claims to several upcoming hypotheses.

There are two general paradigms utilized: (1) how effective is cause-related marketing (CRM); and, (2) the relational models between CSR, consumer branding, and competitive advantage. CRM campaigns are quite ubiquitous in most individual, consumer-driven marketplaces and have been found to be very commonplace (Nan & Heo, 2007). One example of CRM is the "Box Tops for Education," which has given over \$475 million to schools in the United States since 1996 (General Mills, 2012). In addition, there are numerous companies that donate a percentage of their sales or profits to things such as advancing medical research or non-profit organizations with a social focus.

These campaigns are important at two organizational levels. Ross, Patterson, and Stutts (1992) found that companies engaging in CRM are perceived by consumers to be socially responsible, and Smith and Alcorn (1991) found that such activities increase a consumer's willingness to purchase a company's product. Interestingly, though, research has also shown that luxury goods, such as ice cream and concert tickets are more successful in CRM campaigns regarding purchase intention than items such as laundry detergent and toothpaste (Strahilevitz & Myers, 1998). Further, Nan and Heo (2007) found that CRM messaging is more efficient than traditional advertising when trying to build positive company image. These findings suggest CRM is not only an adequate tool for achieving CSR, but is regarded as an effective marketing tool that can be used to boost several facets of a firm.

CSR programs have similar impacts on building a positive corporate image. However, due to the ambiguity of CSR, previous research has found it difficult to affirm such straight-forward claims as the case with CRM. Instead, it has looked into the relational models between CSR, its effect in branding, and its importance to a competitive advantage. The most basic argument for CSR programs is that they provide a unique avenue for the practicing firm's product(s) to increase market share (Berger et al., 2006; Du et al., 2007; Fournier, 1998; Lougee & Wallace, 2008). In addition to being a brand differentiator, Lai, Chiu, Yang, and Pai (2010, pp. 457-8) concluded that "buyers' perceptions [(brand strength)]" of CSR programs "induces buyers' positive brand awareness/association of suppliers' products, improves perceived quality about these products, builds brand loyalty, and brings about brand satisfaction."

CSR image has been shown to affect brand prestige and brand distinctiveness (Carras-Perez, Bigne-Alcaniz, & Alvarado-Herrera, 2009). Both of these help companies establish

and build brand strength. These past studies support the notion that CSR can serve as a key contributor for creating or maintaining a positive corporate image and can aid in establishing a company's perceived legitimacy (Curras-Perez, Bigne-Alcaniz, & Alvarado-Herrera, 2009; Handelman and Arnold, 1999). In addition, CSR image distinguishes a company from competition and thereby can help create a competitive advantage through differentiation.

### **Previous research**

The 1970s and 80s produced a significant amount of research examining corporate social responsibility and financial- and accounting-based performance measures. During the 1970s, research was focused on relationships between CSR and profitability. Many of these were based on research using self-made CSR indices and tracked CSR performance through a variety of variables such as stock price, ROA, ROE, EPS, or some combination of the these (Aupperle, Carroll, & Hatfield, 1985). Even so, findings from research during this period were often contradictory or based on methods that raise concern.

The methodological approaches used that often led to contradictory results included issues such as small sample size, no adjustment for risk, use of a short timeframe of analysis, or questionable index constructs (Aupperle, Carroll, & Hatfield, 1985). By the 1980s the focus on CSR and profitability shifted. Empirical CSR researchers began to look at different variables related to financial performance and sought to view CSR through different organizational perspectives. McGuire, Sundgren, and Schneeweis (1988) found that risk and prior performance are closely associated with social responsibility. Cochran and Wood (1984) found asset age to be correlated with CSR rankings. And Aupperle, Carroll, and Hatfield (1985, p. 459) measured CEOs decision influence levels using "Carroll's Construct" (1979) and found that "no statistically significant relationships were found between a strong orientation toward social responsibility, or concern for society, and financial performance."

While research studying the relationship between CSR and financial performance has produced mixed results, it is possible that this is a result of casting a singular definition of CSR; most of the "socially responsible" firms were handpicked and no study viewed CSR as a pluralistic and/or complex definition until later. Further, the research of the 1970's assumed a causal model with tacit hypotheses such as: "Does CSR increase or decrease EPS or stock price?" However, there are many different ways a firm can be socially responsible, and it seems that the predominant research of the 1980's shifted toward addressing this issue by examining variable correlations and other forms of measurement. This methodological shift was evidenced in the seminal study conducted by Cochran and Wood (1984). Their analysis used industry controls and suggested that CSR manifests itself differently among heavy chemical, energy, and beverage industries.

The technique of controlling companies by industry has proven to be preferable to other past studies that have looked for CSR relationships without controlling for this variable (e.g., Moskowitz, 1972; Parket & Eilbirt, 1975; Vance, 1975; Heinz, 1976; Alexander & Buchholz, 1978). By studying within an industry, a more accurate and homogeneous comparison between firms is possible since certain industries have different "accounting practices, operating leverage and other variables, [such as risk], [which] may influence test results" (Cochran & Wood, 1984, p. 47). These reported accounting data are essential firm-level measures and provide objective data for analysis. Given the importance of the reported accounting data and building on past research using these variables when analyzing the role of CSR in organizations, our first hypothesis follows the approach of Cochran and Wood (1984) in examining the ties of these factors in relation to asset age. Thus,

Hypothesis 1: Operating earnings to assets, operating earnings to sales, asset turnover, fixed asset turnover, and excess value are significantly correlated with asset age.

In addition, there has been a void in this field of research, with only a handful of researchers and firms measuring the profitability of socially responsible investing (SRI)

indices. These indices include the Dow Jones Sustainability Index, the FTSE Group's series of indices, and the Calvert Social Index, which were derived to function as benchmarks for other privately managed socially responsible investing firms. Using SRI indices, Statman (2005, pp. 15-16) found that "the mean score of each is higher than that of the S&P 500 Index," and that the "returns of socially responsible indexes were higher than those of the S&P 500 Index ... [although] there is a wide range of scores of the companies within each socially responsible index and much overlap between the lists of companies in the socially responsible indexes and the S&P 500 Index." Similarly, Lougee and Wallace (2008, p. 103) found that "the Domini 400 has delivered an annual rate of 12.09% while the benchmark, S&P 500, has produced an annual rate of 11.45%."

Outside of these studies, recent empirical research has focused on the relationship between CSR and various other corporate investments, such as R&D, marketing, consumer perception and behavior, and CSR brand strength under acquisitions (Curras-Perez, Bigne-Alcaniz, & Alvarado-Herrera, 2009; Lai, Chiu, Yang, & Pai, 2010; Page & Fearn, 2005; Nan & Heo, 2007; Robinson, Irmak, & Jayachandran, 2012). These studies have looked into the cause and effect relationships between CSR-based company image or cause-marketing campaigning and consumer purchasing behaviors related to CSR.

Further, past research has identified a strong link between consumer purchasing behavior of firm's products and consumer perception of a firm's social concern. More recently, scholars have noted the link between cause marketing campaigns and a positive view of company brand (Robinson, Irmak, & Jayachandran, 2012, p. 126; Brown & Dacin, 1997; Pracejus, Olsen, & Brown, 2003; Strahilevitz & Meyers, 1998). This emphasis of organizations on product development and marketing to enhance consumer perception is expected to be tied to company Green Rankings. Thus, the second hypothesis states:

Hypothesis 2: Reported research and development expenses and selling, general, and administrative (SG&A) expenses will be significantly correlated with CSR rankings.

Although it is the case that much of the reported R&D and SG&A expense is not directly related to CSR efforts, it seems likely that higher R&D to company revenue/size would boost CSR rankings, given its effect on consumer behavior.

## Method

The data utilized in this investigation were collected using Research Insight. The companies analyzed were compiled from *Newsweek's* 2012 Green Rankings since this is currently the most extensive ranking, is easily accessible, and provides a comprehensive CSR list. The 2012 rankings were used because this was the last year a full breakdown of categories essential to this study were recorded (i.e., Environmental Impact, Environmental Management, and Disclosure). In addition to the overall Green Rankings, these three variables allow better insight into the elements contributing to the Green Rankings and their link to other variables assessed in the study. Starting in 2013, these data were no longer reported.

The rankings are based on environmental concerns, thus limiting the scope and problem of ambiguity related to CSR and allowing for more consistency within the data. A major advantage of the data used was the creation of three separate scoring components, including measures of (1) environmental impact, (2) environmental management, and (3) disclosure. The companies' environmental impact score is given through a quantitative, industry-controlled economic model, allowing for a fair comparison between firms that naturally use more raw materials and those that are more service oriented. The environmental management score is created through the "examination of company documents, media sources, online databases, government sources, NGO research, and other industry sources, as well as direct communication with key stakeholders," which are all "peer-reviewed internally and sent to companies for verification" (Newsweek, 2011, para. 8). The environmental management

score assesses the environmental footprint of the organizations, and includes a review of each company's operations, suppliers, contractors, and products and services. It seems plausible that this score may include a corruptibility factor since marketing, R&D, and public relations factors contribute into the positive performance-related criteria and assessment of environmental controversies and incidents. However, the profiles are all peer-reviewed internally.

The disclosure score was created by “evaluat[ing] the breadth and quality of company environmental reporting of their material impacts ... as well as company involvement in key transparency initiatives such as the Global Reporting Initiative and Carbon Disclosure Project” (Newsweek, 2011, para. 9). As a result, the 2012 Green Rankings method has synthesized environmentally financial-based analysis, content analysis, and surveying techniques, which has not been done in any serious manner to date and therefore represents the most comprehensive form of CSR ranking available.

The sample consists of the 500 largest firms as determined by *Newsweek* and included in *Newsweek's* Green Rankings. Each company was assigned a score for each of the CSR measures and the data were analyzed to identify what factors were strongly correlated with higher CSR measure scores. In many tests the sample size is denoted since accounting reporting practices are not consistent across all companies and some reported data is voluntary. We used 2011 and 2012 financial variables as a way of trapping the Green Score since the ranking statistics were determined in June of 2012.

Hypothesis 1 used Cochran and Wood's (1984) variables (i.e., operating earnings to assets, operating earnings to sales, asset age, asset turnover, and excess market value) to determine if the relationships they found over twenty years ago between these and CSR are more or less influential in today's business environment. In addition, the ratio of fixed asset turnover was incorporated since Cochran and Wood's findings were asset-based.

Hypothesis 2 incorporated reported research and development expenses and selling, general, and administrative expenses alongside the Green Ranking scores to determine if there are any significant correlations. Consequently, any significant findings will require further analysis to establish a better understanding of the relationships between the variables .

## Results

The initial results for the five relationships in Hypothesis 1 were all confirmed, except for the relationship between Operating Earnings to Sales and Asset Age. Asset Age was found to be negatively correlated with all other variables, including Operating Earnings to Assets (- 0.173), Asset Turnover (-0.219), Fixed Asset Turnover (-0.133), and Excess Value (-0.135). Thus, Hypothesis 1 found that the variables used in Cochran and Wood's original study are still significantly correlated when using the sample firms included in this study (Table 1).

Table 1.

	Operating Earnings / Assets	Operating Earnings / Sales	Asset Age	Asset Turnover	Fixed Asset Turnover	Excess Value
Operating Earnings / Assets	1.000	0.424**	-0.173*	0.002	-0.017	0.280**
Operating Earnings / Sales		1.000	0.024	-0.229**	0.237**	0.608**
Asset Age			1.000	-0.219**	-0.133**	-0.135**
Asset Turnover				1.000	-0.049	0.005
Fixes Asset Turnover					1.000	0.048
Excess Value						1.000

Note: \* $p < .05$  \*\* $p < .01$

Although there is a difference in some correlations' strengths as compared to Cochran and Wood's study, this similarity is important since it somewhat functions as a control check for the several new industries that now exist in the 28-year gap of research. Consequently, findings for Hypothesis 1 suggest that these variables' relationships have been consistent overtime and were not significantly affected by the emergence of new industries.

Hypothesis 2 was also confirmed as the data showed strong linkages between the Green Score, Env Impact, Env Management, Disclosure, and the other reported financial and operating variables assessed (Table 2).

Table 2. Financial and 2012 Green Score Variable Correlation

	Asset Age	Asset Turnover	Fixed Asset Turnover	Green Score	Env Impact	Env Mgmt	Disclosure	Net Income	SG&A	R&D
Asset Age	1.000	-0.219**	0.133*	0.235**	0.294*	-0.070	0.140*	0.076	0.055	0.132
Asset Turnover		1.000	0.049	0.008	0.137*	-0.066	0.202*	-0.086	0.076	-0.226*
Fixed Asset Turnover			1.000	0.104*	0.051	0.079	0.055	0.164*	-0.002	0.149
Green Score				1.000	0.615*	0.697**	0.321*	0.273*	0.257*	0.378**
Env Impact					1.000	-0.093*	0.408*	0.082	0.121*	0.237**
Env Mgmt						1.000	0.579*	0.280*	0.194*	0.344**
Disclosure							1.000	0.134*	0.163*	0.083
Net Income								1.000	0.055	0.732**
SG&A									1.000	0.804**
R&D										1.000

Note: \* $p < .05$  \*\* $p < .01$

Hypothesis 2 incorporated research and development expense and selling, general, and administrative expense as additional variables. The sample sizes for research and development cost were limited to 278 firms in 2011 and 264 firms in 2012 since reported research and development expense is considered a voluntary disclosure for firms. Given the voluntary nature of the reporting of this data, we conducted a split-sample comparison test (companies providing data and those not) to determine if the volunteerism influenced the results. After testing for differences between market capitalization, net income, and total assets, no significant differences were found between the two subset populations of the data. The, selling, general, and administrative expense samples totaled 455 in 2011 and 464 in 2012 and thus did not require subset testing for differences given the very high reporting rate among firms.

These results have many significant implications. As with the previous correlations between asset age and the Green Rankings and scores, environmental management yielded no statistically significant results. However, these results did identify significant relationships between both research and development expenses and selling, general, and administrative (SG&A) expense variables and environmental management. Further, R&D and SG&A were

found to have significant positive relationships with all Green Scores and the three other measures (Environmental Impact, Environmental Management, and Disclosure), except for no relationship being found between R&D and Disclosure.

An important observation in these results is the almost complete lack of relationship regarding asset age. These results echo findings from past research, including the findings of Bowman and Haire (1975), that “the highest performing firms [were] those found in the middle range of CSR” (Aupperle, Carroll, & Hatfield, 1985, p. 449), and Cochran and Wood (1984), where they found that the information related to operating earnings/assets had no statistical significance (p. 51).

The results further demonstrate the continuing trend between environmental impact scores and ecological management scores — asset age has no significant relationship with environmental management, and R&D expense and SG&A expense have no significant relationship with environmental impact. Further, it highlights the incongruity of disclosure relationships between asset age and the R&D and SG&A expenses, with asset age showing a negative relationship and the other two having positive relationships.

SG&A expense has a positive relationship with Green Score (0.257), disclosure (0.163), environmental management (0.194), and environmental impact (0.121). This difference between negative and positive correlations between disclosure score when related to either asset age or R&D expense and SG&A expense represents a possible point between positive intent and greenwashing. The trend of a negative relationship between asset age and disclosure score (meaning that firms with older assets have higher disclosure scores and firms with newer assets have lower disclosure scores) and a positive relationship between R&D and SG&A expense exists where the three variables coincide. Importantly, disclosure score is more closely related to SG&A expense, which suggests that the disclosure score either represents illegitimate ranking or intrinsic bias toward specific industries.

An example of this is within the information technology industry, which found a minimal relationship between asset age and disclosure in 2010 (-.163) and in 2011 (-.152), yet has an R&D expense and disclosure relationship of (.407) and an SG&A expense and disclosure relationship of (.428) in 2010 and (.438) in 2011. These results support the conclusion of McGuire, Sundgren, and Schneeweis (1988, p. 869) that “it may be more fruitful to consider financial performance as a variable influencing social responsibility than the reverse.” In addition, the results represent the curvilinear relationship of asset age with ranking and suggest the relative strength of R&D expense and SG&A expense on CSR scores.

The findings related to disclosure scores also resonate with the recent research by Chatterji and Toffel (2012), who found that firms sharing information about their environmental activities are not necessarily transparent about their political involvement in environmental policies. They found a relationship between “companies’ political transparency scores [and] their environmental transparency scores from the Newsweek Green Rankings” to be weakly correlated at (.200), which again suggests the importance of factoring R&D expense and SG&A expense into CSR score models to mediate transparency issues (para. 4). These relationships further emphasize the difficulty of CSR measurements and index construction.

## **Discussion**

The results from this study are providing further knowledge related to the ties between corporate social responsibility and financial performance. Findings indicate several relationships between CSR and financial performance that have previously been unexplored, as well as retests of the influence of asset age.

The two most important contributions include testing asset age, R&D expense, and SG&A expense with the three different CSR scores provided by Newsweek, as well as introducing a different system of breaking down CSR. Past studies have looked at CSR with a

singular definition that could be found through financial analysis across many different industries. However, the results that show increased relationships between the three variables and among different Green Scores suggest that different sectors either manifest their CSR in different ways or that specific industries are innately better off when being rated on their social responsibility.

Cochran and Wood's (1984) concluded that the relationship they found between asset age and CSR could be explained by the fact that in the lower regulation in the past could have reduced the motivation for corporations to make significant environmental investments. However, societal demands have changed consumer expectations and the broader corporate position for contributing to a cleaner environment. As a result, most corporations upgrade facilities and operations anticipating those demands or simply to comply with increasing regulative requirements.

This idea has broader implications and applies to the capital-intensive industries of industrials, materials, energy, and utilities. These industries have more long-term, heavy equipment that is amortized over a more extended period as compared to health care, information technology, and financial industries. The latter three industries have the most up-to-date equipment and technology, thereby intrinsically being advantaged for quicker internal change when faced with any unforeseeable external pressure. Such can be posited with the information technology sector, which has the best average ranking. It is a new field with continual expansion, growth, and turnover, which, when compared to capital-intensive industries, has the highest potential to have the most environmentally sound practices.

When industries are grouped into capital-intensive and individual, consumer-driven product categories, the results were statistically significant across every Green Score and were consistent with the rest of the related trends. In addition, the methodology used for calculating the environmental impact score included greenhouse gas emissions among over 700 metrics. Consequently, given this method and consistent relationship with asset age, industry, and environmental impact score, the rationale seems fitting.

The consistent relationships between scores with R&D expense and SG&A expense suggest several possible explanations regarding marketing, branding, and advertising. A simple answer is that marketing and branding is a core component in the essence of CSR, as postulated in this paper. Another explanation could be that companies with significant marketing and R&D teams understand the roles CSR campaigns can play on consumers. Subsequently, the campaigns, firms' brand equity and strength, and firms that are more prone to advertise may influence index construction and ratings since R&D expense and SG&A expense may proxy for emotional/qualitative bias. This idea supports much of the general attitude regarding research on cause-marketing and CSR advertising, as well as some of the sentiments within this paper.

It is important to note the limitations of the study. One limitation is the generalizability of findings to other firms. Given that our sample was based on the 500 largest firms as determined by Newsweek, we cannot assume the findings would carry over to medium, small, or micro firms. In addition, the data that was readily available for our analysis would be very difficult to gather if not looking only at publicly traded organizations.

### ***Areas for Further Study***

As already noted, the financial variables of asset age, R&D expense, and SG&A expense are all strongly related to CSR scores. These variables should be examined further and under different CSR index rankings (i.e., corporate governance CSR rankings) to determine if they have absolute importance with CSR ratings in general.

One difficulty in this study was sample sizes since there are different reporting and accounting practices among different companies and industries. Therefore, the industries were divided based off the GICS economic sector codes, which are broad enough to filter industries to provide more extensive sample sizes, but at the same time compromise the acuity of the

results and intended groupings of the hypotheses. Currently, it seems that there are no CSR rankings that are as large, specific, and comprehensive in measurement as Newsweek's Green Ranking. There is, therefore, a waiting period until larger samples of companies are ranked, such as the Fortune 1000. Once something like this becomes available a more broad approach for testing in this area of research will be possible.

On this same note, since 500 firms are still somewhat of a small sample and the 500 firms in Newsweek's 2016 rankings have slightly changed, using the Fortune 1000 would provide an even more extensive buffer zone to be able to create a predictive model of CSR activities and scores based off of their financial relationships. The conclusion would also then provide a more specific system of grouping, whereby the information technology grouping could be broken into their GICS subcode of software and services, technology hardware and equipment, and semiconductors and semiconductor equipment.

On a different note, a general observation in the results is that the Green Scores seem to have stronger relationships with the 2012 financial variables. The results suggest that the prior year's financial measures may be more indicative of the following year's Green Rankings. Consequently, an analysis of *Newsweek's* 2012 Green Ranking using 2011's and 2012's financial datasets could provide even more insight into the construction of this ranking and would be an excellent way for comparison. An example of this would be to run a similar analysis as this study as well as to further Chatterji and Toffel's original intent (between political lobbying disclosure and environmental disclosure) and systematize a way to screen or measure company or industry greenwashing.

Another observation for further study is the similarity between the findings of Cochran and Wood's significant, but weak correlation with asset age and this study's significant and weak to moderate asset age correlations. A question to ask regarding both of these results is: if Cochran and Wood's ranking system was so simplistic and Newsweek's ranking was far more extensive, then could any other index or ranking demonstrate similar asset age relationships? Depending on these results, the absolute significance of asset age and CSR would have to be questioned. Also, this question asks whether there will ever be objective CSR rankings and can these be cross-cultural or will this construct continue to be deeply divided based on cultural perspective? Currently, CSR ranking practices rely on a collective subjectivity. This paper's findings could be further explored to determine the variables' causal role and then incorporated into ranking models to counter unseen biases. This would represent a giant step toward objective CSR ranking practice since it would filter out such qualitative biases, which is what R&D expense and SG&A expense may represent.

Finally, future statistical studies relating to CSR must begin to break down or group industries with similar structures. The results significantly reflect this step. Importantly, this step furthers the notion that CSR scores are not as singular as CSR's accepted definition and should continue to be used in future studies.

## **Conclusion**

Corporate social responsibility is not a single topic or definition as stated. It has many levels and can be exercised differently, according to an industry or firm's interests. This paper has highlighted the difficulty in measuring CSR, and suggests that there is no absolute solution until further research is conducted regarding the variables analyzed and additional ones in future research. This is still a relatively young field of research and clearly has potential for the advancement of a commonly accepted definition and focus. The past forty years have presented the growth of the topic, from defining it and measuring it in elementary terms of profitability, to understanding strict relationships between CSR image and its relation to brand strength. Even with these contributions, there is still a wide range of research to be done moving forward.

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