Strategic Management Journal
Strat. Mgmt. J., **27**: 1101–1122 (2006)
Published online 13 September 2006 in Wiley InterScience (www.interscience.wiley.com) DOI: 10.1002/smj.557
Received 21 November 2003; *Final revision received 3 March 2006*

BEYOND DICHOTOMY: THE CURVILINEAR RELATIONSHIP BETWEEN SOCIAL RESPONSIBILITY AND FINANCIAL PERFORMANCE

MICHAEL L. BARNETT[1]* and ROBERT M. SALOMON[2]
[1] *College of Business Administration, University of South Florida, Tampa, Florida, U.S.A.*
[2] *Stern School of Business, New York University, New York, New York, U.S.A.*

A central and contentious debate in many literatures concerns the relationship between financial and social performance. We advance this debate by measuring the financial–social performance link within *mutual funds that practice socially responsible investing (SRI). SRI fund managers have an array of social screening strategies from which to choose. Prior studies have not addressed this heterogeneity within SRI funds. Combining modern portfolio and stakeholder theories, we hypothesize that the financial loss borne by an SRI fund due to poor diversification is offset as social screening intensifies because better-managed and more stable firms are selected into its portfolio. We find support for this hypothesis through an empirical test on a panel of 61 SRI funds from 1972 to 2000. The results show that as the number of social screens used by an SRI fund increases, financial returns decline at first, but then rebound as the number of screens reaches a maximum. That is, we find a curvilinear relationship, suggesting that two long-competing viewpoints may be complementary. Furthermore, we find that financial performance varies with the types of social screens used. Community relations screening increased financial performance, but environmental and labor relations screening decreased financial performance. Based on our results, we suggest that literatures addressing the link between financial and social performance move toward in-depth examination of the merits of different social screening strategies, and away from the continuing debate on the financial merits of either being socially responsible or not.* Copyright © 2006 John Wiley & Sons, Ltd.

Are financial and social performance negatively or positively associated? Extant theoretical and empirical research has supported both contradictory positions (Margolis and Walsh, 2003; Orlitzky, Schmidt, and Rynes, 2003; Rowley and Berman, 2000; Mahon and Griffin, 1999; Roman, Hayibor, and Agle, 1999; Griffin and Mahon, 1997; Ullmann, 1985). In this paper, we reconcile these divergent views through an empirical study of socially responsible investing (SRI). SRI is the practice of choosing financial investments on the basis of social responsibility criteria. By some accounts more than $1 trillion, or about 10 percent of all U.S. assets under management, including about 160 mutual funds, can be categorized as SRI (Glassman, 1999; Hutton, D'Antonio, and Johnsen, 1998; LaRose, 1998).

Many scholars have compared the financial performance of SRI funds to those of funds that do not screen their holdings based on social criteria (Statman, 2000; Guerard, 1997; Sauer, 1997; Kurtz and DiBartolomeo, 1996; Diltz, 1995; Hamilton, Jo, and Statman, 1993; Luck and Pilotte, 1993; Teper, 1992; Mueller, 1991; Rudd, 1979). As with the broader debate on the link between financial and

Keywords: stakeholder theory; modern portfolio theory; corporate social responsibility; socially responsible investing
* Correspondence to: Michael L. Barnett, College of Business Administration, University of South Florida, 4202 E. Fowler Ave., BSN 3527, Tampa, FL 33620-5500, U.S.A.
E-mail: mbarnett@coba.usf.edu

social performance, the results of SRI and non-SRI fund performance comparisons have been mixed. Many studies have shown that SRI funds can perform as well as (e.g., Guerard, 1997; Diltz, 1995; Hamilton *et al*., 1993), and even better than (e.g., Statman, 2000; DiBartolomeo and Kurtz, 1999; Luck and Pilotte, 1993) unscreened funds. But other studies have shown that SRI funds perform worse than unscreened funds (Geczy, Stambaugh, and Levin, 2003; Teper, 1992; Rudd, 1979). Moreover, SRI critics have suggested that the strong financial performance of some SRI funds in recent years may be the result of a decrease in the stringency of their social screening criteria (Glassman, 1999; Goetz, 1997).[1] That is, they contend that SRI funds lowered their social performance in order to raise their financial performance. Thus, the stronger financial performance of SRI funds in recent years could actually serve as further evidence that financial and social performance are negatively, not positively, related. Indeed, SRI funds vary greatly in the type and intensity of social screens applied to their investments. Prior empirical studies have not addressed this heterogeneity, and so have confounded a range of social responsibility practices.

In order to advance this long-standing and contentious debate, rather than again comparing socially screened to unscreened mutual funds, we address differences *within* SRI funds. In this paper, we measure how variation in the intensity and type of social screening employed by SRI funds affects their financial performance. We first review the debate over the link between financial and social performance. We then develop a set of hypotheses, grounded in modern portfolio theory (Campbell *et al*., 2001; Fama, 1971; Markowitz, 1952; Sharpe, 1964) and stakeholder theory (Freeman, 1984; Donaldson and Preston, 1995; Jones, 1995), that predict how variation in both the intensity and type of social screening influences risk-adjusted financial performance. We test these hypotheses on a panel of 61 SRI funds. We find that the relationship between financial and social performance is neither strictly negative nor strictly positive. Rather, it is curvilinear, with the strongest financial returns to low and high levels of social responsibility, and significantly lower financial returns to moderate levels of social responsibility. In addition, we find that some types of social responsibility are linked to higher financial performance than others. We conclude by discussing the implications of these findings for the future of research on the link between social and financial performance.

THE LINK BETWEEN SOCIAL AND FINANCIAL PERFORMANCE

The nature of the relationship between the socially beneficial behaviors of a corporation and its financial performance has long been debated, yet it remains unresolved (Margolis and Walsh, 2003). One group of scholars has argued, simply, that social responsibility detracts from a firm's financial performance (Friedman, 1970; McWilliams and Siegel, 1997; Jensen, 2002). Any discretionary expenditures on social betterment unnecessarily raise a firm's costs, thereby putting it at an economic disadvantage in a competitive market. In contrast, another group of scholars has argued that the better a firm's social performance, the better it can attract resources (Cochran and Wood, 1984; Waddock and Graves, 1997), obtain quality employees (Greening and Turban, 2000; Turban and Greening, 1996), market its products and services (Fombrun, 1996; Moskowitz, 1972), and even create unforeseen opportunities (Fombrun, Gardberg, and Barnett, 2000). Thus, social responsibility is a source of competitive advantage (Porter, 1991; Porter and van der Linde, 1995). Empirical tests of these opposing positions have long produced mixed results, and so have not resolved this debate (Ullmann, 1985; Griffin and Mahon, 1997; Margolis and Walsh, 2003; McWilliams and Siegel, 2000; Wood and Jones, 1995).

In this paper, we test the relationship between social and financial performance within mutual funds. Mutual funds seek to maximize performance across a portfolio of firms, not within a single firm. As with the firm-level debate, the basic issue concerns whether the costs of social responsibility are offset or exceeded by financial returns over some period of time. However, mutual funds are also concerned with diversification (Sharpe, 1964; Black, Jensen, and Scholes, 1972; Campbell *et al*., 2001; Geczy *et al*., 2003).[2] If a mutual fund

[1] Refer to Figure 3 for consideration of this argument.

[2] Throughout this paper, we use diversification to mean efforts of a mutual fund to invest in a broad set of firms so as to create a

DOI: 10.1002/smj

implements strict social performance criteria that exclude firms, industries, or sectors from its portfolio, that mutual fund may be unable to adequately diversify. Without ample diversification, the fund will be exposed to additional risk for a given level of return and so by definition will incur a loss in risk-adjusted financial returns. SRI proponents argue, though, that while there may be less potential breadth in an SRI fund's portfolio, those firms that are chosen for the portfolio are substantively better managed than the average firm and so tend to generate equal or higher financial returns, even on a risk-adjusted basis. The remainder of this section reviews these opposing views on the link between social and financial performance and develops a set of hypotheses that predict the financial outcomes of variability in intensity and type of social screens.

The financial costs of social responsibility

Critics of corporate social responsibility point out that it is costly and administratively burdensome for a firm to engage in socially responsible practices such as doling out corporate philanthropy, providing employee day care, granting paid parental leave, and reducing environmental impact. These additional costs and administrative burdens directly detract from the bottom line and so can put socially responsible firms at a competitive disadvantage relative to rivals who do not engage in such practices (Friedman, 1970; McWilliams and Siegel, 1997; Jensen, 2002). Through a process termed 'screening,' SRI funds restrict their investments to those firms that engage in these costly and burdensome social practices:

> Screening describes the inclusion or exclusion of corporate securities in investment portfolios based on social or environmental criteria. Socially concerned investors generally seek to own profitable companies with respectable employee relations, strong records of community involvement, excellent environmental impact policies and practices, respect for human rights around the world, and safe and useful products. Conversely, they often avoid investments in those firms that fall short in these areas. (Social Investment Forum, 2002)

As a result, SRI funds intentionally select firms that are likely to have above-average operating costs and so, all else equal, below-average financial performance. Thus, as one SRI critic bluntly concluded, 'Socially conscious investing is a dumb idea, yielding sub-par returns, and screaming with contradictions' (Rothchild, 1996: 197).

Moreover, screening may involve the exclusion of not merely certain firms, but entire industries and even economic sectors from the portfolios of SRI funds. For example, the tobacco industry is commonly screened out of SRI funds, and the entire defense sector is excluded from many SRI funds (Social Investment Forum, 2002). The exclusion of firms, industries, and economic sectors has significant implications for the financial performance of an investment portfolio, regardless of its social orientation. According to modern portfolio theory, an investment portfolio bears two types of risk: systematic and unsystematic, or 'specific,' risk (Markowitz, 1952; Sharpe, 1964; Fama, 1971). Systematic risk is the risk inherent in the volatility of the entire capital market, while specific risk is associated with the volatility of an individual security. Investors may assemble portfolios in such a way that the specific risk carried by any individual security within the portfolio is offset by the specific risk carried by another. This is referred to as diversification. Efficient capital markets reward investors for bearing systematic risk, but because diversification is possible, investors are not rewarded for bearing specific risk. That is, when a fund carries specific risk, it fails to reach the efficient frontier, wherein the risk/return trade-off is optimized. Because they exclude certain firms, industries, and sectors, SRI funds thus tend to bear a substantial degree of specific risk (Kurtz and DiBartolomeo, 1996; DiBartolomeo and Kurtz, 1999), and so should experience decreased risk-adjusted returns.

However, a mutual fund can achieve diversification ample to effectively eliminate most specific risk even if it does not select the entire universe of securities. The traditional 'rule of thumb' in the finance literature is that a fund can closely approximate a well-diversified portfolio with as few as 20 or 30 randomly selected stocks (Fisher and Lorie, 1970; Bloomfield, Leftwich, and Long, 1977). More recently, due to increasing volatility in the stock market, researchers have concluded that the minimum number of randomly selected stocks necessary to closely approximate a well-diversified portfolio is at least 50 (Campbell *et al.*, 2001), and some have estimated this figure to be as

portfolio of investments that eliminate unsystematic, or specific, risk.

DOI: 10.1002/smj

high as 200 (Statman, 1987). Regardless, one need not hold the entire universe of stocks to be sufficiently diversified. However, the subset selected for the portfolio needs to be randomly chosen for this rule of thumb to hold, and even then, some specific risk remains. For example, Campbell *et al*. (2001) found that a random portfolio of 50 securities still bore a 5 percent excess standard deviation relative to the market portfolio.

SRI portfolios, as with the holdings of many other mutual funds, are not randomly chosen. They are intentionally selected based on a set of screening criteria. Thus, one can expect SRI funds, even those with large and relatively diverse holdings, to bear specific risk (Kurtz, 1997). For example, the Domini Social Index (DSI), which serves as the benchmark portfolio for socially responsible investing and is the SRI fund most often criticized for having broad holdings (Glassman, 1999; Goetz, 1997), holds some 400 non-randomly selected stocks. Measures of both its beta and standard deviation of returns have shown that it is riskier than the S&P 500 (Statman, 2000). Other researchers have also found that there are financial costs associated with the lack of diversification of SRI funds. Teper (1992) estimated that funds that chose their portfolios based on social criteria bore a one percent loss in returns relative to diversified funds. Rudd (1979) measured the returns to portfolios that screened out firms with holdings in South Africa and found that they suffered a 4 percent loss in returns. More recently, Geczy *et al*. (2003) found a range of losses to risk-adjusted return, from just a few basis points per month, to more than 1500 basis points per month. Thus, a substantial body of both theoretical and empirical research in modern portfolio theory indicates that SRI funds are bound to suffer a financial loss of some magnitude due to inadequate diversification.

The financial benefits of social responsibility

Despite the financial logic of modern portfolio theory, many researchers have found that SRI funds yield returns that equal or exceed those of mutual funds that operate without the constraints of social responsibility. For example, Diltz (1995), Guerard (1997), and Hamilton *et al*. (1993) all found that there were no significant differences between the risk-adjusted returns of portfolios composed of socially responsible firms and portfolios selected without social screening. The DSI, outperformed the S&P 500 index from its inception in May 1990 through March 1999, earning a total of 470 percent as compared to 389 percent for the S&P 500 (DiBartolomeo and Kurtz, 1999). Even on a risk-adjusted basis, the DSI's financial performance exceeded that of the unscreened S&P 500 (Luck and Pilotte, 1993; Statman, 2000).

How can SRI funds possibly earn equal or higher risk-adjusted returns than unconstrained funds? Though modern portfolio theory rightfully assesses the costs to limiting investment choices through social screening, it does not account for the benefits that social screening may bring. Portfolio theory assesses only the ability of a given stock to push a portfolio toward or away from the efficient frontier, wherein risk-adjusted return is maximized (Markowitz, 1952). However, it takes no account of any variation in the ability of a firm upon which a stock's value is based to create value. Rather, under the assumption of perfectly efficient markets, each stock is treated as homogeneous in all but its volatility relative to the market.[3]

SRI proponents counter that, while SRI portfolio managers are constrained from choosing amongst the entire universe of stocks, the pool of stocks from which they do choose is superior to that of the overall market and therein more likely to provide favorable financial returns over time. Firms are embedded in a social environment (Granovetter, 1985; Scott, 1981). In order to maintain legitimacy and effectively attract resources, firms must build favorable relations with those groups that compose this environment. Strong social performance is an indicator that a firm possesses superior management talent (Alexander and Bucholtz, 1978; Bowman and Haire, 1975) that understands how to improve internal and external relationships through socially responsible activities (Moskowitz, 1972). Thus, SRI proponents argue that because social relationships matter to financial

[3] We recognize that some form of market failure is central to a strategy literature in which firms can achieve above-average returns (see Barney, 1991; Dierickx and Cool, 1991; Wernerfelt, 1984; Williamson, 1975, 1985). This presents an obvious dilemma relative to an efficient markets hypothesis (EMH), the resolution of which is outside the scope of this paper. There remains considerable debate in the finance literature as to whether, and in what form, the EMH holds. In fact, this has been one of most researched topics in the field of finance (see Fama, 1991, for a review). The interested reader is encouraged to consult this literature for more on this debate.

DOI: 10.1002/smj

performance, social responsibility is not merely a cost, but a wise investment.

This basic rationale is supported by stakeholder theory, which suggests that the better a firm manages its relationships with the myriad groups that have some interest, or 'stake,' in the firm, the better its financial performance over time (Donaldson and Preston, 1995; Freeman, 1984). For example, a firm with a favorable work environment can decrease its hiring costs and increase its employee retention rate, decrease community opposition and legal costs when opening a new factory, and more easily lobby for tax breaks from local governments (Freeman, 1984; Waddock and Graves, 1997). A favorable social agenda builds valuable goodwill that can buffer a firm from unforeseen problems and even provide valuable new opportunities not available to less socially responsible firms (Fombrun *et al*., 2000). All in all, effective stakeholder management can create competitive advantage. Empirical results bear this out. Graves and Waddock's (2000) study of 'built to last' companies suggested that the investments in stakeholder relations made by these firms led to their above-average financial performance over an 8-year window, as measured by return on equity, return on assets, and return on sales. Hillman and Keim's (2001) study of the market value added of 308 firms within the S&P 500 found that effective stakeholder management was significantly correlated with, and preceded improved financial performance. Thus, even though SRI funds must draw from a limited pool of firms, they draw from a richer pool—one that is more likely to contain well-run, stable firms that outperform the broader market over the long run. The competitive advantage these individual firms possess aggregate into superior financial returns at the portfolio level.

Variable financial returns to social responsibility

Many studies have been published supporting a negative relationship, and many studies have been published supporting a positive relationship. Which is it? If one sums up this conflicting empirical work, it appears that the relationship is positive on the whole: 'A simple compilation of the findings suggests there is a positive association, and certainly very little evidence of a negative association, between a company's social performance and its financial performance' (Margolis and Walsh, 2003: 277). Orlitzky *et al*. (2003) recently conducted a meta-analysis that led to a similar conclusion: the prior literature, in aggregate, indicates that social and financial performance are positively related. However, as Margolis and Walsh (2003: 278) caution, such a conclusion is illusory. A compilation of findings cannot produce a definitive conclusion given the limitations of the underlying studies. As many reviews of this body of literature note, these studies are imperfect in a variety of ways (see Wood and Jones, 1995; Griffin and Mahon, 1997; Rowley and Berman, 2000). Thus, Margolis and Walsh (2003: 278) argue that '[t]he CSP-CFP empirical literature reinforces, rather than relieves the tension surrounding corporate responses to social misery.' Overall, despite all the attention to the topic, the nature of the relationship remains contested.

Further fueling the debate, some critics of SRI studies have argued that the strong financial performance of some SRI funds could be an indication that the relationship between social responsibility and financial performance is actually negative. When SRI funds were first introduced, they were 'the butt of Wall Street jokes' (Glassman, 1999: 4) because their financial returns were often quite poor. These critics suggest that many SRI funds have become strong financial performers only because their 'once-strict screening criteria have turned porous' (Goetz, 1997: 43). That is, the improved financial performance of SRI funds is a result of gradually minimizing social performance standards for those firms to be included in their portfolios. SRI funds have 'opened the door to less-than-angelic companies whose high returns have helped SRI gain the upper hand in the long-standing performance debate' (Goetz, 1997: 43). Therefore, social performance must indeed be sacrificed to gain financial returns.

This argument points to the need to account for heterogeneity in the standards of social responsibility employed by SRI funds. The standard approach in research on SRI funds is to contrast the financial performance of a set of screened funds with that of a set of unscreened funds or the overall market (e.g., Guerard, 1997; Hamilton *et al*., 1993). This approach confounds a range of screening practices within SRI funds. Because some SRI funds have more stringent social screening standards than others, the SRI literature must examine variances *within* screened funds to better determine the underlying nature of the relationship between

DOI: 10.1002/smj

financial and social performance. The uncertainty of extant empirical results, despite decades of study, may be a function of treating social responsibility as a dichotomous variable.

If the heterogeneity in the intensity of social screens applied by SRI funds is accounted for, the combination of modern portfolio and stakeholder theories points toward neither a strictly positive nor negative relationship, but a curvilinear relationship between social and financial performance. Based on the efficient market assumption that underlies modern portfolio theory, consider the entire universe of stocks to have a uniform distribution of returns. Those stocks in the center of the distribution earn the market return, while those in the left tail earn less, and those in the right tail earn above-average returns. A fund manager taking random draws from this universe can expect to assemble a portfolio that will earn the market return, so long as the resulting portfolio is diversified. If the stocks picked do not sum to a diversified portfolio, the fund carries unsystematic risk and so can expect to have a risk-adjusted return that underperforms the market. Since social screening systematically constrains the ability to diversify, an SRI fund is thus expected to underperform the market.

However, a fund manager using social screens may have better odds of avoiding stocks in the left tail of the distribution and picking stocks in the right tail. Based on stakeholder theory, we expect that firms engaging in socially responsible practices are more likely to achieve superior long-run performance (Freeman, 1984; Jones, 1995; Wicks, Berman and Jones, 1999). Thus, socially responsible firms are more likely to be in the right tail of the distribution. In contrast, firms with poor stakeholder relations are more risky and susceptible to crises (Cornell and Shapiro, 1987; Fombrun *et al*., 2000), and so more likely to be in the left tail of the distribution. As a result of using social screens that exclude firms with poor stakeholder relations and funnel in firms with good stakeholder relations, SRI fund managers become more likely to select firms that will achieve above-average returns, and less likely to select firms that will earn below-average returns.[4] Figure 1 illustrates this relationship.

The combination of modern portfolio theory and stakeholder theory, as well as a long history of mixed empirical findings, then suggests that the relationship between social and financial performance may be curvilinear, not strictly monotonic. SRI funds that have relatively weak social responsibility standards will be able to choose from a larger universe of potential investments, thereby increasing their odds of achieving ample diversification and hence improving risk-adjusted financial performance. As an SRI fund's social standards increase, its pool of investment opportunities shrinks, and so it will have a decreased likelihood of establishing a well-diversified portfolio. However, this negative effect is offset as the stringency of social screening intensifies. Those funds that greatly restrict potential investments benefit from improved selection of investment targets

[4] This argument does not address skill differences across fund managers. Rather, it is premised on averages; given that the pool of firms from which SRI fund managers select is richer, better returns are more likely, regardless of individual fund manager characteristics. Nonetheless, it seems reasonable to conclude, and some have argued, that the actions inherent in screening can provide useful information to fund managers about a target firm's relationships with its stakeholders (e.g., Lowry, 1991).

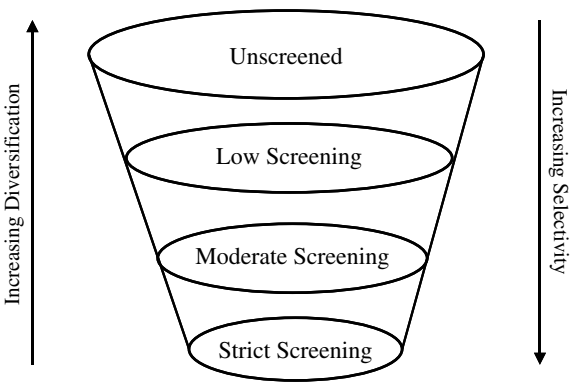

Figure 1. The effects of social screening on the universe of stock choices

DOI: 10.1002/smj

(Lowry, 1991). Though an SRI fund may bear more and more specific risk by choosing from an increasingly smaller pool of stocks, the pool from which it does choose becomes richer. As a fund manager dips into this increasingly rich pool, he/she is more likely to pick a stock that will provide above-average financial returns. SRI funds that are 'stuck in the middle' may bear all the costs of either pure strategy without gaining any of the benefits. That is, an SRI fund with a moderate level of social screening may bear specific risk yet not consistently exclude underperforming firms or consistently select those firms with above-average financial performance. Thus, we hypothesize:

Hypothesis 1: The relationship between the intensity of social screening and financial performance for SRI funds is curvilinear (U-shaped).

The financial returns to different types of social responsibility

SRI funds vary not only in the intensity of their social screening, but also in the types of social screens they employ. SRI fund investors can choose from a variety of funds tailored to a specific social issue or group of social issues. For example, the Aquinas line of SRI funds pursue investment in only those firms that they deem to amply reflect Catholic religious values, and the Sierra Club mutual funds invest in only those firms that they believe have acceptable environmental performance. Whereas previous studies, in comparing SRI to non-SRI funds, have largely ignored the rich heterogeneity within SRI funds, we expect to find significant financial performance differences not only across varying levels of screening intensity, but also across the varying types of social screens that SRI funds use.

As Jones (1995: 430) noted: 'Certain types of corporate social performance are manifestations of attempts to establish trusting, cooperative firm/stakeholder relationships and should be positively linked to a company's financial performance.' However, engaging in the socially responsible behaviors that build these relationships is costly. For example, firms that dole out corporate philanthropy, provide day care centers and paid parental leave, or engage in other such socially responsible behaviors incur significant expenses. Faced with a large set of often-conflicting demands from a broad set of stakeholders and a limited budget, firms must decide where to allocate their resources. Which investments in stakeholder relationship building are likely to generate the greatest financial returns?

Instrumental stakeholder theory provides a theoretical basis for predicting the varying financial implications of differing types of social performance. It points out that some stakeholder relationships are more instrumental to a firm's success than others. The more a firm relies on a particular stakeholder group, the more that firm stands to gain by investing in the creation and maintenance of trusting relations with that group (Preston and Post, 1975; Waddock and Graves, 1997; Wicks *et al*., 1999). Employees, in particular, are instrumental to a firm's financial performance. Employees constitute the 'front line' of the firm, and are responsible for transforming the firm's inputs into outputs. As we have moved further and further away from the industrial age and begun to rely more and more on the knowledge and creativity of employees to create value, labor relations have become increasingly important (Florida, 2002). Positive labor relations can facilitate increased productivity, decreased turnover, and decreased strife (Freeman, 1984). For example, during a period when most major airlines suffered one or more strikes, Southwest Airlines, a firm with much-heralded labor relations, avoided such disruptions and maintained profitability. Several studies have shown that the better a firm's labor relations, the better its financial performance (Berman *et al*., 1999; Greening and Turban, 2000; Jones and Murrell, 2001; Turban and Greening, 1996; Waddock and Graves, 1997; Wright *et al*., 1995). Thus, we hypothesize the following:

Hypothesis 2: SRI funds that select firms for their portfolios based on labor relations screening criteria will earn higher financial returns than those that do not.

Firms must physically locate their operations within the boundaries of specific communities. Poor relations with these host communities can create a variety of costly problems. For example, poor community relations can increase the difficulty and cost of expansion and thereby limit a firm's growth. A firm with poor community relations may face 'not-in-my-back-yard' (NIMBY) protests when attempting to open new plants. Such

DOI: 10.1002/smj

protests decrease the ability of a firm to obtain essential building and zoning permits from local governments and force the firm to bear significant litigation expenses (Dear, 1992; Sellers, 1993). On the other hand, favorable community relations bring a number of benefits. Favorable community relations can not only decrease the likelihood and intensity of NIMBY protests, but can also decrease the likelihood of attacks by shareholder activists (Rehbein, Waddock, and Graves, 2004: 239). Moreover, favorable community relations increase the likelihood of successful bargaining with local government officials for favorable taxation and regulation (Waddock and Graves, 1997). More generally, 'Companies that treat local communities well reap many returns, including better schools, fewer local restrictions, and a better infrastructure to support the firm. In the long term, these decrease corporate operating costs' (Waddock and Smith, 2000: 79). This better infrastructure includes access to more highly skilled employees (Greening and Turban, 2000). A variety of empirical studies have indeed found that a firm's efforts to improve relations with their host communities through activities such as philanthropy and support of employee volunteering can lead to improved financial performance (Hillman and Keim, 2001; Preston and O'Bannon, 1997; Simpson and Kohers, 2002; Waddock and Graves 2000). Therefore, we expect the following:

> *Hypothesis 3: SRI funds that select firms for their portfolios based on community relations screening criteria will earn higher financial returns than those that do not.*

Finally, responsible environmental practices have become critical to a firm's relationships with a variety of stakeholder groups. Over the last few decades, stakeholders have increased their expectations about the degree to which firms should assume responsibility for protection of the natural environment (Hoffman, 1997, 1999). Today, firms with poor environmental performance risk consumer disfavor, protest by activist groups, negative media coverage, and general degradation of their reputation (Fombrun *et al*., 2000; King and Lenox, 2000). Poor environmental practices can also place firms at increased risk for serious industrial accidents that may result in large regulatory fines, costly lawsuits, and even the shutdown of operations (Perrow, 1984; Rees, 1994). However, it can be quite costly for a firm to substantially improve its environmental performance. Do the benefits outweigh the costs? A growing body of literature indicates that it does, indeed, 'pay to be green.' Studies have shown that strong environmental performance is associated with increased operational efficiency, improved learning and innovation, decreased insurance costs, improved relationships with stakeholders, differentiation of products and services, and other such benefits that, individually and in combination, can more than offset the costs of implementing environmental improvements (Hart and Ahuja, 1996; King and Lenox, 2002; Klassen and McLaughlin, 1996; Klassen and Whybark, 1999; Konar and Cohen, 2001; Russo and Fouts, 1997; Porter and van der Linde, 1995). We therefore hypothesize:

> *Hypothesis 4: SRI funds that select firms for their portfolios based on environmental screening criteria will earn higher financial returns than those that do not.*

METHODOLOGY

The data we employ come from several sources. Our initial sample consisted of the socially responsible mutual funds tracked by the Social Investment Forum. The Social Investment Forum is a national non-profit organization that encourages and promotes the growth of socially responsible investing. Data from this source provide information about the social screening strategies (number and type of social screens used) of 67 socially responsible funds.[5] After identifying our initial sample of 67 socially responsible mutual funds, we used CRSP data to track each fund's financial performance. We compiled monthly financial performance data from 1972 to 2000, which encompass the entire substantive existence of SRI funds. We supplemented this data with mutual fund information from Weisenberger and ICDI. Weisenberger

[5] Although screening data were only available from 1997 on, in the results presented herein, we use performance data from as far back as was available to get as complete a picture as possible. We acknowledge that the inherent assumption in using such data is that the screening strategy of the mutual fund did not change prior to 1997. To check the implications of this assumption, we performed two sensitivity analyses. First, we limited the sample to those funds that were founded in 1997 or later. Second, we eliminated the data for all funds prior to 1997 to check for potential biases. In both cases, the quantitative and qualitative results were consistent with those shown.

DOI: 10.1002/smj

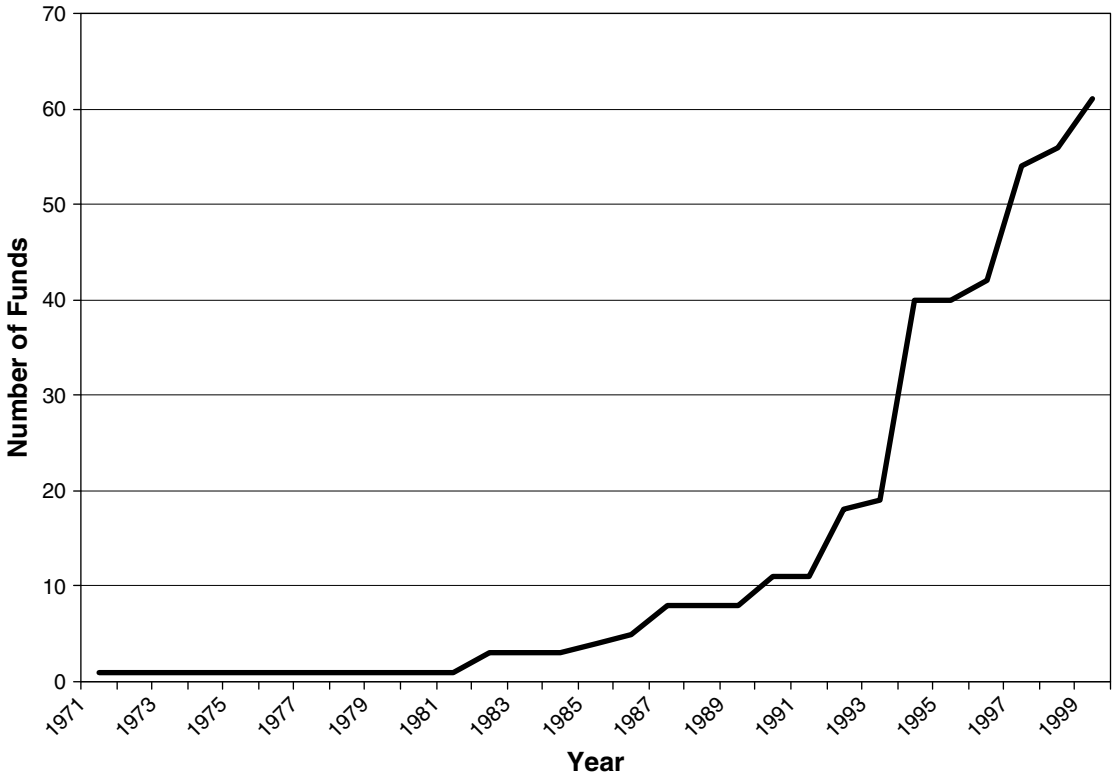

Figure 2. Population of SRI funds

and ICDI are mutual fund tracking services that provide a standard directory of information on mutual funds and their holdings such as mutual fund total assets and general investment strategy (e.g., growth, income, capital appreciation).

The resultant sample from these sources is an unbalanced panel of 61 funds and 4,821 fund-month observations. The total available sample could have reached 22,512 fund-month observations (67 funds $\times$ 28 years $\times$ 12 months of performance data). However, six funds failed to report their social screening strategies to the Social Investment Forum. Most data were lost, though, because SRI boomed only in recent years. Only one fund, the PAX World Fund, existed at the beginning of the sample (1972). No other fund entered the sample until 1982. As illustrated in Figure 2, most SRI funds did not exist prior to 1996, with a 218 percent growth in the number of funds since then. Fortunately, none of the funds in our sample exited during the event window, therein eliminating concern of a survival bias that has plagued other studies of this type (see Elton, Gruber and Blake, 1996b).

Dependent variable

We test for the effects of social screening on financial performance. Thus, our dependent variable is the risk-adjusted financial performance of a given SRI fund in a given month. *Risk-adjusted performance* (RAP) is defined as the average monthly return, measured as the percentage change in a fund's market value from the beginning to the end of a given month, adjusted by the fund's specific beta (see Sharpe, 1964). For details on how we used the CAPM model to calculate RAP, refer to the Appendix.

Independent variables

Previous research has taken a largely dichotomous approach to categorizing SRI funds: either a fund screens for social responsibility, or it does not. Most empirical work then compares the performance of SRI funds to non-SRI funds. However, SRI funds are not homogeneous. Some have more stringent social screening standards than others. Gains to highly diversified but weakly screened SRI funds may have offset performance losses in

DOI: 10.1002/smj

less intensively screened SRI funds. Then again, intensively screened SRI funds may have selected a stronger portfolio, thereby subsidizing the poor choices of the weakly screened funds. Thus, lumping all SRI funds into a single category may have contributed to the largely contradictory findings of prior research. Moreover, such studies shed no light on the argument of SRI opponents that 'the key to the recent success of many SR[I] funds could be that they own what conventional funds own' (Glassman, 1999: 4). To advance the debate, we examine the performance implications of varying the stringency of screening strategies used by different SRI funds.

The Social Investment Forum lists 12 types of screens that SRI funds may use to filter firms from their investment portfolios. Potential screening criteria include excluding firms based upon their affiliation with the following 12 industries or issues: alcohol, tobacco, gambling, defense/weapons, animal testing, product/service quality, environment, human rights, labor relations, employment equality, community investment, and community relations. We refer to an SRI fund's choice of number of screens to apply to its investment portfolio as its *screening intensity*. Screening intensity varies from 1 to 12. If a fund's screening intensity is given a value of 12, this indicates that the fund employs all 12 of the above-listed screens, whereas a value of 1 indicates that the fund uses only 1 of the 12 available screens.[6] Each SRI fund determines how many and which of these screens it wishes to use. For example, the Ariel Socially Responsible Fund uses only two screens (tobacco and nuclear power) while the Calvert Social Equity Fund uses all twelve screens to select its investment portfolio.

The number of screens employed by the fund proxies for the extent of diversification of the fund. As illustrated in Figure 1, the greater a fund's screening intensity, the smaller its universe of potential investment targets. In contrast, lesser screening intensity implies a larger universe from which a fund manager might select, and so a closer resemblance to a broadly diversified portfolio. Thus, a large value for screening intensity indicates an increasing tendency toward a narrower SRI portfolio, while a small value for screening intensity reflects a more diversified SRI portfolio.[7]

In order to test Hypotheses 2, 3, and 4, we must tease out the variance in performance associated with employment, community, and environmental screens. To do this, we created a dichotomous variable for each of the screening strategies related to workforce, community, and environmental issues. For instance, in order to test Hypothesis 4, we assigned a value of 1 to the variable *environment* if a fund screened out firms based on environmental performance, zero otherwise. We similarly defined two variables related to workforce issues in order to test Hypothesis 2: *labor relations* and *equal employment*. Finally, as a test of Hypothesis 3, if a fund screened out firms based on what it deemed as a poor community record, then the variables *community investment* and *community services*, respectively, received a value of 1, zero otherwise. Table 1 provides general definitions of how each of the above screens is employed by the various socially responsible mutual funds.

Control variables

Because our dependent variable captures the financial performance of a fund, we must control for

[6] In sensitivity analyses we dropped those funds that reported extreme screening intensity values (e.g., fewer than 3 and greater than 10 screens) to test for outliers or influential points. Results remained qualitatively unchanged.

[7] The inherent assumption in using such an additive screening intensity variable is that any one screen is the same as another inasmuch as it decreases the opportunity for diversification. We acknowledge that this is a coarse proxy, as each screen may not contribute equally to the ability of a mutual fund manager to diversify. We therefore checked the robustness of the results by using different weightings of the screening intensity variable. Results were largely consistent with those presented herein.

Table 1. Definitions of social screens

Type of social screen	Firms affected by screen
1. Environment	Excludes firms with a record of poor environmental performance
2. Labor relations	Excludes firms with a record of poor labor relations practices
3. Employment/equality	Excludes firms that violate norms of equal employment and diversity at work
4. Community investment	Excludes firms that do not invest in and/or develop economically depressed communities
5. Community relations	Excludes firms that have a poor record of accountability to local community stakeholders

DOI: 10.1002/smj

factors that could systematically affect financial performance. We therefore include variables previously identified as likely to influence the financial performance of mutual funds, while controlling for unobservables using a combination of fixed and random effects. We discuss the details of the econometric specification in the subsequent section.

A fund's age is a potential factor in its financial performance. Older funds may have different cost structures from new or young funds. Moreover, the collective experience of a particular fund accumulates over time, and that learning may be a valuable asset in choosing and managing its portfolio (Argote, 1999). We control for any age effects with the variable *fund age*, a count of the number of months since the fund's inception.

Larger funds may outperform smaller funds because of economies of scale in fund management. For instance, larger funds may spread costs of information gathering, investor solicitation and communication, and other fund management expenses across a greater asset base. On the other hand, larger funds may face liabilities of size. As they seek ways in which to invest cash, they may find it increasingly difficult to uncover bargains. Moreover, when larger funds make sizable market purchases, the size of the trades may move the market, making it difficult for these funds to purchase undervalued stocks without the act of purchase raising the value of the stock. Therefore, larger funds may be constrained to make smaller purchases than desired, spread across a larger number of stocks than desired. In order to control for any potential size effect, we include a measure of overall fund assets (measured in millions of U.S. dollars). We label this variable *total assets*.

Global economic cycles and the risks (or potential rewards), over and above those inherent in the underlying U.S. market, may affect financial performance. Thus, funds with holdings only in the United States may perform differently from funds with international holdings. In order to control for performance differentials across funds with national and international holdings, we include the dummy variable *global fund*. This variable takes the value of 1 for funds with international holdings, zero otherwise.[8]

[8] In sensitivity analyses we eliminated those funds with international holdings. Results were largely consistent with those presented herein.

Even after adjusting for a fund's risk profile, there may still remain some difference in the risk-adjusted performance between bond funds and stock funds. Bonds may be a better investment vehicle than stocks, or vice versa. We therefore include two control measures to capture the effects of pursuing different general investment strategies (see Elton, Gruber, and Blake, 1996a). ICDI gathers information on the percentage of total assets each fund invests in stocks vs. bonds. We label these measures as *percent stock* and *percent bonds*, respectively.

Finally, we include yearly dummy variables to control for any residual macro-economic factors that affect all funds similarly and to control for the potential for simultaneity bias and residual serial correlation of the error (Greene, 2000).

Statistical methods

In selecting an appropriate multivariate statistical method, we begin with an ordinary least squares (OLS) specification. As shown in Equation 1, we first specify a fund's risk-adjusted performance (RAP_{it}) as a linear function of the vector X of independent variables for fund i at time t that we wish to examine and can measure, in addition to an error term, which we label u_{it}:

$$\mathrm{RAP}_{it} = \mathrm{X}_{it}\beta + u_{it} \quad (1)$$

Given the panel data structure, with several observations per fund, the possibility arises that u_{it} in Equation 1 will not be independent across time (Greene, 2000). Thus, any systematic effect on risk-adjusted performance that is not included in X will be captured in the error term. Previous research has identified many macro-economic factors associated with performance, including government policy or systemic shocks that influence industries and sectors. Should we be unable to identify and measure all of these effects, there exists the potential for a systematic component to be embedded in u_{it}. This systematic component will lead to correlated errors across observations, which violates an assumption of OLS (Kmenta, 1997; Kennedy, 1998).

Conceptually, we can decompose u_{it} into a vector of systematic (fixed) effects, which we label Z_t, plus a truly random error component, which we label e_{it}. In this case, Z_t represents the yearly dummy variables. After we extract Z_t from u_{it},

DOI: 10.1002/smj

we can more confidently assume that e_{it} is i.i.d. normal with zero mean. Equation 2 represents this decomposition of u_{it}:

$$\mathrm{RAP}_{it} = \mathrm{X}_{it}\beta + \mathrm{Z}_t + e_{it} \quad (2)$$

Finally, because there are several observations for each mutual fund, the possibility still exists that e_{it} in Equation 2 will not be independent within a common fund. This would occur, for instance, if some funds performed, on a risk-adjusted basis, differently from others over time owing to systematically better fund management, or owing to each fund's idiosyncratic application of particular screens. In theory, either a fund fixed- or random-effects model may be used to correct for this (Greene, 2000). However, in our data, some funds exhibit very little variance in total assets and screening strategies across time. Under this condition, and because we have few observations per fund on average, a random-effects model is preferred (Kennedy, 1998). We therefore arrive at our final econometric specification as listed below in Equation 3:

$$\mathrm{RAP}_{it} = \mathrm{X}_{it}\beta + \mathrm{Z}_t + \mathrm{F}_i + \upsilon_{it} \quad (3)$$

In this case, F_i represents the individual mutual fund disturbance. The efficient estimator employed is generalized least squares, and nested models can be compared by the chi-square test.

In summary, we include a fixed year effect and a random fund effect to control for characteristics not directly measured by our other variables but that might correlate with risk-adjusted mutual fund performance. The advantage of the fixed- and random-effects specifications are that they control for unobserved heterogeneity without having to precisely specify the source of that heterogeneity. Therefore, they provide robust estimates that eliminate bias in statistical results. The disadvantage, however, is that we cannot precisely isolate or identify every individual factor that influences the dependent variable. Because our goal is to control for and not investigate or test these effects, we accept this trade-off.

RESULTS

Table 2 presents descriptive statistics and product moment correlations for the variables we used to test the hypotheses. For the most part, the descriptive statistics and correlations are as expected. The

Table 2. Descriptive statistics and product moment correlations

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. RAP	1											
2. Screening intensity	−0.001	1										
3. Fund age	0.019	0.066	1									
4. Total assets	0.025	0.035	0.604	1								
5. Percent stocks	0.072	−0.039	0.000	0.113	1							
6. Percent bonds	−0.107	−0.082	0.118	0.019	−0.630	1						
7. Global fund	−0.033	0.134	−0.127	−0.027	0.199	−0.153	1					
8. Labor relations	−0.019	0.588	−0.163	0.065	0.050	0.048	0.238	1				
9. Equal employment	−0.019	0.609	0.151	0.074	−0.046	−0.157	0.167	0.201	1			
10. Community investment	−0.018	0.442	0.195	−0.104	−0.211	0.092	0.054	0.039	0.409	1		
11. Community relations	−0.002	0.735	−0.216	−0.075	0.030	−0.066	0.133	0.612	0.570	0.316	1	
12. Environment	−0.044	0.405	0.045	−0.016	−0.016	0.070	0.124	0.260	0.235	−0.067	0.214	1
Mean	0.13	7.79	68.38	93.00	67.30	16.02	0.07	0.46	0.73	0.50	0.47	0.83
S.D.	0.03	3.02	58.62	173.20	37.51	29.11	0.26	0.49	0.44	0.50	0.50	0.37
Minimum	−3.02	1	1	0.19	0	0	0	0	0	0	0	0
Maximum	3.08	12	354	1483.92	106.7	100	1	1	1	1	1	1

DOI: 10.1002/smj

average fund held about 67 percent of its portfolio in equity and 16 percent in bonds, thus explaining the relatively low fund beta.[9] The greater the percentage of assets allocated to stocks, the greater the mutual fund financial performance. Likewise, the more a mutual fund invested in bonds, the lower the risk-adjusted performance of the fund.

Table 2 suggests that many of the screens tend to be used in conjunction with others. For instance, mutual funds that screened on the basis of community relations also tended to screen out firms with poor labor relations ($\rho = 0.612$). It is also interesting to note the relative popularity of particular types of social screens. Whereas many SRI funds screened out firms based on their environmental performance (83%) and equal employment records (73%), less than half of SRI funds concerned themselves with labor relations (46%) or community relations (47%). This presents some econometric challenges. The main concern is that such high correlations may infuse multicollinearity into the regression. Given this concern, we performed various sensitivity analyses to ensure the robustness of the results. First, we added each type of social screening strategy separately into the regressions; the results were largely consistent across specifications. Second, we entered the independent variables in different orders. The results did not change substantively. Finally, we explored the variance inflation contribution of each of the independent variables. All were well within the acceptable range (Kennedy, 1998; Belsley, Kuh, and Welsch, 1980). As a result, interpretations of the findings do not change.

Figure 3 presents two graphs that display (a) average monthly RAP and (b) average screening intensity for all funds in the study over time. Figure 3(a) illustrates that there was a dip in performance in the early 1990s, and then the financial performance of SRI funds tended to increase over time. As discussed previously, some have argued that this increase in performance has come at the expense of a decrease in the stringency of social screening (Glassman, 1999; Goetz, 1997). Figure 3(b) provides modest support for this position, as it shows that average screening intensity has declined over time, though most of the decline occurred in the early 1990s, with only small declines from the late 1990s until the end of the study in 2000. Of course, these graphs do not control for intervening factors that have the potential to influence the relationship between RAP and screening intensity. We address these additional influences in the analyses below.

In Table 3 we present results of regression models testing the first hypothesis. While we included fixed year effects in the empirical specification, we did not report them here. Briefly though, the results suggested that while mutual fund performance was best in 1997 and 1998 in raw terms, the funds in this sample assumed more risk during those years, which raised their risk profile and actually decreased their risk-adjusted performance. Consistent with the correlation tables, funds with a greater percentage of equity investments achieved the best overall risk-adjusted performance, while funds that invested heavily in bonds were the worst overall performers in our sample. However, we should point out that the economic impact of such findings is negligible. For example, the marginal effects in Model 1 indicate that a 10 percent increase in stock holdings amounts to about a 0.06 percent increase in risk-adjusted performance per month, or about 0.72 percent per year. Not surprisingly, global mutual funds performed consistently worse than funds with a purely domestic investment orientation. This result may be due to the additional risk involved with investing in foreign locations (Hymer, 1976) over and above the risk imposed by the domestic market.

In Model 1, we posit risk-adjusted performance to be a linear function of screening intensity. In this specification we test whether including more social screens is positively or negatively related to fund financial performance. A negative relationship would support those who contend that social screening has a detrimental affect on financial performance by limiting a fund's ability to diversify, while a positive relationship would support the stakeholder argument that well-screened socially responsible funds outperform more broadly diversified funds because they are able to select from a better subset of firms. Interestingly, we find no linear association between the number of screens and fund performance.

[9] The maximum percentage of equity reached 106.7 percent in this sample. This suggests that a fund borrowed to invest more than its total assets in stocks. Mutual funds are generally restricted from leveraging assets by the Investment Company Act of 1940; however, at times, they may borrow to invest more than their total assets. This is not a common practice. In our sample, only two of the funds were ever levered (invested greater than 100% of their assets) at any point in time. When we eliminated these levered funds from the analysis, the results did not change.

DOI: 10.1002/smj

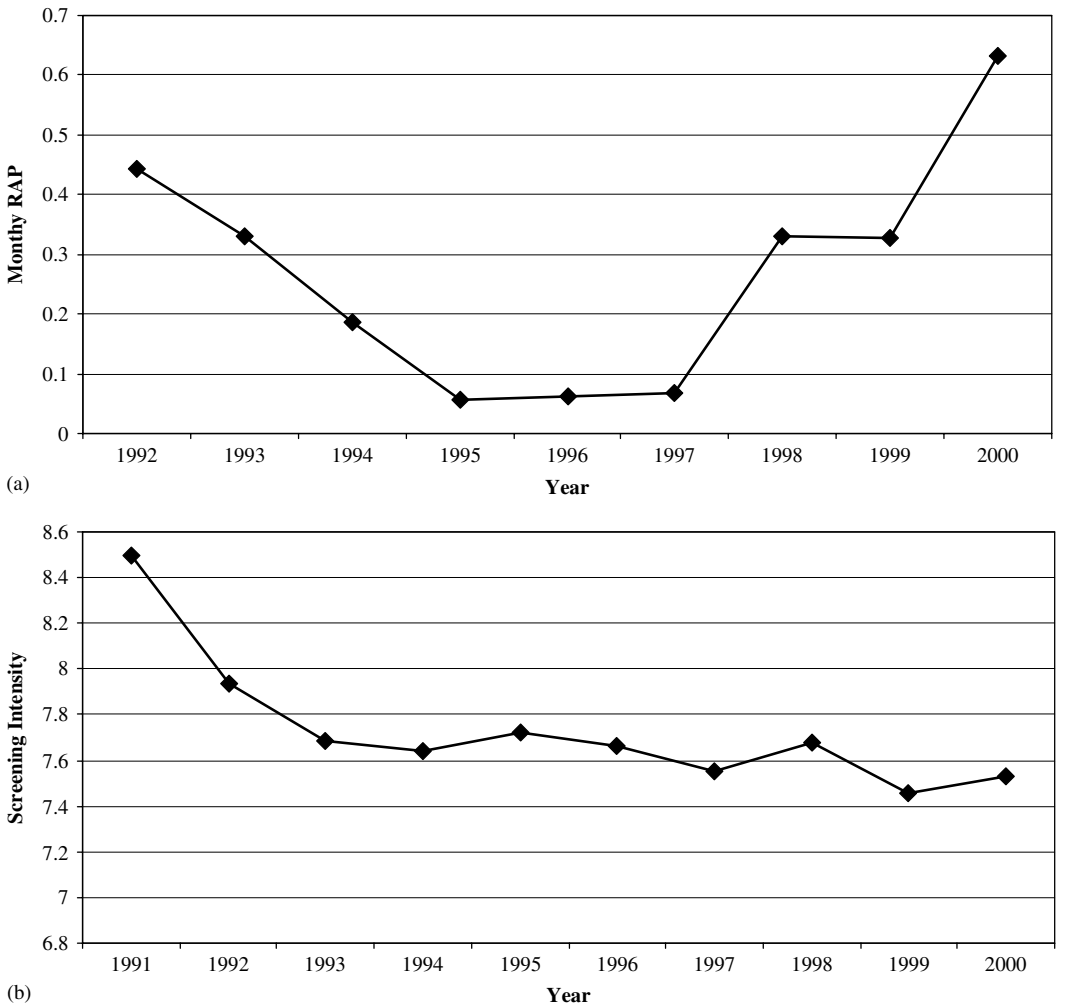

Figure 3. Fund performance and screening intensity over time. (a) Average monthly RAP (all funds). (b) Average screening intensity (all funds)

Model 2 adds a squared screening intensity term. Because the models are nested, we can directly compare the χ^2 statistic across the two to determine which dominates. The $\chi^2_{(1)}$ increase of 7.12 from Model 1 to Model 2 is significant at the $p < 0.01$ level, suggesting that Model 2 better fits the data. Consistent with our expectations, we find a negative and significant coefficient for screening intensity and a positive and significant coefficient for its quadratic. This result implies a curvilinear, non-monotonic relationship between screening intensity and fund performance, thus supporting Hypothesis 1. Risk-adjusted performance declines at first as screening intensity increases, reaching a minimum at 7 screens, but then increases continuously until it reaches the maximum social screening intensity of 12 screens. We note that even at the maximum of 12 screens, however, performance does not recover to reach the levels achieved by those funds with 1 screen. In fact, the results suggest that we should expect funds with 12 screens to suffer performance decrements of about 0.2 percent per month (about 2.4% per year) vs. more broadly diversified funds. We therefore cannot conclude that screening comes without costs. Figure 4 depicts this relationship graphically.

In Table 4 we explore the variance across the screening strategies of interest. Not surprisingly, we find that some screening strategies significantly influence mutual fund performance. However, some of the relationships are not as hypothesized.

DOI: 10.1002/smj

Table 3. Regression results for screening intensity

	Model 1 (RAP)	Model 2 (RAP)
Constant	0.533**	1.090***
	(1.84)	(2.56)
Screening intensity	−0.005	−0.202**
	(−0.22)	(−1.78)
Screening intensity^2		0.014**
		(1.77)
Fund age	0.001	0.001
	(0.87)	(0.88)
Total assets	0.000	0.000
	(0.33)	(0.46)
Percent stocks	0.006***	0.006***
	(2.35)	(2.53)
Percent bonds	−0.009***	−0.009***
	(−2.69)	(−2.68)
Global fund	−0.609**	−0.698***
	(−2.19)	(−2.46)
Mutual fund effects	Included	Included
No. of observations	4821	4821
No. of mutual funds	61	61
$\chi^2_{(d.f.)}$	94.23***	101.35***
	(16)	(17)

* p-value < 0.10; ** p-value < 0.05; *** p-value < 0.01 (one-tailed tests)

Although there is no significant relationship between labor relations screening strategies and risk-adjusted performance, mutual funds that actively screened out firms based on their equal employment records suffered performance decrements compared to the baseline fund. The latter result, as shown in Model 1, runs counter

Table 4. Regression results for screen types

	Model 1 (RAP)	Model 2 (RAP)	Model 3 (RAP)
Constant	0.605***	0.711***	0.950***
	(2.59)	(2.98)	(3.58)
Labor relations	0.110	−0.152	−0.099
	(0.68)	(−0.77)	(−0.51)
Equal employment	−0.287*	−0.571***	−0.471**
	(−1.61)	(−2.50)	(−2.07)
Community investment		−0.091	−0.138
		(−0.54)	(−0.84)
Community relations		0.550**	0.535**
		(2.20)	(2.22)
Environment			−0.381**
			(−1.91)
Fund age	0.002	0.002*	0.002*
	(1.01)	(1.44)	(1.35)
Total assets	0.000	0.000	0.000
	(0.17)	(0.15)	(0.36)
Percent stocks	0.004**	0.004**	0.004**
	(1.92)	(1.72)	(1.81)
Percent bonds	−0.011***	−0.011***	−0.010***
	(−3.39)	(−3.42)	(−3.24)
Global fund	−0.570**	−0.430*	−0.396*
	(−2.03)	(−1.51)	(−1.44)
Mutual fund effects	Included	Included	Included
No. of observations	4821	4821	4821
No. of mutual funds	61	61	61
$\chi^2_{(d.f.)}$	100.57***	110.63***	134.24***
	(16)	(18)	(19)

* p-value < 0.10; ** p-value < 0.05; *** p-value < 0.01 (one-tailed tests)

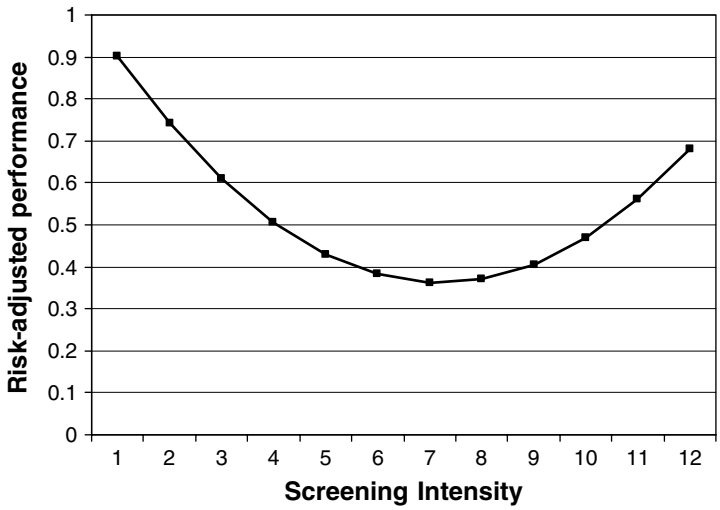

Figure 4. Non-monotonic effects of screening

DOI: 10.1002/smj

to Hypothesis 2. Funds that excluded firms that violated norms of equal employment actually suffered a financial penalty of about 0.29 percent per month. This result implies at the firm level that the costs of implementing such programs may outweigh their benefits, and/or that the diversification penalty incurred by mutual funds that use such screens exceed financial gains.

Model 2 adds our proxies for community screening strategies. Although there was no systematic relationship between the screening of those firms that invested in their local community (community investment) and performance, mutual funds that included firms that fostered positive relationships with their local community (community relations) performed better. Therefore, Hypothesis 3 receives some support. This implies, consistent with instrumental stakeholder theory, that firms that foster positive relationships within their communities are financially rewarded.

Finally, contrary to Hypothesis 4, screening on the basis of environmental criteria was negatively related with risk-adjusted financial performance. All else equal, SRI funds that culled environmentally poor performers out of their holdings performed about 0.38 percent worse per month than the baseline SRI fund. The costs of implementing environmentally sound policies appear to outweigh their potential benefits, and they do not compensate mutual funds for the loss in diversification that they impose. These findings stand in contrast to a growing body of literature that suggests that firms that perform better on environmental criteria will experience better overall financial performance (Dowell, Hart, and Yeung, 2000; Porter and van der Linde, 1995; Russo and Fouts, 1997).

Sensitivity analyses

In order to assess the robustness and sensitivity of the results, we tested several variants of the models presented herein.[10] First, because equity returns are sensitive to the time frame of study, the time window used may impact the findings. Although we include time dummies to control for bias that may be induced from pooling data across time, we reran the results using various time windows. Regardless of the time frame selected, the results did not change. In some instances the results were slightly weaker in statistical significance given a reduction in sample size, but the marginal effects, and so inferences, do not change.

Second, because we are using data both pooled across time, and within funds across time, there is the potential for residual serial correlation of the error. In order to assess whether our results were biased by serial correlation, we ran two specific tests. We pooled the data by year and tested whether AR(1) processes were at work after controlling for year effects. The Durbin–Watson statistic did not suggest that serial correlation of the AR(1) type was present in any of the models. We then arranged the data by fund-year and assessed the within-fund correlations of the residuals over time. We found a within-fund average correlation of around 0.007 across all models; further, none of the individual fund correlations was greater than 0.30 or less than −0.30. We therefore conclude that, after controlling for fund and year effects, the results are not biased by serial correlation.

Third, the inherent assumption underlying our screening intensity measure is that any one screen is the same as another inasmuch as it decreases the opportunity for diversification and increases the opportunity for selectivity. However, some of the screens represent 'positive' screens in that they select certain firms into the portfolio (e.g., environment, labor relations, community relations) while some screens are negative screens in that they eliminate entire industries and sectors from a portfolio. To the extent that negative screens impose more diversification costs upon a fund and positive screens disproportionately increase a fund's selectivity, we might plausibly expect a negative performance effect for 'negative' screens and a positive performance effect for 'positive' screens. In order to test for this possibility, we grouped screens into negative or positive and reran the results presented in Model 1 of Table 3 using counts of positive and negative screens instead of screening intensity. Both variables were economically and statistically insignificant, suggesting that positive and negative screens contribute to both decreased diversification and increased selectivity.

Fourth, we sought to verify that the results presented in Table 4 are not just an artifact of the screening intensity data. If the results are driven by low screening intensity funds employing all of the screens that appear positive and significant, mid-range intensity funds employing all of the screens with negative and significant coefficients,

[10] We thank the anonymous reviewers for motivating and suggesting several of the sensitivity analyses.

DOI: 10.1002/smj

and high screening intensity funds employing all of those with neutral coefficients, we could be mistakenly attributing our results to differences in screen usage though the results are actually driven by variation in the degree of diversification. In order to assess this possibility, we split the sample into low (1–4 screens in use), medium (5–8 screens in use), and high (9–12 screens in use) screening intensity subsets to conduct a more nuanced analysis of the screen usage patterns of the funds. We found no patterns to suggest that low intensity funds were disproportionately using community relations screens or that medium intensity funds were disproportionately favoring equal opportunity and environmental screens. We therefore conclude that we are capturing variance that is unique to the individual screen in question.

Fifth, there is some disagreement among financial economists as to which asset-pricing model is most accurate (for a review see Fama and French, 1992, 1996; Kothari, Shanken, and Sloan, 1995). Some support the CAPM advanced by Sharpe (1964) and Lintner (1965), while others advocate more elaborate models such as the 3-factor model proposed by Fama and French (1993) or the 4-factor model proposed by Carhart (1997). Although we use CAPM to calculate our measure of risk-adjusted performance (RAP) in this study, those who believe in a Fama and French 3-factor or Carhart 4-factor world might suggest that using CAPM will bias our results because betas alone do not adequately explain average return. We therefore reran our results using RAP calculated from the Fama and French (1993) 3-factor model and then the Carhart (1997) 4-factor model. In the case of the Fama and French (1993) 3-factor model, results were similar in statistical significance but slightly weaker in magnitude. Using the Carhart (1997) 4-factor model, results were both statistically and economically stronger than those reported in this paper. Because CAPM is the standard asset-pricing model applied in strategy research, we report CAPM results herein.

Finally, asset-pricing models generally do not incorporate a bond term in addition to other market factors to explain returns. Fama and French (1993) found that using a bond term explains little variation in the return of funds comprised mostly of stocks. Because bond holdings comprise only 16 percent of the total invested assets of the funds in our sample, the funds are likely representative of the type of portfolios that Fama and French (1993) described. Following prior literature, therefore, we do not include a bond term to help quantify RAP in our CAPM equation. Instead, we incorporate percentage bonds as a control variable in our regression models. To determine whether the absence of a bond term introduces any bias, we reran our analyses excluding the 11 funds in our sample that hold bonds at any given point in time. This left a set of 50 pure equity funds and 3026 fund-month observations. The results did not change.[11]

DISCUSSION

If we assume that investors are rewarded only for bearing systematic risk and all firms are homogenous in all but their risk premium, as modern portfolio theory contends, then SRI can only harm financial performance. However, as stakeholder theory argues, some firms may be consistently better financial performers than others because of their socially oriented characteristics. The fundamental market logic of SRI is that social screening can help in selecting these firms. Our findings support both portfolio and stakeholder theories to varying degrees. It appears that even though social screening forces a narrowing of investment choices, if adequately implemented, social screening can lead to an increase in financial returns. That is, the financial performance of those limited firms chosen through intensive social screening offsets costs from loss of portfolio diversification to some degree.

These trade-offs help explain how two long competing viewpoints in the SRI literature may actually be complementary. Funds that employ many social screens may effectively eliminate underperforming firms from their portfolio in order to improve financial performance. On the other hand, SRI funds that employ few social screens improve financial performance through benefits received from increased diversification.[12] Those

[11] All results discussed in this section are available from the authors upon request.

[12] It could be argued that since mutual funds are required to perform active analysis of social performance, one would expect operating costs (and the funds' associated expense ratios) to be higher as screening intensity increases. Increased costs reduce performance, and would propose an alternative interpretation of the negative portion of our curvilinear effect, potentially calling our diversification inferences into question. However, returns compiled by CRSP and used in our analyses do not factor in expense ratios. This allows us to specifically isolate the effects

DOI: 10.1002/smj

funds that are 'stuck in the middle' may not be able to either effectively diversify away unsystematic risk, or eliminate enough underperforming firms from their portfolios to improve financial performance.

The results of our analyses of different types of social screens prove more vexing. We found support for Hypothesis 3 that, indeed, funds that screened on the basis of community relations had relatively stronger financial performance. Thus, our findings concur with those of others who have shown that the costs incurred by a firm to improve its relations with its local communities are more than offset by financial gains (Hillman and Keim, 2001; Simpson and Kohers, 2002; Waddock and Graves, 2000). However, our findings ran counter to Hypotheses 2 and 4.[13] These results suggest that the financial costs of increasing equal employment opportunity and diversity, as well as environmental performance to levels adequate to pass the screening standards of SRI funds (above and beyond what is mandated by law) may outweigh their financial benefits. Considering recent findings suggesting that it 'pays to be green' (e.g., Klassen and Whybark, 1999; Konar and Cohen, 2001; Russo and Fouts, 1997; Porter and van der Linde, 1995), our result concerning environmental screening seems particularly difficult to reconcile.

There are several possible reasons why we found that it did not pay to screen out firms with better labor relations or to 'screen for green.' First, our measures of CSP are admittedly coarse. For example, the environmental performance measure cannot distinguish between proactive and reactive environmental initiatives. King and Lenox (2002) found that waste prevention, not 'end of pipe' cleanup drives financial gains. If the SRI funds in this sample disproportionately include firms that engage in reactive environmental initiatives, the findings could thus be skewed. Ultimately, finer-grained measures may be needed to adequately tease out such variance in performance.

Second, in our study, we used market measures of financial performance. Orlitzky *et al.* (2003: 403) concluded that 'CSP [Corporate Social Performance] appears to be more highly correlated with accounting-based measures of CFP [Corporate Financial Performance] than with market-based indicators ….' A fruitful area of future research on the nature of the relationship between social and financial performance therefore might be to relate how differences in research measures and methods might contribute to different empirical findings. Prior studies have used a variety of measures, to include both market-based indicators (e.g., Klassen and McLaughlin, 1996; Shane and Spicer, 1983; Belkaoui, 1976) and accounting-based measures (e.g., King and Lenox, 2002; Russo and Fouts, 1997; Hart and Ahuja, 1996). A recent study by DellaVigna and Pollet (2005) suggests that investors rarely attend to information that extends beyond a 5-year horizon and therefore do not accurately price for the long-term. For SRI funds, this implies that the market might not accurately value social initiatives with extended payback periods.

Finally, as with any study of financial performance, our analysis is retrospective and so must be interpreted with caution. By necessity, we analyzed the appropriateness of screening strategies based upon the historical performance of mutual funds. Some of the financial benefits of certain social screens may not be discernible until farther in the future. For example, though we found that screening out firms with poor environmental records actually harmed an SRI fund's performance, a firm's up-front investment in environmental improvements may pay off in future years. Since the majority of the funds in our study were less than 5 years old, our study may have missed these gains. The market's preference for certain types of social screens may also change over time. For example, the market may at first be slow to reward firms for particular social actions, then provide increasing financial incentives as the issue becomes salient and popular, only to later simply expect firms to take such actions without financial reward. For all of these reasons, we are hesitant to draw strong conclusions from our findings on labor and environmental screening.

---

of diversification so as to ensure that they are not confounded with the effects of screening costs on mutual fund performance—thereby reducing the plausibility of such an alternative. Moreover, in sensitivity analyses conducted using expense ratios, we did not find any relationship between screening intensity and expense ratios, and our results did not change.

[13] It is important to note that the negative results for the labor relations and environmental screens do not invalidate the stakeholder theory arguments used to justify the positive portion of the curvilinear relationship suggested (and found) in Hypothesis 1. Rather, these negative results only imply that the loss of diversification associated with adopting either of these two particular screens *in isolation* outweighed any gains. In contrast, the financial gains from superior stakeholder relations possessed by firms with positive community relations added more to the RAP of SRI funds than the associated decrease in diversification necessary to select such firms took away from their RAP.

DOI: 10.1002/smj

Implications

The aforementioned caveats notwithstanding, our study has several important implications for both practitioners and scholars. First, it implies that fund managers need to more carefully consider the effects their chosen screening strategies are likely to have on the performance of their funds. The choice is not as simple as either being an SRI fund or not, but rather, just how socially responsible to be. The prescription is that managers should either wholeheartedly commit to broadly screening socially irresponsible firms from their funds, or exclude very few firms such that they do not interfere with their ability to diversify. Additionally, SRI fund managers must be aware of which types of social screens are rewarded at any particular point in time.

For scholars, this result suggests that both camps can peacefully coexist. Those who base their arguments on the financial logic of modern portfolio theory and those who support instrumental stakeholder theory may not be at odds. Funds that use few screens gain the benefits of diversification, and those that filter stocks and limit their universe of investments do not handicap their portfolio as much as some contend. The real danger lies in not committing to one strategy or the other—in being 'stuck in the middle.' Failure to control for screening intensity amongst SRI funds may explain, in part, the mixed findings that have allowed this debate to rage on for so long.

In conclusion, we have uncovered findings that appear to bring together long-divided factions in the broad literature on the link between financial and social performance. Given our findings, further research that moves beyond the dichotomy inherent in prior studies seems well warranted. We encourage others to improve upon our contribution by looking at improved data sets with more fine-grained measures.

REFERENCES

Alexander G, Bucholtz R. 1978. Corporate social responsibility and stock market performance. *Academy of Management Journal* **21**: 479–486.

Argote L. 1999. *Organizational Learning: Creating, Retaining and Transferring Knowledge*. Kluwer: Boston, MA.

Barney J. 1991. Firm resource and sustained competitive advantage. *Journal of Management* **17**: 99–120.

Belkaoui A. 1976. The impact of the disclosure of the environmental effects of organizational behavior on the market. *Financial Management* **5**: 26–31.

Belsley DA, Kuh E, Welsch RE. 1980. *Regression Diagnostics: Identifying Influential Data and Sources of Collinearity*. Wiley: New York.

Berman SL, Wicks AC, Kotha S, Jones TM. 1999. Does stakeholder orientation matter? The relationship between stakeholder management models and firm financial performance. *Academy of Management Journal* **42**(5): 488–506.

Black F, Jensen M, Scholes M. 1972. The capital asset pricing model: Some empirical tests. In *Studies in the Theory of Capital Markets*, Jensen M (ed). Praeger: New York; 79–121.

Bloomfield T, Leftwich R, Long J Jr. 1977. Portfolio strategies and performance. *Journal of Financial Economics* **5**: 201–218.

Bowman E, Haire M. 1975. A strategic posture towards CSR. *California Management Review* **18**(2): 49–58.

Campbell J, Lettau M, Malkiel B, Xu Y. 2001. Have individual stocks become more volatile? An empirical exploration of idiosyncratic risk. *Journal of Finance* **56**(1): 1–43.

Carhart M. 1997. On persistence in mutual fund performance. *Journal of Finance* **52**: 57–82.

Cochran PL, Wood RA. 1984. Corporate social responsibility and financial performance. *Academy of Management Journal* **27**(1): 42–56.

Cornell B, Shapiro AC. 1987. Corporate stakeholders and corporate finance. *Financial Management* **16**(1): 5–14.

Dear M. 1992. Understanding and overcoming the NIMBY syndrome. *Journal of the American Planning Association* **58**(3): 288–300.

DellaVigna S, Pollet JM. 2005. Attention, demographics, and the stock market. NBER working paper #11211.

DiBartolomeo D, Kurtz L. 1999. Managing risk exposures of socially screened portfolios. Northfield Information Services working paper.

Dierickx I, Cool K. 1991. Asset stock accumulation and sustainability of competitive advantage. *Management Science* **35**(12): 1504–1511.

Diltz JD. 1995. The private cost of socially responsible investing. *Applied Financial Economics* **5**: 69–77.

Donaldson T, Preston LE. 1995. The stakeholder theory of the corporation: concepts, evidence, and implications. *Academy of Management Review* **20**(1): 65–91.

Dowell G, Hart S, Yeung B. 2000. Do corporate global environmental standards create or destroy market value? *Management Science* **46**: 1059–1074.

Elton E, Gruber MJ, Blake CR. 1996a. The persistence of risk-adjusted mutual fund performance. *Journal of Business* **69**(2): 133–157.

Elton E, Gruber MJ, Blake CR. 1996b. Survivorship bias and mutual fund performance. *Review of Financial Studies* **9**(4): 1097–1120.

Fama EF. 1971. Risk, return, and equilibrium. *Journal of Political Economy* **79**(1): 30–55.

Fama EF. 1991. Efficient markets: II. *Journal of Finance* **46**: 1575–1617.

DOI: 10.1002/smj

Fama EF, French KR. 1992. The cross-section of expected stock returns. *Journal of Finance* **47**: 427–465.

Fama EF, French KR. 1993. Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics* **33**: 3–56.

Fama EF, French KR. 1996. The CAPM is wanted dead or alive. *Journal of Finance* **51**: 1947–1958.

Fisher L, Lorie JH. 1970. Some studies of the variability of returns on investments in common stocks. *Journal of Business* **43**(2): 99–134.

Florida R. 2002. *The Rise of the Creative Class*. Basic Books: New York.

Fombrun CJ. 1996. *Reputation: Realizing Value from the Corporate Image*. Harvard Business School Press: Boston, MA.

Fombrun CJ, Gardberg NA, Barnett ML. 2000. Opportunity platforms and safety nets: corporate citizenship and reputational risk. *Business and Society Review* **105**(1): 85–106.

Freeman RE. 1984. *Strategic Management: A Stakeholder Approach*. Pitman: Boston, MA.

Friedman M. 1970. The social responsibility of business is to increase its profits. *New York Times Magazine* 13 September: 122–126.

Geczy C, Stambaugh R, Levin D. 2003. Investing in socially responsible mutual funds. Wharton School of Business working paper.

Glassman JK. 1999. Letting your conscience be your investment guide. *Houston Chronicle* 8 February: 4.

Goetz T. 1997. Dealing with the devil. *Village Voice* 19 August: 43–44.

Granovetter M. 1985. Economic action and social structure: the problem of embeddedness. *American Journal of Sociology* **91**(3): 481–510.

Graves S, Waddock S. 2000. Beyond built to last ... stakeholder relations in 'built-to-last' companies. *Business and Society Review* **105**(4): 393–418.

Greene WH. 2000. *Econometric Analysis*. Macmillan: New York.

Greening DW, Turban DB. 2000. Corporate social performance as a competitive advantage in attracting a quality workforce. *Business and Society* **39**(3): 254–280.

Griffin JJ, Mahon JF. 1997. The corporate social performance and corporate financial performance debate: twenty-five years of incomparable research. *Business and Society* **36**(1): 5–31.

Guerard JB Jr. 1997. Is there a cost to being socially responsible in investing? *Journal of Investing* **6**(2): 11–18.

Hamilton S, Jo H, Statman M. 1993. Doing well while doing good? The investment performance of socially responsible mutual funds. *Financial Analysts Journal*, November–December: 62–66.

Hart S, Ahuja G. 1996. Does it pay to be green? An empirical examination of the relationship between emissions reduction and firm performance. *Business Strategy and the Environment* **5**: 30–37.

Hillman A, Keim G. 2001. Shareholder value, stakeholder management, and social issues: what's the bottom line? *Strategic Management Journal* **22**(2): 125–139.

Hoffman A. 1997. *From Heresy to Dogma: An Institutional History of Corporate Environmentalism*. New Lexington Press: San Francisco, CA.

Hoffman A. 1999. Institutional evolution and change: environmentalism and the U.S. chemical industry. *Academy of Management Journal* **42**: 351–371.

Hutton RB, D'Antonio L, Johnsen T. 1998. Socially responsible investing: growing issues and new opportunities. *Business and Society* **37**(3): 281–305.

Hymer SH. 1976. *The International Operations of National Firms: A Study of Direct Foreign Investment*. MIT Press: Cambridge, MA.

Jensen M. 2002. Value maximization, stakeholder theory, and the corporate objective function. *Business Ethics Quarterly* **12**: 235–256.

Jones R, Murrell A. 2001. Signaling positive corporate social performance: an event study of family-friendly firms. *Business and Society* **40**(1): 59–78.

Jones T. 1995. Instrumental stakeholder theory: a synthesis of ethics and economics. *Academy of Management Review* **20**(2): 404–437.

Kennedy P. 1998. *A Guide to Econometrics*. MIT Press: Cambridge, MA.

King A, Lenox M. 2000. Industry self-regulation without sanctions: the chemical industry's Responsible Care program. *Academy of Management Journal* **43**(4): 698–716.

King A, Lenox M. 2002. Exploring the locus of profitable pollution reduction. *Management Science* **48**(2): 289–299.

Klassen R, McLaughlin C. 1996. The impact of environmental management on firm performance. *Management Science* **42**(8): 1199–1214.

Klassen R, Whybark D. 1999. The impact of environmental technologies on manufacturing performance. *Academy of Management Journal* **42**(6): 599–615.

Kmenta J. 1997. *Elements of Econometrics*. Macmillan: New York.

Konar S, Cohen M. 2001. Does the market value environmental performance? *Review of Economics and Statistics* **83**(2): 281–289.

Kothari SP, Shanken J, Sloan RG. 1995. Another look at the cross-section of expected stock returns. *Journal of Finance* **50**: 185–224.

Kurtz L. 1997. No effect, or no *net* effect? Studies on socially responsible investing. *Journal of Investing* **6**(4): 37–49.

Kurtz L, DiBartolomeo D. 1996. Socially screened portfolios: an attribution analysis of relative performance. *Journal of Investing* **5**(3): 35–41.

LaRose JA. 1998. More than profits: selected resources in socially responsible investing. *Reference and User Services Quarterly* **38**(1): 33–40.

Lintner J. 1965. The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets. *Review of Economics and Statistics* **47**: 13–37.

Lowry R. 1991. *Good Money: A Guide to Profitable Investing in the '90's*. W. W. Norton: New York.

Luck C, Pilotte N. 1993. Domini Social Index performance. *Journal of Investing* **2**: 60–62.
Mahon JF, Griffin JJ. 1999. Painting a portrait. *Business and Society* **38**(1): 126–133.
Margolis J, Walsh J. 2003. Misery loves company: rethinking social initiatives by business. *Administrative Science Quarterly* **48**: 268–305.
Markowitz H. 1952. Portfolio selection. *Journal of Finance* **7**(1): 77–91.
McWilliams A, Siegel D. 1997. The role of money managers in assessing corporate social responsibility research. *Journal of Investing* **6**(4): 98–107.
McWilliams A, Siegel D. 2000. Corporate social responsibility and financial performance: correlation or misspecification? *Strategic Management Journal* **21**(5): 603–609.
Moskowitz M. 1972. Choosing socially responsible stocks. *Business and Society Review* **10**: 71–75.
Mueller S. 1991. The opportunity cost of discipleship: ethical mutual funds and their returns. *Sociological Analysis* **52**: 111–124.
Orlitzky M, Schmidt F, Rynes S. 2003. Corporate social and financial performance: a meta-analysis. *Organization Studies* **24**: 403–441.
Perrow C. 1984. *Normal Accidents: Living with High-Risk Technologies*. Basic Books: New York.
Porter M. 1991. Towards a dynamic theory of strategy. *Strategic Management Journal*, Winter Special Issue **12**: 95–117.
Porter M, van der Linde C. 1995. Green and competitive. *Harvard Business Review* **73**(5): 121–134.
Preston LE, O'Bannon D. 1997. The corporate social–financial performance relationship. *Business and Society* **36**(4): 419–429.
Preston LE, Post JE. 1975. *Private Management and Public Policy: The Principle of Public Responsibility.* Prentice-Hall: Englewood Cliffs, NJ.
Rees J. 1994. *Hostages of Each Other: The Transformation of Nuclear Safety Since Three Mile Island*. University of Chicago Press: Chicago, IL.
Rehbein K, Waddock S, Graves S. 2004. Understanding shareholder activism: which corporations are targeted? *Business and Society* **43**(3): 239–267.
Roman RM, Hayibor S, Agle BR. 1999. The relationship between financial and social performance: repainting a portrait. *Business and Society* **38**(1): 109–125.
Rothchild J. 1996. Why I invest with sinners. *Fortune* 13 May: 197.
Rowley T, Berman S. 2000. A brand new brand of corporate social performance. *Business and Society* **39**(4): 397–418.
Rudd A. 1979. Divestment of South African equities: how risky? *Journal of Portfolio Management* **5**(3): 5.
Russo M, Fouts P. 1997. A resource-based perspective on corporate environmental performance and profitability. *Academy of Management Journal* **40**: 534–559.
Sauer D. 1997. The impact of social-responsibility screens on investment performance: evidence from the Domini 400 Social Index and Domini Equity mutual funds. *Review of Financial Economics* **6**(2): 137–149.
Scott R. 1981. *Organizations: Rational, Natural, and Open Systems*. Prentice-Hall: Englewood Cliffs, NJ.
Sellers M. 1993. NIMBY: a case study in conflict politics. *Public Administration Quarterly* **16**(4): 460–477.
Shane P, Spicer B. 1983. Market responses to environmental information produced outside the firm. *Accounting Review* **58**: 521–538.
Sharpe WF. 1964. Capital asset prices: a theory of market equilibrium under conditions of risk. *Journal of Finance* **19**: 425–442.
Simpson WG, Kohers T. 2002. The link between corporate social and financial performance: evidence from the banking industry. *Journal of Business Ethics* **35**: 97–109.
Social Investment Forum. 2002. http://www.socialinvest.org/Areas/SRIGuide/Screening.htm [15 January 2002].
Statman M. 1987. How many stocks make a diversified portfolio? *Journal of Financial and Quantitative Analysis* **22**(3): 353–363.
Statman M. 2000. Socially responsible mutual funds. *Financial Analysts Journal* May/June: 30–39.
Teper J. 1992. Evaluating the cost of socially responsible investing. In *The Social Investment Almanac* (1st edn), Kinder P (ed.). Henry Holt: New York; 340–349.
Turban DB, Greening DW. 1996. Corporate social performance and organizational attractiveness to prospective employees. *Academy of Management Journal* **40**(3): 658–672.
Ullmann A. 1985. Data in search of a theory: a critical examination of the relationship among social performance, social disclosure, and economic performance. *Academy of Management Review* **10**: 450–477.
Waddock SA, Graves SB. 1997. The corporate social performance–financial performance link. *Strategic Management Journal* **18**(4): 303–319.
Waddock SA, Graves SB. 2000. Performance characteristics of social and traditional investments. *Journal of Investing* **9**(2): 27–38.
Waddock SA, Smith N. 2000. Corporate responsibility audits: doing well by doing good. *Sloan Management Review* **41**(2): 75–83.
Wernerfelt B. 1984. A resource-based view of the firm. *Strategic Management Journal* **5**(2): 171–180.
Wicks AC, Berman SL, Jones TM. 1999. The structure of optimal trust: moral and strategic implications. *Academy of Management Review* **24**(1): 99–116.
Williamson OE. 1975. *Markets and Hierarchies: Analysis and Antitrust Implications*. Free Press: New York.
Williamson OE. 1985. *The Economic Institutions of Capitalism*. Free Press: New York.
Wood D, Jones R. 1995. Stakeholder mismatching: a theoretical problem in empirical research on corporate social performance. *International Journal of Organizational Analysis* **3**: 229–267.
Wright P, Ferris S, Hiller J, Kroll M. 1995. Competitiveness through management of diversity: effects on stock price valuation. *Academy of Management Journal* **38**(1): 272–287.

DOI: 10.1002/smj

APPENDIX: CALCULATION OF RISK-ADJUSTED PERFORMANCE (RAP)

A fund's expected return is a linear function of the market return. A market index represents the market return (in our case, the S&P 500), and the coefficient beta represents the linear relationship of the fund's return to the market return. As is conventional in CAPM (see Sharpe, 1964), this study computes beta on the basis of monthly returns. Specifically:

$$R_{it} - R_{ft} = a_i + B_i^* \, (R_{mt} - R_{ft}) + e_{it} \qquad (4)$$

where R_{it} represents the return on fund i in month t, a_i is Jensen's alpha, R_{mt} represents the return on the market portfolio for month t, R_{ft} reflects the risk-free rate of return (e.g., the 30-day T-bill rate), B_i captures the fixed beta of fund i, and e_{it} represents random error.

The risk-adjusted return of the fund is the difference between the risk premium of that fund and the fund's expected return, given its beta and the market's risk premium. The risk-adjusted performance (RAP) then for fund i in month t, RAP_{it}, is:

$$\mathrm{RAP}_{it} = (R_{it} - R_{ft}) - B_i^* \, (R_{mt} - R_{ft}) \qquad (5)$$

In essence, RAP_{it}, from Equation 5, captures the fund's return over and above what is expected based upon its beta.[14]

[14] When we model RAP as the dependent variable, we are parameterizing the error term and Jensen's alpha to uncover residual systematic noise in a fund's performance. We found similar results when we parameterized the standard CAPM equation.

DOI: 10.1002/smj