

# RESEARCH NETWORK *for* BUSINESS SUSTAINABILITY



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## Valuing Business Sustainability: A Systematic Review

ISSUE DATE: NOVEMBER 2008

# RESEARCH NETWORK *for* BUSINESS SUSTAINABILITY

## Valuing Business Sustainability: A Systematic Review

A systematic review of the academic and practitioner knowledge on Best Practices in Valuing Business Sustainability

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## Executive Summary

**Research shows that there is undoubtedly a small, positive relationship between sustainability and company financial performance.** However, despite three decades of work on the topic, the research provides little guidance to managers on how they should measure the financial impacts of their sustainability strategies. This report shows that there are no consistent metrics for measuring sustainability, and little attention is paid to metrics that address the causality between investments in sustainability and financial performance.

This systematic review of 159 research papers and practitioner reports identified 39 unique measures of sustainability used to examine the relationship between sustainability and financial performance. Three distinct, causally linked, categories of metrics were identified. The most common measures are at the end of the chain, such as share price or return on assets labelled “end state outcome metrics.” Share price is the dominant measure in both the academic and practitioner literatures, appearing in 50% of academic articles and 45% of practitioner reports.

Practitioner reports are more likely than academic publications to use intermediate outcome metrics, which precede end state metrics. These “intermediate metrics” measure outcomes that eventually create business value in end state outcomes. For example, a positive change in cash flow (the intermediate outcome) should lead to a positive change in share price (the end state outcome).

The third set of metrics captures the “mediating variable” that generates business value. These metrics are most closely associated with sustainability itself. For example, decreased energy consumption (the mediating variable) reduces operating costs (the intermediate outcome), which increases a firm’s share price (the end state financial result).

Because the majority of studies only include end state metrics, they do not provide the necessary level of detail for managers who want to establish an optimal level of sustainability investment for their company. In addition, inconsistency across the existing research may add to the uncertainty managers feel when trying to employ sustainability metrics. For example, the most popular metric, pollution control or output, was only used in 18% of studies sampled.

The most important direction for future research lies in understanding the mediation process between sustainability and financial performance. Capturing it is essential; first, to understand how sustainability creates business value, and second, to develop indicators to assess the value early in the process. Further, mediating variables must take a holistic view of the potential benefits and costs of sustainability. Researchers have only just started to comprehend the significance of the mediating process. As the field of inquiry shifts from examining the relationship between sustainability and financial performance to examining the structures and processes firms use to engage in sustainability, it will be critical to use appropriate financial metrics that capture the full value proposition. Without this knowledge, managers may hold back from investing in sustainability for fear that it will undermine financial performance, thus creating unnecessary social and environmental harm. Or they may over-invest in sustainability in an effort to capitalize on popular sentiment, only to find that they have in fact destroyed shareholder value.

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# 1. Introduction

The reviews are in, and the question of whether it pays to be good is a resounding “probably; it depends...” The sustainability–financial performance relationship is affected by a myriad of contextual factors, such as firm size, industry, economic conditions, and regulatory environment. Many have argued that the relationship between sustainability and financial performance is nonlinear. Further, the lingering question of causality remains: Do companies that are more profitable engage in sustainability, or are sustainable companies more profitable as a result of their initiatives?

To date, researchers have concentrated on establishing the business case for sustainability. Although useful, this work has taken the place of research needed to help managers establish strategies for measuring the financial impact of sustainability initiatives. It is one thing to argue in abstract terms that sustainability “pays” but managers have been given precious little guidance on this issue. Reed (2001) points out that “the business case is not a generic argument...for all companies in all situations, but rather something that must be carefully honed to the specific circumstances of individual companies operating in unique positions within distinct industries. Success in whole industries and at other companies are useful examples, but the case still has to be applied one company at a time,” and ideally one initiative at a time.

Most previous studies have examined the relationship between financial performance and some measure of sustainability to uncover the presence of a business case. Our research is different. We focus on the tools and metrics that have been used to quantify the financial impacts of sustainability. As such, we are less concerned with the relationship between sustainability and financial performance and more interested in how to measure the impact of sustainability on financial

performance. If we can uncover some best practices in these measures, we might help managers select the tools and metrics that are best suited to their sustainability challenges, strategies, and goals.

In the field of business sustainability, financial metrics are crucial for several reasons. First, deciding to invest in sustainability usually means choosing from a menu of options (e.g., investing in pollution control may come at the expense of other good causes, such as reducing energy use or supporting a local charity). To make these choices, alternative initiatives have to be measured against some standard. In these circumstances, financial metrics turn abstract sustainability measures into a common corporate language. Second, sustainability investments usually come under intense scrutiny, and the managers responsible for them are expected to clearly quantify the effects of their programs on the bottom line. Programs that are not financially quantifiable are subject to the vagaries of public opinion, changes in leadership, and the ebb and flow of financial cycles (Epstein & Roy, 2001). Third, those responsible for allocating budgets—the financial controllers—frequently oppose sustainability investments (Steger, 2007). A Yale University study of chief financial officers and financial analysts found that finance executives tend to discount environmental issues because of a lack of hard data, even though they believe that environmental issues are relevant to business. Further, Gentry and Fernandez (2005) state that financial analysts think that most firms are poor at communicating their reasons for investing in sustainability (i.e., expected business benefits). In sum, if sustainability advocates want their initiatives accepted into mainstream budgeting, they have to be able to offer financial measures of the returns from these investments.

## 2. The Financial Impact of Investing in Sustainability

We define sustainability as “business strategies that are intended to add social and/or environmental value to external stakeholders while increasing value to shareholders” (Reed, 2001). Our definition of sustainability encompasses both social and environmental initiatives for two reasons: (i) both have been considered in previous research, and (ii) both are potential drivers of business value. A recent review of research examining the relationship between sustainability and financial performance finds that the question dates back to the early 1970s, and the academic literature contains at least a dozen meta-analyses and reviews (Margolis, Elfenbein, & Walsh, 2008). Further complicating matters is Orlitzky’s (2007) finding that the strength of the relationship between sustainability and financial performance depends on the discipline of the researcher. This suggests that the field is subjective and highly fragmented. Overall, the research shows a small but positive relationship between sustainability and financial performance. However, this relationship has not been causally demonstrated (i.e., does sustainability lead to financial performance or vice versa?), and we continue to see studies published that find a neutral or even negative relationship. Clearly, doubts remain regarding the business case for sustainability.

Rousseau and colleagues (2008) argue that fragmentation within a field of study can undermine the accumulation of knowledge and integration of research findings. They point out that a range of approaches in itself is not troublesome, but that systematic reviews are necessary in order to “identify whether apparent differences across research domains are substantive or semantic, reflective of different starting points or disciplinary assumptions or authentic differences in the phenomena studied.” Systematic reviews move beyond traditional literature reviews by providing transparent,

replicable processes that are open to audit and scrutiny. Previous researchers have performed meta-analytic reviews of the relationship between sustainability and financial performance, however their work tends to only include macro categorizations of financial performance (e.g., return on assets or share price). These meta-analytic reviews do not help managers measure the specific impacts of sustainability at the firm level.

There is a clear disconnect between the study of sustainability and the study of financial performance measures and this has significant consequences. Managers may hold back from investing in sustainability for fear that it will undermine financial performance, thus creating unnecessary social and environmental harm. Or they may over-invest in sustainability in an effort to capitalize on popular sentiment, only to find that they have in fact destroyed shareholder value. In sum, we have no consistent metrics for measuring sustainability, despite three decades of research. Our systematic review is thorough and transparent and intended to guide the research community on how to move forward to address this gap.

To be part of our review, an article or report must include a quantitative calculation of the business value of sustainability (e.g., profitability, share price, ROA, etc.), or describe a process or tool for making a quantitative calculation. Some researchers have argued that a reciprocal relationship exists between sustainability and financial performance (e.g., Margolis and Walsh, 2003); however, our review is only concerned with the causal effect of sustainability on financial performance, since this is the relationship of most interest to managers. We reviewed the abstract or summary of each article or report to eliminate those that did not fit this mandate.

## 2.1 SYSTEMATIC REVIEW

The first step in data collection was to review previous meta-analyses and reviews of the subject. Two prominent articles were used: the influential review by Margolis and Walsh (2003) (hereafter, the Margolis review), and the formal meta-analysis by Orlitzky and colleagues (2003) (hereafter, the Orlitzky review). Both of these meta-analyses comprehensively reviewed the literature examining the business case for sustainability. The authors conducted broad searches of major academic journals and contacted researchers working in this area. These two meta-analyses represent the most current synthesis of the relationship between sustainability and financial performance. However, they only analysed two broad categories of financial metrics: market measures (e.g., share price) and accounting measures (e.g., ROA). Our review goes beyond the ubiquitous accounting and market measures of performance to include other important metrics that appear earlier in the causal chain of value creation. For example, measures of employee productivity or regulator approval cycle times are important, but often overlooked, ways of establishing the business case for sustainability.

All relevant articles from these meta-analyses were automatically included in our review, producing 108 articles. To ensure our review was as current as possible, we conducted our own search of the EBSCO Business Source Complete database, which houses 1,100 scholarly journals. We did not restrict this search by date, although we did not expect to find any additional relevant articles published before 2003. The keywords used for the title and subject fields were: sustainability, (corporate) social responsibility/performance, (corporate) environmental responsibility/performance, triple bottom line, and social profit. This process produced 17 articles in addition to those from the Margolis and Orlitzky meta-analyses.

We supplemented our search process with two additional steps. First, we examined the reference lists of the studies collected to identify any relevant articles, but this did not produce any additional material.

Second, we tried to capture unpublished research by posting requests on listservs relevant to researchers working in this area. These included the Social Issues in Management (SIM) listserv, the Public and Nonprofit (PNP) Division of Academy of Management listserv, and the Social Marketing listserv at Georgetown University. This step produced four additional articles. At the end of our search process, we had collected 128 articles for our academic review.

An example of a typical article in the academic review is a recent study by Surroca and colleagues (2008). This work examines a large sample of almost 600 firms, using publicly available data on sustainability metrics (SiRi database) and financial performance (COMPUSTAT). It is methodologically and statistically rigorous, with a host of control variables to account for potential spurious relationships.

## 2.2 PRACTITIONER SYSTEMATIC REVIEW

We also reviewed the practitioner literature on the business case for sustainability. This was a deliberate effort to extend the Margolis and Orlitzky reviews and to recognize the managerial focus of our research question. Although the practitioner literature lacks the centralized databases used in academic research, we wanted to ensure a similar standard of rigour. Our review of practitioner reports had four principal elements, from broad to narrow. First, we conducted a total of 16 separate Google searches. These were based on the search terms: sustainability, corporate social responsibility, sustainable development, environment, tools, valuation, value, share price, and business case. Our return numbers were large: 92,000 for the open phrase “corporate social responsibility” and “valuation” and 18,700,000 for the open phrase “environment” and “business case.” We restricted the results for our study to the top 50 matches for each Google search.<sup>1</sup> We also limited our search to PDF files because most of the relevant material is usually provided in that format (excluding blogs, generic descriptions of the business case, etc.).

<sup>1</sup> Google searches were conducted during the week of October 29, 2007.

Second, we searched several specialized online sources. These were: GLOBE-Net, Greenbiz.com, Socialfunds.com, csrWire, United Nations Environment Programme Finance Initiative (UNEPFI), World Business Council for Sustainable Development, Green Money Journal, and Environment and Finance. These sources are recognized repositories of the latest insights on subjects related to business sustainability and are, for the most part, searchable. These sources enable keyword searches that are far more targeted than anything possible through Google's broad search engines. As a whole, these sources thoroughly cover relevant research developments occurring during the search period.

Third, we conducted manual searches of the publications section of the web sites of organizations known to be active in the field of corporate sustainability. These were: accounting bodies, such as the Canadian Institute of Chartered accountants and The Association of Certified Chartered Accountants; brokerage houses such as Goldman Sachs, UBS, and WestLB; Canadian government organizations, such as Environment Canada and the National Round Table on the Environment and the Economy; industry groups, such as Business in the Community (UK), Business for Social Responsibility (US), Canadian Business for Social Responsibility, EXCEL Partnership, and the International Council for Mining and Metals; investment consultants/information providers, such as Innovest Strategic Value Advisors, SAM, SustainAbility, Mercer Investment Consulting, and FTSE4Good; law firms, such as Freshfields Bruckhaus Deringer; management consultants, such as Arthur D. Little, Deloitte, KPMG, PriceWaterhouseCoopers, and Stratos Inc.; non-governmental organizations, such as the United Nations Global Compact and the United Nations Environment Programme Finance Initiative; socially responsible investment umbrella groups, such as Social Investment Forum, Social Investment Organization, and Eurosif; and think tanks, such as AccountAbility, The

Conference Board of Canada, and the World Resources Institute. This search captured a broad cross section of organizations known to be active in the field of business sustainability.

Finally, we manually reviewed a set of corporate sustainability reports to see if they shed any further light on the current project. We chose reports that had either recently won, or been nominated for, the Ceres-Association of Chartered Certified Accountants (ACCA) Sustainability Reporting Awards. The company reports selected were those of Baxter, BP, BT, Bristol Myers Squibb, Green Mountain Coffee Roasters, Dupont, Mountain Equipment Coop, and Van City. This search augmented the academic review with 31 more examples of how to financially value sustainability. The practitioner literature search was not bounded by date, but most of the reports we collected were published between 2005 and 2007 (we did include one study published in 2001).

We found that practitioner reports tend to be more alike than academic studies, even though they are generated from a broader range of sources than academic reports. They often include complex models and variables to account for the mediation between sustainability and financial performance; for example, the effects of increased employee productivity or faster permit approval times (sdEffect, 2006). However, practitioner reports are less likely than academic studies to contain empirical work or specific variable measures. Further, our search uncovered many reports that were only available through sale, suggesting that practitioner knowledge is often proprietary.

We used two independent coders to ensure reliability, and double-checked the source article when we found coding inconsistencies, following the procedure outlined by Orwin (1994). We achieved consensus between coders for a final round inter-rater reliability of .92.<sup>2</sup>

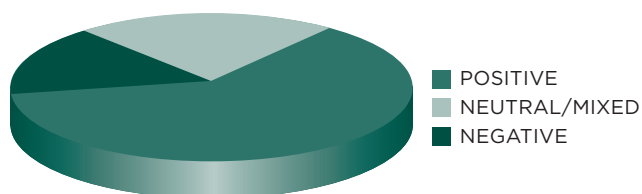
<sup>2</sup> The data are available from the first author by request. Appendix A lists the code fields; Appendix B lists the articles included in the review.



### 3. Results

Figure 1

RELATIONSHIP BETWEEN SUSTAINABILITY AND FINANCIAL PERFORMANCE



Our review of the literature examining the business case for sustainability includes a total of 159 studies. Most of the studies are drawn from academic sources (128 articles); 31 come from the practitioner literature. We find that the majority of studies show a positive relationship between sustainability and financial performance (63%); 15% of studies report a negative relationship, and 22% report a neutral or mixed relationship. Our result is similar to the findings of the Margolis and Orlitzky reviews.

The academic material we examined spans 36 years (and counting); the earliest article was published in 1972 and the most recent appeared in 2008. The practitioner literature we examined is much more recent, published in the period 2001 to 2008. This is because of the nature of our practitioner search process and because there is no centralized repository for historical practitioner material.

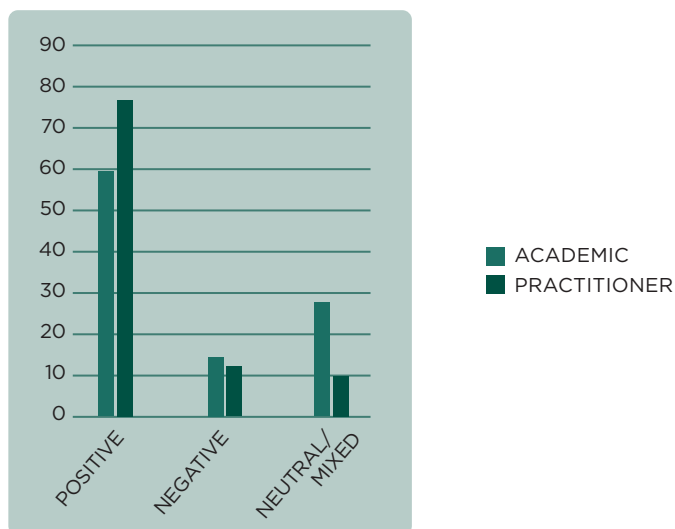
Most articles (96%) from the academic literature examine sustainability value empirically; only a few include specific financial metrics in a theoretical process for valuing sustainability. This is in contrast with the practitioner literature, where almost a third (29%) of reports do not report specific results; instead, they discuss processes for valuing sustainability.

Results in the academic literature tend to show a less positive relationship between sustainability and financial performance than the practitioner reports. In the academic literature, 59% of studies report a positive relationship between sustainability and financial

performance, 27% report a mixed relationship, and 14% report a negative relationship (this latter figure includes the non-empirical studies that argue in favour of a negative relationship). In contrast, 77% of all the practitioner reports included in this review show a positive relationship between sustainability and financial performance, 10% report a mixed or neutral relationship, and 13% report a negative relationship.

Figure 2

SUSTAINABILITY-CORPORATE FINANCIAL PERFORMANCE RELATIONSHIPS IN THE ACADEMIC AND PRACTITIONER LITERATURES (%)



#### 3.1 SUSTAINABILITY METRICS

We found that there are literally dozens of metrics that managers and researchers can use to conceptualize sustainability and assign financial value to sustainability investments. It should be noted that our review did not include the expansive research examining how firms measure the social and environmental impacts of their business practices, since this literature did not fit the mandate of the research question. However, our review did uncover a host of alternatives for firms to measure their sustainability performance.

A total of 39 unique measures of sustainability were used to examine the relationship between sustainability and financial performance. Most studies (82%) used a single sustainability measure, most commonly: pollution control or output (18%); environmental, health, and safety investments (16%); third party audits or awards (12%); the KLD index (9%); and Fortune Magazine rankings (9%).

The fact that the most popular sustainability metric was used in only 18% of the total sample highlights the tremendous inconsistency in previous research. Indeed, over 38% of all the sustainability metrics we identified appeared in only one study. Sustainability metrics are incredibly varied, reflecting the diverse nature of sustainability itself. For instance, some metrics are based on family-friendly working policies (Jones & Murrell, 2001), some on industry-specific codes of ethics (Boyle, Higgins, & Rhee, 1997), and others on firm-specific measures such as the Innovest Climate Leadership Index (Innovest, 2007).

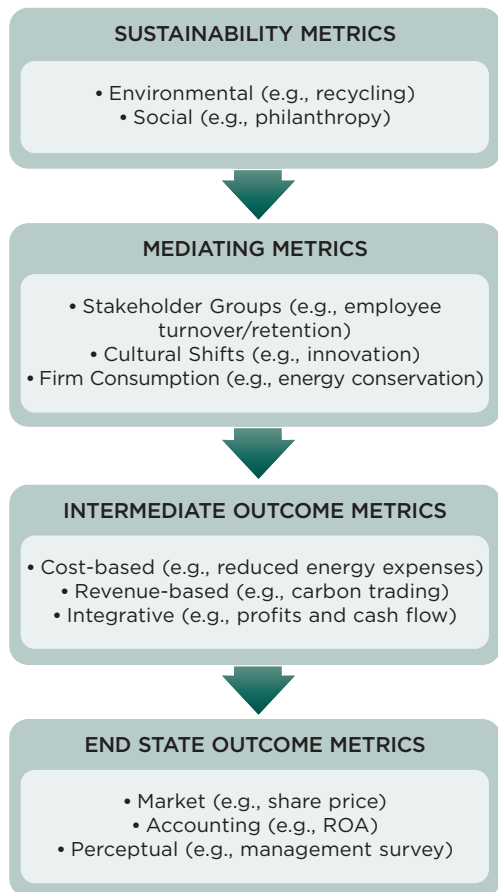
It is not particularly helpful to try and draw conclusions about the relationship between financial performance and every single one of these sustainability metrics. Instead, we categorized each measure as one of environmental, social, or broad (the latter encompassing both social and environmental issues). The research we examined used environmental measures 46 times, social measures 62 times, and broad measures 120 times. (The total exceeds the sample size [164] because 24 studies used more than one sustainability measure).

Interestingly, 65% of the environmental metrics of sustainability show a positive relationship between sustainability and corporate financial performance, while only 55% of the social metrics show a similarly positive relationship. This finding is not statistically significant, but it may suggest that environmental initiatives are more likely to be associated with positive financial returns. Alternatively, it may simply be an artefact of the typical financial measures used for environmental initiatives. This will be explored later in this section.

The general relationship between sustainability and corporate financial performance is positive across both social and environmental initiatives, with two notable exceptions. First, when sustainability is measured by the firm's business practices in South Africa, the relationship between sustainability and financial performance trends toward neutral, if not negative. This measure appeared eight times in our sample: in six cases it was negatively associated with financial performance; once, the relationship was positive; and once it was neutral. Second, when sustainability is measured with mutual fund screens, the relationship between sustainability and financial performance is equivocal. This measure appeared 11 times in our sample: in four cases it was positively associated with financial performance; twice the relationship was negative; and five times it was neutral. These findings suggest that the form of sustainability influences its relationship to financial performance, consistent with previous meta-analyses (Margolis et al., 2008).

Figure 3

**STAGES OF FINANCIAL IMPACT FROM SUSTAINABILITY**



**3.2 VALUATION METRICS**

The metrics used to value sustainability investments are as varied as those used to measure the idea of sustainability. We found that 36 unique metrics were used a total of 124 times to quantify or conceptualize the financial business case for sustainability.

These metrics presume a causal process that moves from sustainability to financial valuation in three distinct stages (see Figure 3). The most common measures are those

at the end of the chain, such as share price or return on assets (ROA). In Figure 3, these are labelled “end state outcome metrics.” Some studies use measures that precede end state metrics. These “intermediate metrics” measure outcomes that eventually create business value in end state outcomes. For example, a positive change in cash flow (the intermediate outcome) should lead to a positive change in share price (the end state outcome). The third set of metrics is those that capture the “mediating variable” that generates business value. These metrics are most closely associated with sustainability itself. For example, decreased energy consumption (the mediating variable) reduces operating costs (the intermediate outcome), which increases the firm’s share price (the end state financial result).

**End State Outcome Metrics**

The vast majority of studies we examined included some form of end state outcome metric (91%). In fact, most studies included only end state metrics, and 80% of the studies which used a single metric, used an end state one.

End state outcome metrics can be categorized into three types: (i) market approaches, such as share price or other values determined by external stakeholders; (ii) internal accounting approaches, such as return on assets (ROA); and (iii) perceptual approaches, which qualitatively assess firm performance, using either internal or external sources. These approaches are summarized in Table 1. Market-based approaches are the most common metrics in use, across all the studies we examined. Share price dominates this category, with 78 observations in total. Share price is a popular metric for several reasons. First, it makes it easy for firms to monitor their own performance over time. Second, it is a standard by which companies can compare their performance with that of firms in different sectors, geographies, and so on. Third, share price information is readily available, enabling firms to analyse the performance of initiatives that are expected to deliver some competitive advantage in the marketplace (such as brand differentiation).

Even though share price is driven by a single stakeholder group—investors—it still captures the entire spectrum of sustainability value (positive to negative) across all stakeholders. This is because investors take other stakeholders into account in their pricing decisions. For example, an investor considering a firm’s environmental initiative will simultaneously factor in the costs incurred in the project and the value gained in the form of improved relationships with regulators, community groups, employees, customers, and so on. This metric is congruent with the hypothesis that at least part of the business value from sustainability relies on salient stakeholders assigning a positive value to sustainability activities (Peloza & Papania, 2008).

Accounting-based approaches were also widely used in the sample, appearing more often than all other metrics, except share price and return on assets. Accounting measures, such as return on sales (26 observations) and return on equity (23 observations), are driven by the accounting practices of the firm. Thus, they are not always consistently applied. Accounting measures essentially demonstrate how efficiently the firm uses its assets to generate value. Therefore, they are often used over the long-term or to value initiatives that are expected to generate value in the short-term. However,

accounting metrics can misrepresent the business case for sustainability. For instance, investing in local charities, schools, or infrastructure may appear to be an inefficient use of assets in the short-term. However, over time, these investments may increase customer loyalty and community goodwill and provide a latent form of brand insurance. In contrast, short-term accounting measures capture most of the value of investing in initiatives that are designed to immediately reduce operating costs (e.g., decreasing waste).

The third category of end state metrics is perceptual metrics. The studies we examined used both external and internal perceptual metrics, but neither proves very useful for managers seeking to assess their investments, for several reasons. First, external metrics, such as the Fortune Most Admired rankings, are heavily influenced by other end state metrics, like share price. Therefore, these rankings do not capture the incremental value of other readily available or firm-generated measures. Internal measures - where researchers ask managers to assess their firm’s financial performance - are also likely to be highly correlated with other reported financial performance measures, such as return on assets, but without the credibility or rigour.

**Table 1**

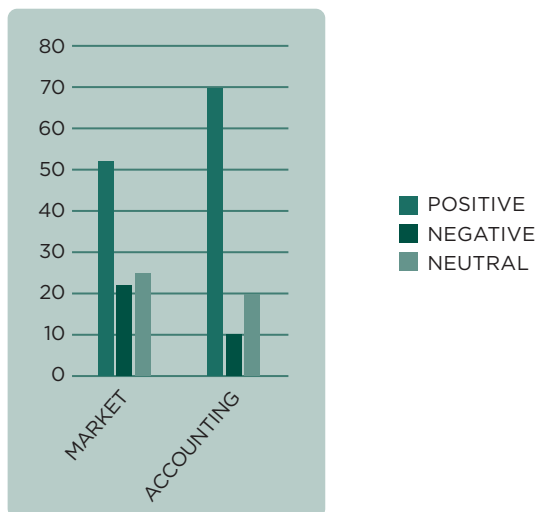
**END STATE OUTCOME METRICS BY CATEGORY**

CATEGORY	METRICS INCLUDED	EXAMPLES
MARKET	Share price, Mutual fund returns	Share Price: Schnietz and Epstein (2005). Mutual Fund Returns: Barnett and Salomon (2006).
ACCOUNTING	Return on assets (ROA), Return on equity (ROE), Return on sales (ROS)	ROA: Turban and Greening (1997). ROE: McWilliams and Siegel (2000). ROS: Griffin and Mahon (1997).
PERCEPTUAL	Fortune magazine rankings, Business Week rankings, Management surveys	Fortune: Verschoor (1999). Business Week: Verschoor (1998). Surveys: Husted and Allen (2007).

Previous research has found that accounting measures tend to show a larger correlation between sustainability and financial performance, as shown in Figure 4 (Margolis et al., 2008; Orlitzky et al., 2003). Our review confirms these findings. We found that 70% of accounting-based metrics demonstrated a positive relationship between sustainability and financial performance, compared to 53% of market-based metrics. This finding supports the hypothesis that financial performance has more impact on sustainability than sustainability has on financial performance. This is because accounting measures reflect past performance of the firm, while market measures predict future performance. If a stronger relationship exists between past financial performance and sustainability, then the causal direction does not support the business case for sustainability. These findings illustrate the importance of measuring performance as close to the sustainability initiative as possible, in order to demonstrate causality.

Figure 4

**CORRELATION BETWEEN SUSTAINABILITY AND MARKET VERSUS ACCOUNTING MEASURES (%)**



End state metrics are appealing because they reflect the overall financial health of the firm, but they are inappropriate for managers whose sustainability initiatives make relatively little contribution to share price movements. In many cases, sustainability activities tend to be lost in the noise of hundreds or thousands of other firm initiatives that are unrelated to sustainability. Used in isolation, end state metrics provide little meaningful guidance for managers trying to measure the returns from sustainability.

However, end state metrics are important for measuring the business case for sustainability, for at least two reasons. First, they provide a certain elegance and finality to the business case. These are the metrics by which managers are typically judged and rewarded. For example, share price is closely tied to executive compensation and is perhaps the ultimate measure of the financial health of a firm.

Second, end state metrics are useful because not all sustainability measures can be judged solely at the initiative level. Some aspects of sustainability require comparative analysis across a broad sample of firms. We illustrate this point by considering the different impacts of environmental and social sustainability initiatives. Environmental initiatives often lead to direct cost savings which are much easier to quantify, at least in part. For example, Reed (2001) analyses the corporate environmental report of Baxter International to demonstrate how the firm's environmental initiatives affect its market value. He takes the total savings generated (US\$85.2 million in 1998) and the profits/earning ratio of the firm's stock to calculate that Baxter's environmental initiatives have a market value of US\$1.02 billion. These savings are relatively easily calculated by accounting for the income earned from recycling, conserving energy, and reducing the use of costly hazardous materials. On the other hand, the benefits of social initiatives often come at the expense of other firms. For example, if a firm donates to charity to make it more attractive to potential employees, the financial benefit is only realized if the firm is perceived as better than other employers. But, if all employers engage in similar activities then the financial effect is negative, since all firms have now adopted a higher cost base through donations (Peloza, 2006).

**Table 2**

**INTERMEDIATE OUTCOME METRICS BY CATEGORY**

CATEGORY	METRICS INCLUDED	EXAMPLES
<b>COST</b>	Reduced use, Operational efficiencies, Changes in risk profile	Reduced Use: Carter (2005). Efficiencies: Sharma and Vredenburg (1998). Risk: Sharfman and Fernando (2008).
<b>REVENUE</b>	Customer loyalty, New markets, Competitive advantage	Customer Loyalty: JP Morgan (2006). New Markets: Sustainable Asset Management/WRI (2007).
<b>INTEGRATIVE</b>	Cash flow, Profitability	Cash Flow: Reed (2001). Profit: Lopez, Garcia, and Rodriguez (2007).

**Intermediate Outcome Metrics**

Intermediate outcome metrics are far less common than end state metrics, but still appear in 16% (25) of the studies in our sample. We categorized intermediate outcome metrics into cost-based approaches, revenue-based approaches, and integrative approaches, as summarized in Table 2.

Cost-based approaches assess the extent to which a sustainability initiative changes the cost structure of the firm. In fact, several of the company reports we studied translated waste reduction and energy conservation into direct cost savings. For example, Baxter and British Telecom (BT) emphasize that cost savings are a key part of their rationale for investing in sustainability. BT (2007) reported savings of £229.3 million in 2007 alone, and Baxter (2006) reported “income, savings and cost avoidance” of between US\$51 million and US\$90 million per year between 2003 and 2006. Cost measures were used 13 times in our sample, more than any other intermediate metric. Cost-based approaches are appealing because firms are inherently good at tracking and measuring costs.

Another important cost-based measure is the extent to which sustainability impacts the risk profile of the firm. For example, investing in sustainability to mitigate the threat of government regulation reduces risk and improves the cost of capital to the firm. Sharfman and Fernando (2008) examined the environmental record of firms and found a positive relationship between sustainability and cost of capital: improved environmental practices led to lower costs.

However, cost-based approaches have an inbuilt potential for bias because firms focus on cost savings and tend to overlook the cost increases associated with a sustainability initiative. For example, Epstein (1996) cautions that cost savings tend to be allocated to the sustainability investment, while cost increases are allocated to ongoing operations or overhead. He points out that carefully identifying all costs associated with environmental initiatives can result in a figure five times higher than original estimates. He uses life cycle analysis to thoroughly examine environmental costs, including the cost of past decisions (e.g., costs of cleaning up pollution produced in previous years), current costs, and future costs (e.g., future waste disposal costs).

Revenue-based measures are the second category of intermediate metrics. They are rarer than their cost-based counterparts, but occasionally appear in the business case literature. Three ways that sustainability can increase firm revenues are: (i) garnering loyalty among current customers, (ii) generating new market opportunities, and (iii) trading carbon emissions. For example, JP Morgan’s (2006) report on obesity points out that firms that include healthy foods in their product portfolios can generate above-average margins and take advantage of the new market opportunities arising from consumer and government concerns about high fat/caloric foods. A joint report by Sustainable Asset Management and World Resources Institute (2007) highlights that firms that invest in carbon technologies, and the expertise required to manage them, enjoy several potential revenue-generating

benefits: (i) reducing their exposure to potential carbon costs, (ii) opening up new markets, (iii) developing competencies that provide a competitive advantage, and (iv) creating new revenue streams from excess credits. For example, energy firm TransAlta sold the carbon credits they earned from wind farms and purchased no-till farming carbon credits at a lower cost.

Integrative measures are the third category of intermediate metrics. They offer a more holistic net measure of the value of sustainability initiatives. These measures either integrate cost and revenue estimates into one metric, or take a longer-term view of the business case for the initiative. To illustrate, net profit is an integrative measure because it takes into account both the revenues accrued and costs incurred in sustainability activities. For example, a waste treatment project may create savings associated with lower shipping costs and better relationships with regulators and costs associated with buying equipment and retraining employees. A full accounting of each is required to assess the true business value of the initiative.

Cash flow (or discounted cash flow) is another integrative approach. This metric assigns value to the firm by taking the value expected from an initiative (cost savings, revenue, or net profit) and extrapolating its effect on the cash inputs or outputs of the firm. A net value is then assigned, using a particular discount rate for the stream of cash in future years, to create a net present value to the firm. Using this metric, initiatives that may seem unprofitable in the short-term can demonstrate significant positive value to the firm in the long-term.

Share price is the dominant measure in both the academic and practitioner literatures, appearing in 50% of academic articles and 45% of practitioner reports. Nevertheless, practitioner reports are more likely to use intermediate outcome metrics than academic publications. This is because managers, institutional investors, and advisors have far more access to company financial data than academics. Academics have to rely on survey data or publicly available data sources (e.g., COMPUSTAT for share prices, Center for Research in Security Price for mutual fund returns). On the other hand, managers and analysts have access to the entire

financial analysis spectrum of their firm; thus they can use metrics which are rarely available to outsiders. To illustrate, the cash flow metric appears 11 times in the 31 practitioner reports we studied, but only once in the 128 academic studies. Similarly, cost increases or cost decreases appear in only 6% of the academic studies, compared to 16% of the practitioner sources.

Intermediate financial measures have two important benefits for managers trying to establish a business case for sustainability. First, they provide a measure of the financial value to the firm that might not be visible in end state metrics, such as share price. End state metrics are affected by a host of other business issues, such as competitive pressures, economic cycles, or regulatory changes. The positive or negative impacts of sustainability can simply be drowned out by this other noise. End state metrics can be factored into macro measures such as share price; for example by translating savings into a lift in earnings per share or cash flow. However, we argue that managers benefit more from metrics that are applied much closer to the actual initiative.

Second, sometimes the business case for sustainability is made by comparing a large sample of firms to one another on metrics such as share stock price. But, a more appropriate benchmark for sustainability investment might be a firm's own past performance, not the concurrent performance of other firms. If a manager invests in a sustainability initiative and finds that shares of her firm did not rise as much as shares of a competing firm, what action should she take? Increase or decrease her sustainability investment? Or switch to a different sustainability initiative altogether? Measures such as share price offer no guidance because they do not provide insights into why and how the sustainability initiative led (or did not lead) to a change in financial performance. A similar situation would arise if the manager was evaluating the success of her customer service initiatives. Comparing share prices, even within the same industry, does not yield much helpful information about customer service. More appropriate metrics would involve customer satisfaction, repeat purchase, loyalty, and so forth, which could be translated into a financial value, such as return on assets.

## Mediating Metrics

An important aspect of the relationship between sustainability and financial performance is the mediation process that demonstrates causal effect (i.e., that sustainability initiatives lead to a change in financial performance). For example, if a mining company shortens its permit approval times by investing in the local community, then permit turnaround is the mediating variable between the initiative and some measure of profitability. Almost all the studies we examined discussed the expected mediation process that leads to a theoretical relationship between sustainability and financial performance. However, only 8% of the studies explicitly considered or measured this process.

Four distinct categories of mediating metrics emerge from this relatively sparse literature. The first are those that measure the use of inputs (e.g., energy) or outputs (e.g., waste or pollution). Other categories relate to value that is generated when sustainability impacts a stakeholder group, such as employees or customers. The categories are summarized in Table 3.

The first, and simplest, mediating metrics are those that measure the cost savings from initiatives like pollution control. Here, the mediation process simply involves calculating savings. It is a straightforward process because there is a ready market for pricing such outcomes (e.g., the price of energy, the cost of

disposal). Because researchers are ultimately interested in the cost savings or revenues associated with this process, the actual metric is rarely reported. Although simple, these metrics must be calculated in order to confirm that the assumed financial benefits of a sustainability initiative do not actually arise from other sources, such as changing energy prices. Several company reports described this type of mediation. For example, Baxter accounted for the cost savings of reduced energy consumption and the revenue generated from selling products that were previously sent to landfills.

The second mediating metric is related to the employee stakeholder group and this was the most common mediation process in the studies we examined. Of the 15 studies that investigated mediation, seven concentrated on employees. Of these, six found a positive relationship between sustainability and financial performance (the other finding was mixed). Sustainability mediates through employees in at least two ways. First, it can make the employer more attractive to prospective employees, thus reducing hiring costs. Second, it can increase employee job satisfaction, subsequently increasing employee productivity and lowering retention costs. It is critical to carefully measure mediating metrics, such as employer attractiveness, to ensure that changes in hiring costs are not due to external causes like tightening labour markets.

Table 3

### MEDIATING OUTCOME METRICS BY CATEGORY

CATEGORY	METRICS INCLUDED	EXAMPLES
INPUT/OUTPUT	Energy consumption, waste reduction	Baxter (2006).
EMPLOYEE	Employee retention, satisfaction	Turban and Greening (1997).
INNOVATION	Cultural shifts, improved interdepartmental processes	Christmann (2000), Klassen and Whybark (1999), Sharma and Vredenburg (1998).
REPUTATION	Customer loyalty, purchase intention, regulators	Sen, Bhattacharya, and Korschun (2007), sdEffect (2006).



The third category of mediating metric is also related to employees, but typically involves relationships among employees, rather than between the employer and individual staff members (e.g., job satisfaction). This category includes the metrics that tell us how investing in sustainability can change organizational culture; for example, by stimulating innovation (Christmann, 2000). Klassen and Whybark (1999) considered measures of manufacturing performance, such as cost, speed, quality, and flexibility. Similarly, Sharma and Vredenburg (1998) used the Canadian oil and gas industry to demonstrate how investments in sustainability lead to innovation and improved product quality.

The fourth category of mediating metric concerns the reputation and brand of the firm in the eyes of customers and regulators. Reputational metrics differ from end state perceptual measures because the former are related to a specific stakeholder. End state measures, such as the BusinessWeek rankings, are usually based on an aggregate of various other metrics such as share price, revenues, and the like. The authors of *sdEffect - Translating Sustainable Development into Financial Valuation Measures* (2006) used a reputational metric to investigate how community involvement programmes help fast-track project approvals. For one firm in their study, investing in the community paid off with a 5.5% increase in company value, via the mediating mechanism of faster project approvals.

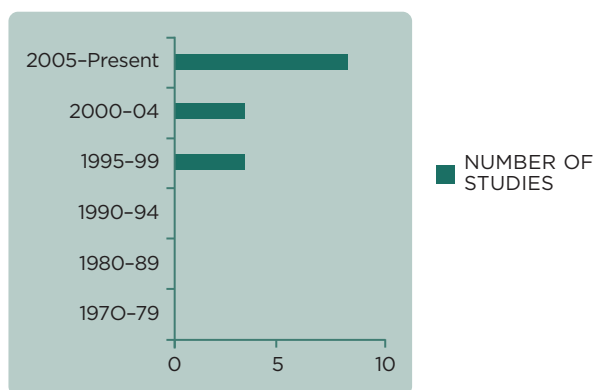
Sen and colleagues (2007) find that sustainability can positively impact consumer purchase intentions and price sensitivity, simultaneously improving revenues and margins. There is an interesting approach, because most other research on mediating metrics (25% of the studies examined) focuses on costs.

Again, we found that the practitioner literature is more likely than the academic literature to consider the mediating process of the business case (16% vs. 5%). Nevertheless, only three studies in the entire sample (less than 2%) included mediating, intermediate, and end state metrics to completely measure the chain of causation. As managers and analysts begin to closely scrutinize the financial returns from sustainability investments, there will be more interest in the mediating process. Indeed, there has already been a marked increase in the number of studies using mediating metrics over the last decade, as shown in Figure 5.

A notable variable related to mediating metrics is the use of industry-specific samples. This is because different industries face different sustainability challenges. For example, firms in the energy industry might focus on pollution and carbon trading, while clothing manufacturers see human rights as their big issue. Just as we face a relative dearth of mediating metrics, we also have few category-specific studies that lend themselves to considering specific mediating processes.

**Figure 5**

**THE USE OF MEDIATING METRICS IN STUDIES OVER TIME - 1970 TO PRESENT**



To date, the value of sustainability has overwhelmingly been examined at a cross-industry level. Over 77% of the sample data we reviewed are not specific to any particular sector(s) of the economy. That said, some authors do focus on industries with higher risk profiles (e.g., oil and gas, mining) or exclude regulated industries such as utilities. However, only 37 studies considered the financial impacts of sustainability on a specific industry. Not surprisingly, industries with higher public profiles on issues related to environmental sustainability are most likely to be singled out for attention. Of the 37 single-industry studies we examined, eight investigated the chemical industry, four concentrated on the forest industry, and four focused on utilities, as shown in Figure 6. Single-industry studies are more common in the practitioner sector. Over half (54%) of the industry-specific samples come from practitioner sources, as opposed to 19% overall.

Mediating metrics are essential for assessing the business case for sustainability, for at least two reasons. First, they are a prerequisite for demonstrating causality. There is always a mediation process, even in straightforward situations in which the financial value seems obvious. To illustrate, consider initiatives that reduce energy use. The link between financial performance and energy savings seems clear because there are existing metrics for energy consumption and there is an existing market that determines unit prices for the value of that energy. But, the costs savings from reducing energy use are not the only mediated source of financial value to the firm. Conserving energy can also have reputational benefits, making the firm more attractive to customers, employees, and suppliers. Regulators may look at the investment favourably and administer a regime of self-regulation rather than compliance. Conserving energy may generate a culture of innovation throughout the firm which empowers employees to come forward with solutions to other problems.

Second, understanding the causality in the relationship between financial performance and sustainability helps managers proactively manage the process. They can assess how the relationship works for their industry, firm, or initiative. This is necessary, given that the relationship is more likely to be curvilinear than linear. Previous researchers have envisioned a so-called “smart zone” where managers invest in sustainability at a level that maximizes financial benefits until further spending begins to deteriorate shareholder wealth (Steger, 2006). Interestingly, Barnett and Saloman (2007) find a U-shaped relationship, but in the opposite direction. They find that socially responsible investment

screens initially have a negative impact on financial performance. But, the effect turns positive as the screens encourage investment in more stable and perhaps better-managed firms. This contradiction illustrates the problems with relying solely on end state metrics. The Barnett and Saloman (2007) study measured financial performance in terms of mutual fund returns, while those who conceptualize the smart zone do so at the firm level.

Finally, looking at sustainability through the lens of mediating metrics provides the manager with a leading indicator of performance, and gives him/her the opportunity to adjust strategy and inputs accordingly. Epstein and Roy’s (2001) useful model provides guidance for measuring both the leading and lagging indicators in the relationship between sustainability and financial performance. For example, they argue that work-related injury rates are both a lagging indicator of investments in workplace safety, and a leading indicator of an outcome such as employee satisfaction. The use of leading indicators of financial performance gives managers time to adjust their sustainability strategies to maximize their chances of success.

Figure 6

LEADING SECTOR-SPECIFIC EXAMINATIONS OF THE FINANCIAL IMPACTS OF SUSTAINABILITY



## 4. Gaps and Directions for Future Research

We believe that the most important direction for future research lies in understanding the mediation process between sustainability and financial performance. Capturing the mediation process is essential; first, for understanding how sustainability creates business value, and second, for developing leading indicators to assess this value early in the process. Further, mediating variables must take a holistic view of the potential costs and benefits of sustainability. For example, a recycling program might generate an obvious \$1 million in annual cost savings. But there are other potential benefits, such as improved customer loyalty or favourable relationships with regulators, and other potential costs, such as employee training. Researchers should assemble an inventory of the salient stakeholders of the firm and ensure that any metrics designed to assess the sustainability–financial performance relationship capture the impacts on these various stakeholders. Pelozo and Papania (2008) argue that assessing the business case for sustainability inevitably requires firms to review how they identify and evaluate their stakeholders. We found that no stakeholder group was particularly well represented in our sample. Employees and customers have received some research attention, but there are still big gaps in terms of regulators, community activist groups, suppliers, media, and competitors.

Another obvious gap in the existing research is that it tends to rely on single measures of financial performance, typically end state metrics such as share price. But, to fully understand how sustainability creates value, we need to think more broadly and measure mediating processes, intermediate outcomes, and end state metrics. Only three of the studies we examined thoroughly explored the business case for sustainability, from investment, through mediation and intermediate outcomes, to end state metrics; only one of these three examined the relationship empirically. Instead, authors tend to rely on correlational relationships between broad measures of sustainability and end state metrics.

A third implication of our review is that the practitioner and academic communities need to collaborate much more than they do now. There is a gap between the work being done to develop the business case for sustainability at a macro level (i.e., being good “pays”)

and the research needed to equip managers with proper metrics for assessing the impacts of sustainability initiatives within their own firms. Almost four decades of research and over a dozen meta-analyses have given us insights into the overall relationship between sustainability and financial performance, but managers have been left to fend for themselves when it comes to tracking their own sustainability initiatives. On the one hand, practitioners often use the business case research developed by academics to justify sustainability investments. It lends credibility to those who seek to implement sustainability strategies. However, the nature of academic inquiry means that this work tends to be at the macro level (i.e., samples of hundreds of firms) rather than at the initiative level. It favours generalizability and methodological rigour, over case studies. Nevertheless, academics already have validated measures and research methods for capturing the mediation processes that are expected to impact financial performance (e.g., job satisfaction, customer loyalty, cultural innovation, etc.). We believe that business case research would move sharply forward if academics and practitioners established partnerships—the researchers providing academically rigorous metrics and methods and the managers offering access to data and a front line perspective on how sustainability creates business value.

Our review also indicates that we need to be more consistent in how we measure both the business value of sustainability and the concept of sustainability itself. Our review revealed 39 different measures of sustainability; from behavioural measures, such as philanthropic donations, to perceptual measures, such as public rankings. There are positive metrics related to family-friendly working policies and negative metrics related to lawsuits. Some studies use backward-looking (accounting) end state metrics, such as return on assets; some use forward-looking (market) end state metrics, such as share price; some use perceptual measures of financial performance alongside intermediate outcome metrics, such as discounted cash flow and cost reduction. In this context, is it surprising that previous meta-analyses have been able to demonstrate any relationship between financial performance and sustainability, beyond pure random distribution.

Can we possibly consider that hiring minority employees in 1981 is equivalent to conserving energy in 2006? Can the savings achieved by reducing waste be realistically compared to any share price increases resulting from philanthropic donations? Indeed, Margolis and colleagues (2008) examined the relationship between corporate social responsibility (CSR) and corporate financial performance across eight categories of CSR and found that different initiatives have significantly different impacts on financial performance.

Finally, we believe that practitioners should be more open with their knowledge of the business case for sustainability. Our review uncovered numerous reports that were available only through purchase. Ironically, the practitioner literature is more likely to examine the

issue at a theoretical level, even though practitioner researchers typically have access to more micro-level data. In other words, those researchers who have access to the best data are not reporting on it. We recognize that proprietary issues prohibit firms from disclosing their sustainability strategies and financial outcomes, but perhaps industry associations can play a role in bringing together firms for the collective good. Collectively sharing aggregate data and standardized metrics would protect individual firm data and might protect the industry from external threats (King and Lenox, 2000). The importance of the business case suggests that industry associations should not only develop operating standards, but also reporting and measurement standards.

## 5. Conclusion

Recent meta-analyses of the entire field have revealed a positive relationship between sustainability and financial performance; however, the business case for sustainability is somewhat unclear. The relationship is relatively weak; questions of causality are unanswered; and the measures used to examine the business case are inconsistent. This situation leaves the “believers” advocating for sustainability based on broad studies that do not address firm-specific issues, and the “sceptics” discounting sustainability because the research findings are irrelevant. Managers have a vague idea that sustainability initiatives pay off financially, but they do not know how best to measure the financial impacts of implementing these initiatives.

Our review highlights the inconsistencies for managers who seek the “holy grail” of creating financial value out of environmentally and socially sustainable activities.

The variety of metrics and measurement processes we have described demonstrate that we need to clarify the value chain, from initiative to financial impact. The measures we use will depend on how a sustainability initiative is conceived and how it is anticipated to affect the firm. Understanding the impact of sustainability on end state financial metrics, such as share price, depends on capturing the full costs and benefits of each initiative, through the mediation process. But, researchers have only just started to comprehend the significance of the mediating process. As the field of inquiry shifts from examining the relationship between sustainability and financial performance to examining the structures and processes firms use to engage in sustainability, it will be critical to use appropriate financial metrics that capture the full value proposition.

## References

- BT's Changing World: Sustained Values 2007, accessed on October 23, 2007 from: <http://www.btplc.com/societyandenvironment/index.cfm>.
- Barnett, M.L., & Salomon, R.M. 2006. Beyond dichotomy: The curvilinear relationship between social responsibility and financial performance. *Strategic Management Review*, 27: 1101-1122.
- Baxter 2006 Sustainability Report, accessed on October 20, 2007 from: <http://sustainability.baxter.com>.
- Boyle, E.J., Higgins, M.M, & Rhee, S.G. 1997. Stock market reaction to ethical initiatives of defence contractors: Theory and evidence. *Critical Perspectives on Accounting*, 8: 541-561.
- Carter, C.R. 2005. Purchasing social responsibility and firm performance. *International Journal of Physical Distribution & Logistics Management*, 35: 177-194.
- Christmann, P. 2000. Effects of "best practices" of environmental management on cost advantage: The role of complementary assets. *Academy of Management Journal*, 43: 663-680.
- Epstein, M.J. 1996. Improving environmental accounting with full environmental cost accounting. *Environmental Quality Management*, Autumn: 11-22.
- Epstein, M.J. & Roy, M.J. 2001. Sustainability in action: Identifying and measuring the key performance drivers. *Long Range Planning*, 34: 585-604.
- Gentry, B.S. & Fernandez, L.O. 2005. Valuing the environment: How Fortune 500 CFOs and analysts measure corporate performance, UNDP Public-Private Partnerships for the Urban Environment, Yale University.
- Griffin, J.J. & Mahon, J.F. 1997. The corporate social performance and corporate financial performance debate. *Business & Society*, 36: 5-31.
- Husted, B.W. & Allen, D.B. 2007. Strategic corporate social responsibility and value creation among large firms: Lessons from the Spanish experience. *Long Range Planning*, 40: 594-610.
- Innovest Strategic Value Advisors. 2007. Carbon beta© and equity performance. Accessed on October 30, 2007 from: [www.innovestgroup.com/index.php?option=com\\_content&task=view&id=50&Itemid=39](http://www.innovestgroup.com/index.php?option=com_content&task=view&id=50&Itemid=39).
- JP Morgan. 2006. Obesity. Re-Shaping the Food Industry.
- Jones, R. & Murrell, A.J. 2001. Signalling positive corporate social performance: An event study of family-friendly firms. *Business & Society*, 40: 59-78.
- King, A.A. & Lenox, M.J. 2000. Industry self-regulation without sanctions: The chemical industry's responsible care program. *Academy of Management Journal*, 43: 698-716.
- Klassen, R.D. & Whybark, C.D. 1999. The impact of environmental technologies on environmental performance. *Academy of Management Journal*, 42: 599-615.
- Lopez,V.M., Garcia, A., & Rodriguez, L. 2007. Sustainable development and corporate performance: A study based on the Dow Jones Sustainability Index. *Journal of Business Ethics*, 75: 285-300.
- Margolis, J.D. & Walsh, J.P. 2003. Misery loves companies: Rethinking social initiatives by business. *Administrative Science Quarterly*, 48: 268-305;
- Margolis, J.D., Elfenbein, H.A., & Walsh, J.P. 2008. Does it pay to be good? A meta-analysis and redirection of research on the relationship between corporate social and financial performance, working paper, Harvard University.
- McWilliams, A. & Siegel, D. 2000. Corporate social responsibility and financial performance: Correlation of misspecification? *Strategic Management Journal*, 21: 603-609.
- Orlitzky, M. 2007. Doing well by doing good: Objective findings, subjective assumptions, or selective amplification? presented at the Academy of Management Conference.

- Orlitzky, M., Schmidt, F., & Rynes, S. 2003. Corporate social and financial performance: A meta-analysis. *Organization Studies*, 24: 403-441.
- Orwin, R.G. 1994. Evaluating coding decisions. In H. Cooper & L.V Hedges (Eds.), *The Handbook of Research Synthesis*: 139-162. New York: Russell Sage Foundation.
- Pelozo, J. 2006. Using corporate social responsibility as insurance for financial performance. *California Management Review*, 48: 52-72.
- Pelozo, J. & Papania, L. 2008. The missing link between corporate social responsibility and financial performance: Stakeholder salience and identification, *Corporate Reputation Review*, forthcoming.
- Reed, D.J. 2001. *Stalking the elusive business case for corporate sustainability*. World Resources Institute, Washington D.C.
- Rousseau, D.M., Manning, J., & Denyer, D. 2008. Evidence in management and organizational science: Assembling the field's full weight of scientific knowledge through synthesis. *Annals of the Academy of Management*, 3, forthcoming.
- sdEffect - Translating Sustainable Development into Financial Valuation Measures - A Pilot Analytical Framework. 2006. Yachnin & Associates, Sustainable Investment Group Ltd., and Corporate Knights Inc., Accessed on October 15, 2007 from [www.sdeffect.com](http://www.sdeffect.com).
- Salzmann, O., Ionescu-Somers, A., & Steger, U. 2005. The business case for corporate sustainability: Literature review and research options. *European Management Journal*, 23: 27-36.
- Sen, S., Bhattacharya, C.B., & Korschun, D. 2006. The role of corporate social responsibility in strengthening multiple stakeholder relationships: A field experiment. *Journal of the Academy of Marketing Science*, 34: 158-166.
- Schnietz, K.E., & Epstein, M.J. 2005. Exploring the financial value of a reputation for corporate social responsibility during a crisis. *Corporate Reputation Review*, 7: 327-345.
- Sharfman, M.P. & Fernando, C.S. 2008. Environmental risk management and the cost of capital. *Strategic Management Journal*, forthcoming.
- Sharma, S. & Vredenburg, H. 1998. Proactive corporate environmental strategy and the development of competitively valuable organizational capabilities. *Strategic Management Journal*, 19: 729-753.
- Steger, U. 2006. Building a business case for corporate sustainability. In S. Schaltegger and M. Wagner (Eds.), *Managing the Business Case for Sustainability*: 412-443. Greenleaf: Sheffield, UK.
- Surroca, J., Tribo, J.A., & Waddock, S. 2008. The role of intangible resources in explaining the relationship between corporate responsibility and financial performance. *Strategic Management Journal*, forthcoming.
- Sustainable Asset Management/World Resources Institute, *Changing Drivers: The Impact of Climate Change of Competitiveness and Value Creation in the Automotive Industry*, accessed from <http://www.sam-group.com/changingdrivers/> on May 23, 2008.
- Turban, D.B. & Greening, D.W. 1997. Corporate social performance and organizational attractiveness to prospective employees. *Academy of Management Journal*, 40: 658-672.
- Verschoor, C.C. 1998. A study of the link between a corporation's financial performance and its commitment to ethics. *Journal of Business Ethics*, 17: 1509-1516.
- Verschoor, C.C. 1999. Corporate performance is closely linked to a strong ethical commitment. *Business and Society Review*, 104: 407-415.

## Appendix A: Coding Sheet Heading/Fields

SOURCE	ARTICLE TITLE, AUTHORS, SOURCE
Date	Year of publication
Academic/Practitioner	Was the source from the academic or practitioner literature?
Empirical	Was the article an empirical investigation or a theoretical account?
Metric for Sustainability	How was sustainability conceived/ measured (independent variable)?
Performance Metric	What is the outcome that is measured (dependent variable)?
Mediating Metric	Was there a mediating process or stakeholder examined?
Sector	Was the study specific to any one sector of the economy?
Result	Was the relationship positive, negative, or neutral/mixed?
Notes	Any relevant points or observations not coded were recorded.



## Appendix B: Articles Included in Review

- Abbott, Walter F. and R. Joseph Mosen (1979), On the measurement of corporate social responsibility: self-reported disclosures as a method of measuring corporate social involvement, *Academy of Management Journal*, 22(3), 501-515.
- Alexander, Gordon J. and Rogene A. Buchholz (1978), Corporate social responsibility and stock market performance, *Academy of Management Journal*, 21(3), 479-486.
- Anderson, John C. and Alan W. Frankle (1980), Voluntary social reporting: An iso-beta portfolio analysis, *The Accounting Review*, 55, 467-479.
- Aupperle, Kenneth E., Archie B. Carroll, and John D. Hatfield (1985), An empirical examination of the relationship between corporate social responsibility and profitability, *Academy of Management Journal*, 28(2), 446-463.
- Barnett, Michael L. and Robert M. Salomon (2006), Beyond dichotomy: the curvilinear relationship between social responsibility and financial performance, *Strategic Management Review*, 27(11), 1101-1122.
- Baxter 2005 Sustainability Report
- Belkaoui, Ahmed (1976), The impact of the disclosure of the environmental effects of organizational behavior on the market, *Financial Management*, 5(4), 26-31.
- Belkaoui, Ahmed and Philip G. Karpik (1989), Determinants of the corporate decision to disclose social information, *Accounting, Auditing and Accountability Journal*, 2(1), 36-51.
- Berman, Shawn L., Andrew C. Wicks, Suresh Kotha, and Thomas M. Jones (1999), Does stakeholder orientation matter? The relationship between stakeholder management models and firm financial performance, *Academy of Management Journal*, 42(4), 488-506.
- Berrone, Pascual, Jordi Surroca and Josep A. Tribo (2007), Corporate ethical identity as a determinant of firm performance: A test of the mediating role of stakeholder satisfaction, *Journal of Business Ethics*, 76, 35-53.
- Bird, Ron, Anthony D. Hall, Francesco Moment, and Francesco Reggiani (2007), What corporate social responsibility activities are valued by the market?, *Journal of Business Ethics*, 76, 189-206.
- Blacconiere, Walter G. and Dennis M. Patten (1994), Environmental disclosures, regulatory costs, and changes in firm value, *Journal of Accounting & Economics*, 18, 357-377.
- Blacconiere, Walter G. and W. Dana Northcut (1997), Environmental information and market reactions to environmental legislation, *Journal of Accounting, Auditing & Finance*, 12, 149-178.
- Blackburn, V.L., M. Doran, and C.B. Shrader (1994), Investigating the dimensions of social responsibility and the consequences for corporate financial performance, *Journal of Managerial Issues*, 6, 195-212.
- Bowman, Edward H. (1976), Strategy and the weather, *Sloan Management Review*, 17(2), 49-62.
- Bowman, Edward H. (1978), Strategy, annual reports and alchemy, *California Management Review*, 20(3), 64-71.
- Bowman, Edward H. and Mason Haire (1975), A strategic posture toward corporate social responsibility, *California Management Review*, 18(2), 49-58.
- Boyle, Edmund J., Mark M. Higgins, and S. Ghon Rhee (1997), Stock market reaction to ethical initiatives of defence contractors: theory and evidence, *Critical Perspectives on Accounting*, 8, 541-561.
- Bragdon, Jay and J.A. Marlin (1972), Is pollution profitable?, *Risk Management*, 19(4), 9-18.
- Bragdon, Jay and Richard Karash (2002), Living-Asset Stewardship: How organizational learning leads to exceptional market returns, *Reflections*, 4(1), 55-65.
- Brammer, Stephen, Chris Brooks, and Stephen Pavelin (2006), Corporate social performance and stock returns: UK evidence from disaggregate measures, *Financial Management*, Autumn, 97-116.
- Brown, Brad (1997), Stock market valuations of reputation for corporate social performance, *Corporate Reputation Review*, 1(3), 76-80.

Brown, Brad (1998), Do stock market investors reward reputation for corporate social performance?, *Corporate Reputation Review*, 1(4), 271-282.

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Carter, Craig R. (2005), Purchasing social responsibility and firm performance, *International Journal of Physical Distribution & Logistics Management*, 35(3), 177-194.

Castro, Noelia Romero and Juan Pineiro Chousa (2006), An integrated framework for the financial analysis of sustainability, *Business Strategy and the Environment*, 15, 322-333.

Chen, Kung H. and Richard W. Metcalf (1980), The relationship between pollution control record and financial indicators revisited, *The Accounting Review*, 55(1), 168-177.

Christmann, Petra (2000), Effects of "best practices" of environmental management on cost advantage: the role of complementary assets, *Academy of Management Journal*, 43(4), 663-680.

Citigroup. Towards Sustainable Mining. Riding with the Cowboys or Hanging with the Sherriff? 2006.

Clarkson, Max B.E. (1988), Corporate Social Performance in Canada, 1976-86, *Research in Corporate Social Performance and Policy*, 10, 241-265.

CM-CIC Securities. On the Road Again: A Financial and Extra-financial analysis of the Auto Industry. ?

Cochran, Philip L. and Robert A. Wood (1984), Corporate social responsibility and financial performance, *Academy of Management Journal*, 27(1), 42-56.

Conine, T.E. and G.P. Madden (1986), Corporate social responsibility and investment value: the expectational relationship, in W.K. Guth (ed.), *Handbook of Business Strategy*, Warren Gorham and Lamont, Boston.

D'Antonio, Louis, Tommi Johnson, and Bruce Hutton (1997), Expanding socially screened portfolios: an attribution of bond performance, *Journal of Investing*, Winter, 79-86.

Darnall, Nicole (2008), Environmental regulations, efficiency offsets and organizations' financial performance, working paper, George Mason University.

Darnell, Nicole, G.J. Jolley and B. Ytterhus (2007), Understanding the relationship between a facility's environmental and financial performance, in N. Johnstone (ed.), *Environmental Policy and Corporate Behavior*, Edward Elgar, Northampton, MA, 213-259.

Davidson, Wallace N. and Dan L. Worrell (1992), The effect of product recall announcements on shareholder wealth, *Strategic Management Journal*, 13(6), 467-473.

Derwall, Jeroen, Nadja Gunster, Rob Bauer and Kees Koedijk (2004), The eco-efficiency premium puzzle, Erasmus Research Institute of Management report.

Deutsche Bank. Beyond the Numbers. 2006.

Deutsche Securities South African Equity Research. Retail Sector. No Evidence to Link Share Ratings With Good Corporate Citizenship...Yet. 2004.

Diltz, J. David (1995), The private cost of socially responsible investing, *Applied Financial Economics*, 5, 69-77.

Dowell, Glen, Stuart Hart and Bernard Yeung (2000), Do corporate global environmental standards create or destroy market value?, *Management Science*, 46(8), 1059-1074.

Dresder Kleinwort Wasserstein Research. Aviation Emissions: Another Cost to Bear. 2003.

Dresder Kleinwort Wasserstein Research. Emissions Trading. Carbon Derby Part II: And They're Off. 2003.

Elsayed, Khaled and David Paton (2005), The impact of environmental performance on firm performance: static and dynamic panel evidence, *Structural Change and Economic Dynamics*, 16, 395-412.

Epstein, Marc J. (1996), Improving Environmental Management with Full Environmental Cost Accounting, *Environmental Quality Management*, Autumn, 11-22.

Epstein, Marc J. and Marie-Josée Roy (2001), Sustainability in action: identifying and measuring the key performance drivers, *Long Range Planning*, 34, 585-604.

Figge, Frank, et. al. The ADVANCE Survey. Sustainable Value of European Industry. A Value-Based Analysis of the Environmental Performance of European Manufacturing Companies. 2006.

Fogler, H. Russell and Fred Nutt (1975), A note on social responsibility and stock valuation, *Academy of Management Journal*, 18(1), 155-160.

Fombrun, Charles and Mark Shanley (1990), What's in the name? Reputation building and corporate strategy, *Academy of Management Journal*, 33(2), 233-258.

Freedman, Martin and A.J. Stagliano (1991), Differences in social-cost disclosures: A market test of investor reactions, *Accounting, Auditing & Accountability Journal*, 4(1), 68-83.

Freedman, Martin and Bikki Jaggi (1982), Pollution disclosures, pollution performance and economic performance, *International Journal of Management Science*, 10(2), 167-176.

Freedman, Martin and Bikki Jaggi (1986), An analysis of the impact of corporate pollution disclosures included in annual financial statements on investors' decisions, *Advances in Public Interest Accounting*, 1, 193-212.

Fry, Fred L. and Robert J. Hock (1976), Who claims corporate responsibility? The biggest and worst, *Business and Society Review*, 18, 62-65.

GEMI - Global Environmental Management Initiative. Clear Advantage. Building Shareholder Value/Environment.

Goldman Sachs. Enhanced Energy ESG Framework. 2006.

Goldman Sachs. Europe: Media - Introducing Our Sustainable Investing Framework for Media. 2006.

Goldman Sachs. Global Mining and Steel: Integrating ESG. 2006.

Graves, Samuel B. and Sandra A. Waddock (1994), Institutional owners and corporate social performance, *Academy of Management Journal*, 37(4), 1034-1046.

Greening, Daniel W. (1995), Conservation strategies, firm performance, and corporate reputation in the U.S. electric utility industry, *Research in Corporate Social Performance and Policy*, 1, 345-368.

Gregory, Alan, John Matatko, and Robert Luther (1997), Ethical unit trust financial performance: small company effects and fund size effects," *Journal of Business Finance & Accounting*, 24(5), 705-725.

Griffin, Jennifer J. and John F. Mahon (1997), The corporate social performance and corporate financial performance debate, *Business & Society*, 36(1), 5-31.

Guerard, John B. (1997), Is there a cost to being socially responsible in investing? *Journal of Forecasting*, 16, 475-490.

Hamilton, Sally, Hoje Jo, and Meir Statman (1993), Doing well while doing good? The investment performance of socially responsible mutual funds, *Financial Analysts Journal*, Nov/Dec., 62-66.

Hart, Stuart L. and Gautam Ahuja (1996), Does it pay to be green? An empirical examination of the relationship between emission reduction and firm performance, *Business Strategy and the Environment*, 5, 30-37.

Hassel, Lars, Henrik Nilsson and Siv Nyquist (2005), The value relevance of environmental performance, *European Accounting Review*, 14(1), 41-61.

Heinze, David C. (1976), Financial correlates of a social involvement measure, *Akron Business and Economic Review*, 7(1), 48-51.

Herremans, Irene M., Parnporn Akathatporn, and Morris McInnes (1993), An investigation of corporate social responsibility reputation and economic performance, *Accounting, Organizations and Society*, 18, 587-604.

- Hickman, Kent A., Walter R. Teets, and John J. Kohls (1999), Social investing and modern portfolio theory, *American Business Review*, 17, 72-78.
- Hillman, Amy J. and Gerald D. Keim (2001), Shareholder Value, stakeholder management and social issues: what's the bottom line?, *Strategic Management Journal*, 22, 125-139.
- Holman, W.R., J.R. New and D. Singer (1990), The impact of corporate responsiveness on shareholder wealth, in Lee Preston (ed.), *Corporation and Society Research: Studies in Theory and Measurement*, 265-280, Greenwich, CT: JAI Press.
- Husted, Bryan W. and David B. Allen (2007), Strategic Corporate Social Responsibility and Value Creation among Large Firms: Lessons from the Spanish Experience, *Long Range Planning*, 40, 594-610.
- Hylton, Maria O'Brien (1992), "Socially responsible" investing: Doing good versus doing well in an inefficient market, *American University Law Review*, 42(1), 1-52.
- Ingram, Robert W. (1978), An investigation of the information content of (certain) social responsibility disclosures, *Journal of Accounting Research*, 16(2), 270-285.
- Innovest Strategic Value Advisors. Carbon Beta© and Equity Performance. 2007.
- Jones, Ray and Audrey J. Murrell (2001), Signalling positive corporate social performance: an event study of family-friendly firms, *Business & Society*, 40(1), 59-78.
- JP Morgan. Obesity. Re-Shaping the Food Industry.
- Judge, William Q. and Thomas J. Douglas (1998), Performance implications of incorporating natural environmental issues into the strategic planning process: an empirical assessment, *Journal of Management Studies*, 35(2), 241-262.
- Kahn, R.N., C. Lekander, and T. Leimkuhler (1997), Just say no? The investment implications of tobacco divestiture, *Journal of Investing*, Winter, 62-70.
- Kedia, B.L. and E.C Kuntz (1981), The context of social performance: an empirical study of Texas banks, *Research in Corporate Social Performance*, 3, 133-154.
- Kieran, Matthew J. (2001), Eco-Value, Sustainability, and shareholder value: Driving environmental performance to the bottom line, *Environmental Quality Management*, Summer, 1-12.
- Klassen, Robert D. and Curtis P. McLaughlin (1996), The impact of environmental management on firm performance, *Management Science*, 42(8), 1199-1214.
- Klassen, Robert D. and D. Clay Whybark (1999), The Impact of Environmental Technologies on Manufacturing Performance, *Academy of Management Journal*, 42(6), 599-615.
- Konar, Shameek and Mark A. Cohen (2001), Does the market value environmental performance?, *The Review of Economics and Statistics*, 83(2), 281-289.
- Kurz, L. and D. DiBartolomeo (1996), Socially screened portfolios: An attribution analysis of relative performance, *Journal of Investing*, Fall, 35-41.
- Lashgari, Malek K and David R. Grant (1989), Social investing: The Sullivan principles, *Review of Social Economy*, 47, 74-83.
- Lopez, M. Victoria, Arminda Garcia, and Lazaro Rodriguez (2007), Sustainable Development and corporate performance: A study based on the Dow Jones Sustainability Index, *Journal of Business Ethics*, 75, 285-300.
- Luck, C. and N. Pilotte (1993), Domini social index performance, *Journal of Investing*, Fall, 60-62.
- Luthehr, R.G. and J. Matatko (1994), The performance of ethical unit trusts: choosing an appropriate benchmark, *British Accounting Review*, 26, 77-89.
- Mahapatra, Sitikantha (1984), Investor reaction to a corporate social accounting, *Journal of Business Finance & Accounting*, 11(1), 29-40.
- Mallin, C.A., B. Saadouni, and R.J. Briston (1995), The financial performance of ethical investment funds, *Journal of Business Finance & Accounting*, 22(4), 483-496.

McGuire, Jean B., Alison Sundgren and Thomas Schneeweis (1988), Corporate social responsibility and firm financial performance, *Academy of Management Journal*, 31(4), 854-872.

McGuire, Jean B., Thomas Schneeweis, and Ben Branch (1990), Perceptions of firm quality: a cause of result of firm performance, *Journal of Management*, 16(1), 167-180.

McWilliams, Abigail and Donald Siegel (1997), The role of money managers in assessing corporate social responsibility research, *Journal of Investing*, Winter, 98-107.

McWilliams, Abigail and Donald Siegel (2000), Corporate social responsibility and financial performance: correlation of misspecification?, *Strategic Management Journal*, 21, 603-609.

Merrill Lynch. Green Property: Does it Pay? 2005.

Meznar, Martin B., Douglas Nigh and Chuck C.Y. Kwok (1994), Effect of announcement of withdrawal from South Africa on stockholder wealth, *Academy of Management Journal*, 37(6), 1633-1648.

Morgan Stanley. Chemicals. 2006.

Mueller, Samuel A. (1991), The opportunity cost of discipleship: ethical mutual funds and their returns, *Sociological Analysis*, 52(91), 111-124.

Nakao, Yuriko, Akihiro Amano, Kanichiro Matsumura, Kiminori Genba, and Makiko Nakano (2007), Relationship between environmental performance and financial performance: An empirical analysis of Japanese corporations, *Business Strategy and the Environment*, 16, 106-118.

Nehrt, Chad (1996), Timing and intensity effects of environmental investments, *Strategic Management Journal*, 17, 535-547.

Newgren, K.E., A.A. Rasher, M.E. LaRoe, and M.R. Szabo (1985), Environmental assessment and corporate performance: a longitudinal analysis using a market-determined performance measure, *Research in Corporate Social Performance and Policy*, 7, 153-164.

O'Neill, Hugh M., Charles B. Saunders, and Anne Derwinski McCarthy (1989), Board members, corporate social responsiveness and profitability: are tradeoffs necessary?, *Journal of Business Ethics*, 8, 353-357.

Parker, I. Robert and Henry Eilbirt (1975), Social responsibility: the underlying factors, *Business Horizons*, 18, 5-10.

Patten, D.M. (1990), The market reaction to social responsibility disclosures: the case of the Sullivan principles signings, *Accounting, Organizations, and Society*, 15, 575-587.

Pava, Moses L. and Joshua Krausz (1996), The association between corporate social-responsibility and financial performance: the role of social cost, *Journal of Business Ethics*, 15, 321-357.

Peloza, John and Lisa Papania (2008), *The Missing Link Between Corporate Social Responsibility and Financial Performance: Stakeholder Salience and Identification*, working paper, Simon Fraser University.

Posnikoff, Judith F. (1997), Disinvestment from South Africa: They did well by doing good, *Contemporary Economic Policy*, 15, 76-86.

Preston, Lee E. and Harry J. Sapienza (1990), Stakeholder management and corporate performance, *Journal of Behavioural Economics*, 19(4), 361-375.

Preston, Lee. E. (1978), Analyzing corporate social performance: methods and results, *Journal of Contemporary Business*, 7, 135-150.

Preston, Lee. E. and Douglas P. O'Bannon (1997), The corporate social-financial performance relationship, *Business & Society*, 36(4), 419-429.

PriceWaterhouseCoopers and Sustainable Asset Management. Sustainability Yearbook 2008.

Reed, Donald J. (2001), Stalking the elusive business case for corporate sustainability, World Resources Institute, Washington, DC.

Reimann, Bernard C. (1975), Organizational effectiveness and management's public values: a canonical analysis, *Academy of Management Journal*, 18(2), 224-241.

Repetto, Robert and Dan Dias. TruCostEVA and the US Utilities Sector.

Repetto, Robert and Duncan Austin (2000), Pure profit: the financial implications of environmental performance, World Resources Institute, Washington, DC.

Reyes, Mario G. and Terrance Grieb (1998), The external performance of socially-responsible mutual funds, *American Business Review*, 16, 1-7.

Rockness, Joanne, Paul Schlachter, and Howard O. Rockness (1986), Hazardous waste disposal, corporate disclosure, and financial performance in the chemical industry, *Advances in Public Interest Accounting*, 1, 167-191.

Russo, Michael V. and Paul A. Fouts (1997), A resource-based perspective on corporate environmental performance and profitability, *Academy of Management Journal*, 40(3), 534-559.

Salama, Aly (2005), A note on the impact of environmental performance on financial performance, *Structural Change and Economic Dynamics*, 16, 413-421.

Sauer, David A. (1997), The impact of social-responsibility screens on investment performance: evidence from the Domini 400 social index and Domini equity mutual fund, *Review of Financial Economics*, 6(2), 137-149.

Schnietz, Karen E. and Marc J. Epstein (2005), Exploring the financial value of a reputation for corporate social responsibility during a crisis, *Corporate Reputation Review*, 7(4), 327-345.

Shane, Philip B. and Barry H. Spicer (1983), Market response to environmental information produced outside the firm, *The Accounting Review*, 58(3), 521-538.

Sharfman, Mark P. and Chitru S. Fernando (2008), Environmental Risk Management and the cost of capital, *Strategic Management Journal*, forthcoming.

Sharma, Sanjay and Harrie Vredenburg (1998), Proactive corporate environmental strategy and the development of competitively valuable organizational capabilities, *Strategic Management Journal*, 19, 729-753.

Simerly, Roy L. (1995), Institutional ownership, corporate social performance, and firms' financial performance, *Psychological Reports*, 77, 515-525.

Sinnerly, Roy L. (1994), Corporate social performance and firms' financial performance: an alternative perspective, *Psychological Reports*, 75, 1091-1103.

Spencer, B.A. and G.S. Taylor (1987), A within and between analysis of the relationship between corporate social responsibility and financial performance, *Akron Business and Economic Review*, 18(3), 7-18.

Spicer, Barry H. (1978), Investors, corporate social performance and information disclosure: An empirical study, *The Accounting Review*, 53(1), 94-111.

Stevens, W.P. (1984), Market reaction to corporate environmental performance, *Advances in Accounting*, 1, 41-61.

Sturdivant, Frederick D. and James L. Ginter (1977), Corporate social responsiveness: Management attitudes and economic performance, *California Management Review*, 19(3), 30-39.

Surroca, Jordi, Josep A. Tribo, and Sandra Waddock (2008), The role of intangible resources in explaining the relationship between corporate responsibility and financial performance, working paper, Boston College.

Taplin, James R.D., David Bent, and David Aeron-Thomas (2006), Developing a sustainability accounting framework to inform strategic business decisions: a case study from the chemicals industry, *Business Strategy and the Environment*, 15, 347-360.

Teoh, Siew Hong, Ivo Wlech, and C. Paul Wazzan (1999), The effect of socially activist investment policies on the financial markets: Evidence from the South African boycott, *Journal of Business*, 72(1), 35-89.

Teper, J.A. (1992), Evaluating the cost of socially responsible investing, in P.D. Kinder, S.D. Lydenberg and A.L. Domini (eds.), *The Social Investment Almanac*, 340-349.

Tichy, Noel M., Andrew R. McGill, and Lynda St. Clair (1997), Introduction: corporate global citizenship - why now?, in N.M. Tichy, A.R. McGill and L. St. Clair (eds), *Corporate Global Citizenship: Doing Business in the Public Eye*: 1-22; San Francisco, New Lexington Press

Travers, F.J. (1997), Socially responsible investing on a global basis: mixing money and morality outside the U.S., *Journal of Investing*, Winter, 50-56.

Turban, Daniel B. and Daniel W. Greening (1996), Corporate social performance and organizational attractiveness to prospective employees, *Academy of Management Journal*, 40(3), 658-672.

UBS. *Alternative Alpha: Infrastructure - The Long View*. 2006.

UBS. *European Emissions Trading Scheme. Bonanza or Bust?* 2003.

UBS. *Food and Beverages: Corporate Responsibility*. 2005.

UBS. *Qseries - Corporate Social Responsibilities. Why try to Quantify the Unquantifiable?*

Van der Lann, Gerwin, Hans Van Ees, and Arjen Van Witteloostuijn (2008), Corporate Social and Financial Performance: An Extended Stakeholder Theory, and Empirical Test with Accounting Measures, *Journal of Business Ethics*, 79, 299-310.

Vance, Stanley C. (1975), Are socially responsible corporations good investment risks?, *Management Review*, 64, 18-24.

Verschoor, Curtis C. (1998), A study of the link between a corporation's financial performance and its commitment to ethics, *Journal of Business Ethics*, 17, 1509-1516.

Verschoor, Curtis C. (1999), Corporate performance is closely linked to a strong ethical commitment, *Business and society review*, 104(4), 407-415.

von Paumgarten, Paul (2003), The business case for high-performance green buildings: sustainability and its financial impact, *Journal of Facilities Management*, 2(1), 26-34.

Waddock, Sandra A. and Samuel B. Graves (1997), The corporate social performance-financial performance link, *Strategic Management Journal*, 18(4), 303-319.

Waddock, Sandra A. and Samuel B. Graves (2000), Performance characteristics of social and traditional investments, *Journal of Investing*, 9(2), 27-38.

Wagner, Marcus (2005), Sustainability and competitive advantage: Empirical evidence on the influence of strategic choices between environmental management approaches, *Environmental Quality Management*, Spring, 31-48.

Wagner, Marcus and Stefan Schaltegger (2004), The effect of corporate environmental strategy choice and environmental performance on competitiveness and economic performance, *European Management Journal*, 22(5), 557-572.

West LB Extra Financial Research. *What Really Counts. The Materiality of Extra-Financial Factors*. 2007.

West LB. *Squaring the Circle*. 2006.

Wokutch, Rochard E. and Barbara A. Spencer (1987), Corporate saints and sinners: the effects of philanthropic and illegal activity on organizational performance, *California Management Review*, 29(2), 62-77.

World Resources Institute. *Carbon Value Analysis Tool*.

World Resources Institute. *Changing Drivers: The impact of climate change on competitiveness and value creation in the automotive industry*. 2003.

Wright, Peter and Stephen P. Ferris (1997), Agency conflict and corporate strategy: the effect of divestment on corporate value, *Strategic Management Journal*, 18, 77-83.

Wright, Peter, Stephen P. Ferris, Janine S. Hiller, and Mark Kroll (1995), Competitiveness through management of diversity: effects on stock price valuation, *Academy of Management Journal*, 38(1), 272-287.

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## Appendix C: About the Research Network for Business Sustainability

**MISSION** The Research Network for Business Sustainability uses knowledge to bridge the communities of research and practice to enable business sustainability.

**OBJECTIVES** The Network aims to:

- Build a **community** of people working on business sustainability.
- Increase capacity within the community to develop **knowledge**.
- Create **tools** based on that knowledge that can impact practice.

**ACTIVITIES** The Network funds projects to move knowledge between the communities of research and practice, organizes events that bring the members of those communities together, and enables ongoing interaction and knowledge exchange through online tools.

**FUNDING** The Network is funded with generous contributions from the Leadership Council members and three major funders. In March 2008, the Network received \$2.4 million from the Social Sciences and Humanities Research Council of Canada.

For more information on the Research Network for Business Sustainability, please visit [www.SustainabilityResearch.org](http://www.SustainabilityResearch.org)



## Appendix D: Research Network for Business Sustainability Leadership Council Members<sup>††</sup>



The Network was created with generous funding from the Richard Ivey School of Business, the Leadership Council members, the Social Sciences and Humanities Research Council of Canada, and the University of Western Ontario.

<sup>††</sup> The Leadership Council Members do not necessarily endorse the findings of this report.

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