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Cover Page Footnote

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The Opportunity Cost of Monetary Conviction: A Comparison of the DSI and the S&P 500

By Melissa Arms

I. INTRODUCTION

Of the numerous types of mutual funds that have developed in the past decade, few have grown as fast or received as much attention as socially responsible funds. SRI's (short for socially responsible investments) are funds that allow the investor to consolidate his or her ethical and moral convictions with their financial goals. This new wave of "putting your money where your mouth is" allows one to purchase stocks that support businesses which produce jobs, support fair trade, strengthen communities, guard the environment and spurn unhealthy practices (alcohol and tobacco). Morningstar reports that total assets in SRI mutual funds have doubled over the last two years with the number of SRI funds now approaching 50, up from just 15 in 1991. The industry itself has grown from a \$40 billion to a \$639 billion industry with almost one in every ten U.S. dollars invested in such funds. (Perryman)

SRI funds subject their investment universe to a series of social and financial screens that ensure the portfolio is consistent with the consumers' personal belief system. These screens can be negative, positive or activist. Although admirable from an ethical standpoint, the financial viability and performance of such funds is questionable; basic financial theory espouses that a limited investment universe equates with limited returns. Socially responsible investors should, therefore, expect to take a loss for their monetary conviction. On the other hand, a growing pool of theory maintains that socially responsible investing could be more lucrative than traditional investing due to market inefficiencies and the strength of the underlying firms. Hence, the purpose of this paper is to determine whether socially responsible investors take a loss for their monetary convictions by delineating the theory between these two opposing

hypotheses and determining which has more statistical validity.

A. Pro-Market Theories vs. Pro-SRI Theories

The first set of theories (called pro-market theories) are based on the widely accepted principals of basic finance and support the hypothesis that the general market should out-perform socially responsible investment funds. The second set of theories (dubbed pro-SRI theories) support the hypothesis that Socially Responsible Investments should theoretically produce greater returns than the general market. The remainder of this paper will review these two sets of theories, examine similar studies from the recent past and then present the mechanics of the current research along with the research findings. The final section will offer a brief conclusion and suggestions for future research.

B. Brief History of Socially Responsible Investing

As early back as the 1920's, religious organizations and church groups prohibited investment into what they considered "sin stocks," or stocks in the liquor, tobacco and gambling industries. One of the first "sin screened" funds was the Pioneer Fund in Boston which eliminated all investments into alcohol, tobacco and gambling companies. Although such a simple screen would not be considered a purely "ethical screen" today, it still serves as a milestone in the alignment of belief and investment.

Modern-day ethical investing is most often attributed to the great activist movements in the 1960's. At this time, the profound political changes that were influencing the nation were also shaping the way in which people began to invest their money. With a growing disdain for corporate America and animosity towards the United States' involvement

in the Vietnam War, college students, clergy, civil rights activists and eventually traditional consumers coalesced to ensure their investments did not support the war. As time progressed, socially responsible investors began to screen the companies in which they invested for broader initiatives such as environmental practices, whether the company supported apartheid in South Africa and the way in which the firm handled its employees. (www.goodmoney.com)

II. THEORY AND LITERATURE REVIEW

The underlying theory concerning the two above hypotheses can be viewed as spanning two general schools of thought. For simplicity's sake, they will be referred to from here on as pro-market theories and pro-SRI theories.

A. Pro-market theory

The essence of this theory espouses that the returns received from socially responsible investments will be less than those produced by the general market (i.e. the market will outperform SRI's). To understand the basis of this theory it is important to understand the mechanics of traditional investing/portfolio creation and the capital asset pricing model (CAPM). The CAPM maintains that if capital markets are efficient, traditional investing should produce a more attractive risk/return ratio than SRI. The goal of basic portfolio creation is to amass the highest possible return for some given level of risk. Non-systematic risk can be diversified away in order to increase the efficiency of the portfolio. Therefore, understanding the concepts of risk, return, diversification and efficiency are essential to this argument.

The elements of risk and return form the basis of the CAPM. It states that $r - r_f = \beta(r_m - r_f)$

where r = a stock's expected return, r_f = the risk free interest rate, β = the covariance of the stock in the market portfolio and r_m = the market's expected return. $r - r_f$ then becomes the expected risk premium from a stock and $r_m - r_f$ is the expected market risk premium. (Peterson) An investment's return is simply its expected profitability that changes according to varying performance scenarios; risk is essentially measured by *beta* and measures the certainty or uncertainty with which one can expect to receive a given return. An investment's value, therefore, hinges on its expected return and the likelihood that such a return will be realized. The long-term relationship between risk and return tends to be positive and linear; the greater the risk, the greater the return and vice versa. In sum, an efficient portfolio will have the highest expected return for a given level of risk or the lowest risk for a given return level. (Hylton, 19)

The last important component of the argument is diversification. Risk comes in two forms, diversifiable (or systematic) and non-diversifiable (or unsystematic). Non-diversifiable risk is the part of total risk that is related to changes in the general economy and stock market which are out of any investor's hands and, therefore, cannot be exterminated through portfolio diversification. In theory, the market rewards (via high returns) only portfolios that have eliminated all non-diversifiable risk. By definition then, an efficient portfolio is one in which the investor has abolished all unsystematic risk and only systematic risk remains.

Modern portfolio theory posits that the use of decision-making criteria other than risk, return, diversification and efficiency will limit the amount of potentially lucrative investments and thereby reduce the chances of compiling a truly efficient

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portfolio. Langbein & Posner (1980) argue that a portfolio created along the lines of social principles will be less diversified than one constructed under the guise of high return and profit maximization. Lack of diversification means higher risk for a given return level. The CAPM suggests that the general market will out-perform SRI's due to the amount of nonsystematic risk inherent and uncompensated for in social, ethical or political investment decision-making. The negative screens used in many SRI funds prohibit investment in certain companies or industries and therefore, according to the CAPM, make it impossible to eliminate systematic risks. (Langbein & Posner, 85)

In sum, the CAPM model combined with efficient market theory posits that inclusion of screens other than those based on risk and return limits a portfolio manager's investment universe and increases the occurrence of systematic risk. This increase translates into less return for any given level of risk or greater risk for a given level of return. (Langbein & Posner, 85)

If socially responsible investing results in a portfolio with an unacceptable amount of systematic risk and lower returns, an alternative option known as the "separation theorem," states that investors should separate their personal preferences from their standard investment criteria. According to this theory, investors will maximize their income only by investing in the stocks with the highest return for a given level of risk and then investing the excess return in some charitable contribution of their choice. This maximization theory, however, is based on a stricter consumption/investment line and is dependent on the perfectly efficient functioning of capital markets. (Hylton, 19-20)

Teper (1991) supports this theory by asserting that there are five principal reasons why socially responsible portfolios would have lower risk-adjusted returns than the unrestricted general market. The first reason is that lower individual security returns could occur when better performing stocks are "black listed" and poorer performing stocks are consequently overweighted in the portfolio. If socially responsible stocks do perform poorly, the SRI portfolio then has absolute lower returns due to the poor performance of the

underlying stocks and relatively lower returns due to the positive performance of "irresponsible" stocks.

The second reason stems from the tendency of socially responsible funds to remove large companies from their portfolios and replace them with smaller, more volatile firms. This occurs most often because large firms embody a number of process lines, products and subsidiaries, any one of which may fail to meet socially responsible guidelines. The volatility of small firms' earnings compared to larger, more established firms can be substantial and, therefore, increases the riskiness of SRI portfolios. Sauer (1997) supports this idea stating that "social screens tend to eliminate larger firms from the investment universe and, as a result, remaining firms tend to be smaller and have more volatile returns. Lower returns are also possible as social screens eliminate stable blue chip ... investment opportunities."

Teper's third explanation for the lower returns of SRI's stems directly from the above discussion on diversification, maintaining that social investment criteria force the portfolio to be underweighted in major industries or sectors thus resulting in lower portfolio diversification. For example, the majority of SRI's prohibit investment into the nuclear power industry. Social portfolios will therefore receive less returns than the general market when the nuclear industry booms.

Teper also notes that the transaction costs of social screening, like the initial cost of eliminating non-qualifying stocks and adding others, can disadvantage restricted portfolios such as SRI's. Finally, he also suggests that the opportunity cost associated with eliminating an entire investment class (such as international investments because they are too difficult to monitor) can hinder the performance of SRI's.

A. Pro-SRI theory

Theoretical arguments supporting socially responsible investing (often termed "doing well while doing good") extend from a myriad of places. Hamilton, Jo and Statman (1993) report that expected returns from socially responsible portfolios may be higher than the expected returns of conventional portfolios if a large-enough group of

investors continuously underestimate the likelihood that socially “irresponsible” businesses will be subject to negative information. They support such an idea with the hypothetical situation of oil companies. If traditional investors consistently miscalculate the chances of oil companies having spills, the price decline in oil company stock when such a spill does occur will reward SRI funds. In other words, the funds which ban oil stocks will perform better due to the relatively lower returns now received by conventionally diversified portfolios maintaining oil stocks. This is essentially the counter-argument to Teper’s lower-diversification reasoning.

Sauer (1997) reports that the firms which remain after a social screening process may be financially stronger and more profitable than those eliminated due to a number of current business dynamics. For example, firms that are already environmentally friendly will be less likely to endure governmental fines, enviro-lawsuits and the loss of business, from environmentally aware consumers.

Social screens that account for product quality and customer satisfaction will also leave behind firms that are least likely to endure liability lawsuits and costly settlements. Additionally, funds screened for firms that adhere to good corporate citizenship standards maintain equity in firms with strong firm loyalty and, thus, higher product sales. Firms with strong employee relations will also be in a better position to attract and retain quality employees. SRI advocates argue that employee loyalty translates into greater productivity and innovation along with a lowering of production costs. Ultimately all of the above characteristics translate into greater profit potential for socially screened firms.

This is in-line with Hylton’s proxy theory.

According to Hylton (1992) in some cases the social screening process may act as a proxy for the type of risk examinations that traditional fund managers use. Consequentially, it may be possible under certain political conditions for SRI funds to out-perform their “irresponsible” peers. Hylton gives the example of South Africa-free investments which, according to *Pensions and Investments* in October of 1989, performed substantially better than traditional funds for a significant period of time. Although it is possible that the portfolio managers of anti-South Africa funds were simply more able stock choosers than traditional portfolio managers, a more logical explanation is that South-Africa screens became a proxy for eliminating high risk investments into such a politically torn and intense area as South Africa in the 1980’s. Undoubtedly, even traditional investments into firms with South Africa ties avoided an area so greatly affected by international political and economic sanctions. As this demonstrates, the greater the popular pull and general compliance behind a specific screen, the

greater its usefulness as a proxy for omitting stocks shunned by even traditional investors. This holds for positive screens into “green” (i.e. environmentally friendly) companies where “green” could possibly be a proxy for “unusually prudent management,” more efficient processes and increased demand for “green” products by Eco-conscious consumers. Hylton views this as one reason for the green Parnassus Fund’s superior

performance to the DJIA. (Hylton, 36)

Both Lowry (1990) and Kinder (1993) argue a similar line of reasoning, maintaining that socially responsible screening is a perfect tool for choosing financially viable and well-performing stocks because of its emphasis on the long term rather than the short term. In theory, socially

Firms which remain after a social screening process may be financially stronger and more profitable due to a number of current business dynamics, such as lower probabilities of legal trouble and higher levels of customer satisfaction.

responsible funds will perform better inasmuch as socially responsible fund managers shun investment decisions based on short-term profits in favor of an accent on long-term gains from investments in stable, growing companies. (Lowry, 54) The socially responsible portfolio manager then views the mechanics of publicly traded corporations as an owner does. Performance is not simply limited to quarterly or annual financial statements, but rather expanded to consider the long-term ability of a firm in an increasingly dynamic and socially aware market. According to Kinder, focusing on long-term viability requires a clear understanding of how the company relates to society at large; social screens evaluate this relationship and invest accordingly. (Kinder, 10- 12)

Hylton points out, however, that the advantage that such an edge gives to socially responsible funds will only last until traditional investors understand and embrace it. In an efficient market, this is the only way for SRI funds to perform better than the general market.

The above theories function under the auspice of efficiently functioning financial markets. However, a large number of studies over the last decade have proposed that it is possible for non-CAPM strategies (such as SRIs) to perform well due to inefficiency in the markets created by speculative booms. This “inefficiency hypothesis” is in direct contrast of CAPM prospects and is based on a growing number of studies that question the empirical and theoretical basis of efficient markets. (Hylton, 24) According to Schleifer & Summers (1990) the inefficiency hypothesis notes that some investors “chase the trend” by buying stocks after a rise and selling after a fall. The basis of this premise is that market prices sometimes deviate from market fundamentals when investors who are chasing trends (as opposed to acting solely on market information) produce speculative booms or “bubbles” in the market. Some arbitrageurs will actually buy certain stocks with rising prices in order to feed the interest of other investors, then sell out near the top and take the corresponding profits. The result is market prices which are not based on the fundamentals assumed by the efficient market hypothesis and nontraditional investors may do better than the general market

while this “bubble” process is occurring. (Schleifer & Summers, 25-28) It is important to note here that if the market is not efficient in this sense, the separation theory does not hold.

III. PREVIOUS RESEARCH

In nearly every major investing periodical, a myriad of short-term statistical comparisons between traditional and socially responsible funds exists. Most of these, however, are of limited use due to their restrained time horizon or the confined number of stocks they use for comparison. For example, simply to state that SRI Fund #1 had a 3% greater return than the Dow Jones for a 6-month period in 1995 tells us little of the possible benefits or costs to overall social investing. In order to define studies relevant for comparison to present research it is important that the studies have a substantial time horizon and a large pool of funds under consideration. Owing to the weight that much of the pro-market theory places on risk-adjusted performance measures, adjusting results for risk is also an important aspect of comparison. Additionally, as Henningsen (1992) states, “the goal in measuring quantitative performance is to compare apples to apples, not apples to oranges. In addition, you need to know the difference between a Granny Smith and a Golden Delicious” (Henningsen, 282). In other words, when evaluating the performance of an equity portfolio the stocks both in the portfolio and in the benchmark index should parallel each other in terms of size capitalization, industry type, risk etc. Interestingly, there are a poor number of studies that currently fulfill the above stipulations and those that do have reached mixed and inconclusive results.

The CDA/Wiesenberger Mutual Funds Update of January 31, 1993 compared 10 socially responsible mutual funds to the average long-term mutual fund over five and ten year periods ending in 1992. The study found that the returns for restricted and unrestricted returns over 5 years were 15.1 % and 15.0% respectively. Over the 10-year period the average restricted social fund returned 12.7%, while the average unrestricted, traditional account returned 13.1%. Clearly, the difference between SRI funds and their respective fund

averages were not immensely different. The study does point out, however, that socially responsible funds performed worse compared to the average 5 and 10-year returns of the general market (measured by the S&P 500) which were 15.8% and 16.1% respectively. Morningstar also reported that between 1988 and 1993 the average mutual fund earned 1% more than socially responsible mutual funds. (Goldberg, 4) However, none of these results are adjusted for risk considerations and are, therefore, difficult to interpret.

Mueller (1991) compared the returns of both unrestricted, traditional mutual funds and ten socially responsible mutual funds over a four-year period in the mid-1980's. She found that the risk-adjusted returns of socially responsible funds earned an average of 1.03% less than their unrestricted counterparts (t-value = -3.83). Hamilton, Jo and Statman (1993) amalgamated the performance of all socially responsible mutual funds which were in the Lipper Analytical data bank as of December 1990. Their study used Jensen's alpha (a measure of the average risk premium for one unit of systematic risk) to evaluate the risk-adjusted returns of SRI funds and found that for all socially responsible mutual funds that had existed for at least five years, nine displayed negative alphas and eight showed positive alphas. This is to say that of the seventeen SRI funds in existence for five or more years, over half performed worse than the general market on a risk-adjusted basis. However, only one of the positive alphas and one of the negative alphas was statistically significant. They also found that these seventeen funds earned excess returns of -0.76% per year and -0.063% on a monthly basis. The monthly excess return was, again, not statistically significant from the return on conventional mutual funds (-0.14%) of the same time period (t-value = -0.92). Results for those socially responsible mutual funds in existence for less than five years were similar; they earned average yearly excess returns of -3.33% per year and -.277% monthly. The performance of these fifteen socially responsible mutual funds were not statistically different (t-value = 0.85) from their traditional counterparts (0.042%). The empirical results, when conclusive, will have shown that, on

a risk adjusted basis, socially responsible funds perform equally as well or slightly less than unrestricted funds.

IV. DATA

The purpose of this research is to determine what cost, if any, today's investors pay for applying socially responsible criteria to their investment decisions. As shown above, most studies in the recent past have tended to concentrate on comparing the performance of restricted, socially responsible mutual funds with their unrestricted mutual fund counterparts. The nature of mutual funds makes it difficult to tell from these studies the basic cost of adding social screens to investment decisions. This is in part because mutual fund returns are a combination not only of the underlying security returns, but also of widely varying transaction costs and managers fees. The last two variables are entirely individual-fund specific. Mutual fund returns are also highly dependent on the decision-making skills of the manager regarding asset allocation, sector selection and security selection. All of the above render a comparison between mutual funds difficult for determining the strait cost of applying a "social conscience" to investment choices. (Sauer, 140) It is for these above reasons that I will compare the S&P 500 and the Domini 400 Social Index.

The Domini 400 Social Index (DSI) was first launched by Kinder, Lydenberg, Domini and Co. in May 1990 as the first common stock index in the U.S. representative of the broad market and designed to reflect the performance of portfolios subjected to multiple social constraints. (Kinder, 1992) KLD used twelve social screens that reflected the broad concerns of many different social investors. Hence, some investors will apply more or less screening to their personal investments based on preference. The screens are divided into five primary screens which are deemed so because they are the first screens applied and the first to develop historically. The primary screens include:

Military Contracting: no company may derive more than 4% of revenues from military weaponry sales.

Alcohol and Tobacco: no company may drive more than 4% of gross revenues from the manufacture of tobacco products or alcoholic beverages.

Gambling: no company may derive 4% of gross revenues from gambling equipment, services or paraphernalia.

Nuclear Power: no company may own, operate, or receive 4% of sales from the nuclear power industry.

South Africa: no company may have operations in, nor be widely perceived to aid, the enforcement of the apartheid system in South Africa.

The secondary screens, applied after the primary screens, control for the response of firms to the demands of today's society. The DSI aims to include companies that have taken notably positive initiatives or exclude companies that have fallen below generally accepted standards in the following areas: (It is important to note that many of these decisions are difficult to make concrete).

Environment: In sum, DSI excludes companies with major environmental problems, takes the middle ground when considering whole industries and looks for companies with aggressively positive environmental policies.

Product Quality and Attitude Toward Customers: DSI looks for firms with a high ratio of value to cost and with W. Edwards Deming's continuous improvement paradigm. It excludes companies with major product liability cases and looks for long-standing commitment to customer service.

Corporate Citizenship: Multiple screens that consider a company's philanthropic record and interaction with the community, such as innovative giving and public/private partnerships.

Employee Relations: Considers a company's labor record, workplace safety, equal opportunity

employment, quality of benefit programs, profit-sharing plans, etc.

Women and Minorities: Includes companies with notable progress on the advancement of women and minorities. Excludes companies with substantial affirmative action fines, but not companies with less-than-perfect advancement records.

Once developed, these screens were applied to the Standard and Poor's 500 with the stocks of "failed" firms removed. In order to maintain a similar industry composition, smaller capitalization companies with superior social responsibility records were then added and, finally, to maintain similar capitalization structure, large-capitalization companies with strong social records in underrepresented industries were added. Two tables presenting the over and under weighted industries relative to the S&P are listed in Appendix B.

Because the DSI and the S&P are not actively managed funds, a comparison of the two will provide a strong indication of the costs of "monetary conviction" because neither is impacted by the perplexing effects of actively managed socially responsible mutual funds. As an index, the DSI does not reflect management fees, transaction costs or investment policy changes. Changes to the DSI are made only in regards to concerns of a firm's social responsiveness and not in response to the general market. In other words, the returns of the DSI reflect only the returns of the underlying securities and it has been designed to depreciate the potential side effects of socially responsible investing. In this study, average monthly returns from the DSI between May 1990 to September 1998 will be compared with those from the unrestricted and well diversified S&P 500 which is also not actively managed. A total listing of average monthly returns for each index are located in Appendix A.

V. EMPIRICAL METHODOLOGY AND RESULTS

This study will utilize a series of tests, both normal and risk-adjusted, to gather empirical results concerning the risk and return of the two portfolios. The first set of tests will compare the normal return

and risk of the two indices by calculating the average monthly return and standard deviation of monthly returns for each portfolio. (Standard deviation of monthly returns is used to represent a portfolio's risk.) In order to gauge whether the difference between the two portfolios is statistically significant, a T-test and F-test will be run on the returns and standard deviation, respectively. Because pro-market theory relies so heavily on risk-adjusted returns, a second set of tests which calculate the coefficient of variation and the Sharpe's Index will be used.

A. Results of Normal Tests

The average monthly returns of the DSI for May 1990 to September 1998 are 0.132 higher than those of the S&P 500, but are not statistically significant (t-score 0.814, See Table 1). This means that it is not statistically possible to prove that the differences between the returns of the two indices are not due to random chance rather than underlying theory. Therefore, it is not possible to prove empirically that *either* pro-market *or* pro-SRI investing produces greater normal returns.

Comparison of the standard deviation of the portfolios' returns shows that the variability of returns from the DSI is greater than that of the S&P (4.07 and 3.80 respectively). The statistical significance of these returns is also interesting. If the pro-market contention is that limiting the investment universe by socially screening portfolios hurts investors by lowering returns and increasing volatility and pro-SRI theorists believe social screens increase the quality of the underlying stocks and hence the size of returns,

both would appear to be inaccurate. As the table above indicates, the F-test was only 0.49, meaning that the difference between the two standard deviations is not significant at the 0.05 level.

Therefore, it cannot be proven that the difference between standard deviations is due to something other than random chance.

Both of the above tests help show that application of social screens to investment decisions did not consistently increase or decrease returns relative to the general market on a normal basis between 1990 and 1998. Likewise, and even

more interesting, is the fact that there is not enough statistical support to prove that social screens result in a greater amount of risk to the investor, contrary to popular belief.

B. Results of Risk Adjusted Tests

As detailed above, a great proportion of pro-market theory rests on the inability of socially responsible investing to produce acceptable risk/return ratios, a problem that the above statistics do not address. Therefore, the next section will consider the interaction of risk and return by comparing the coefficient of variation and the Sharpe value for each portfolio.

The coefficient of variation is one of the most commonly used and basic determinants of a portfolio's risk/reward characteristics. The coefficient of variation gives the amount of risk (variability in returns) that an investor undertakes per one unit of return. A higher coefficient of variation means a riskier portfolio relative to the amount of return. (Clark & Clark) The results for the DSI 400 and the S&P 500 are listed below:

Table 1: Test Results	DSI	S&P
Average Monthly Return	1.54496	1.413317
Standard Deviation	4.074672	3.804176
T-Test	0.813556	
F-Test	0.4933911	

Table 2: DSI vs. S&P	DSI	S&P
Average Return	1.544960	1.413317
Standard Deviation	4.074672	3.804176
Coefficient of Variation	2.637396	2.691665

As the above figures indicate, the DSI and S&P are at relatively the same position regarding risk and return according to the coefficient of variation test. However, it is interesting that according to these figures investors in the DSI accepted 0.06% less risk per unit of return for investing in socially responsible funds rather than the general market between 1900 and 1998. Although the difference is unquestionably small and, therefore, unable to support pro-SRI theory, it certainly contradicts the result expected by pro-market theory. Once again, the difference between the two portfolios appears to be negligible.

This figure, however, does not control for what is known as the “risk free rate,” or the average monthly return that an investor would receive if s/he invested in only 90-day treasury bills, the least risky of assets. For this comparison the Sharpe value is useful.

Sharpe’s Value (or Index) is an appropriate measure of risk exposure because it considers total risk and states results in terms of return. If applying socially responsible criteria to investment decisions limits the investment universe, then pro-market theory maintains that investors may subject themselves to otherwise diversifiable risk. The Sharpe Value gives the average risk premium (amount in excess of that obtained when investing in purely riskless assets) per unit of total risk. For this reason it represents a strong risk-adjusted measure of performance for investments in portfolios that might be under-diversified. The Sharpe Value is calculated by $S = [R_i - RFR] / V_i$. Where S is the Sharpe Value; R_i is the average monthly return on the portfolio of interest; RFR is the risk free rate (in this case the average monthly returns for 90-day T-Bills as reported in Ibboston’s *Stocks Bonds Bills and Inflation 1997 Yearbook*) and V_i is the standard deviation of returns to the portfolio squared. The Sharpe Values for the DSI and S&P 500 are as follows:

Table 3: Sharpe Value	DSI	S&P
Average Monthly Return	1.554960	1.413317
Risk Free Rate (Monthly)	0.390625	0.390625
Standard Deviation	4.074672	3.804176
Sharpe Value	0.2857491	0.268834

As the above table indicates, socially responsible investors are receiving a 29% risk premium (i.e. return) per unit of total risk while the general market returns only a 27% risk premium per unit of systematic risk. While the actual

significance to the average investor of such a small difference is debatable, it is certainly a surprising result when one considers that such a finding contradicts the basic efficient portfolio theory. Although the difference between the two portfolios is not enough to firmly support pro-SRI theory, it is enough to show, once again, that applying socially responsible criteria to investment decisions does

not necessarily negatively affect risk-adjusted returns.

VI. CONCLUSION AND FURTHER RESEARCH

The purpose of this study was to identify whether socially screened portfolio’s, as represented by the DSI, out-perform or under-perform the general market, as represented by the S&P 500. Contrary to pro-market theory and some past research, the above research indicates that socially responsible investors do not necessarily experience an opportunity cost for expressing their monetary conviction. As was expected, socially responsible funds do exhibit higher variation in returns. However, even though socially responsible portfolios are less diversified by pro-market and traditional standards, the above studies show that in the current market, socially responsible investments performed as well, if not minutely better, than the general market. The non-risk adjusted return for socially responsible investments was 0.13% higher than that of the general market and 2% higher on a risk-adjusted basis. The empirical evidence would therefore seem to indicate that, at least for the years 1990-1998, investors did not take a loss from applying social screens to their

investment decisions. The small difference between the two portfolios indicate that, contrary to pro-market *and* pro-SRI theory, the market does not seem to over or under-weight the importance of socially responsible investment screens to any significant degree. Therefore, socially responsible investors can pursue their moral goals without forsaking their financial goals. It should be noted, however, that this applies only to broad applications of screens and that the performance of different types of SRI's may differentiate from these results.

On a final note, the above research compiled all socially responsible investment vehicles into one category. It would be interesting to see how socially responsible growth funds perform relative to traditional growth funds, etc. It would also be interesting to see what types of monetary convictions are more lucrative, i.e. the relative performance of different types of social screens. Do strictly environmental, strictly "sin-free," or multiple screen funds perform better? Additionally, there are hundreds of ways in the financial world to assess risk and risk/reward characteristics. It would be informative to know how the general market and socially responsible investments perform relative to each other based on eight or even ten of these methods and then to assess the differences/appropriateness of each measure. Undoubtedly, in a world where confidence in political structures is waning and the power of transnational companies grows rampantly and unabated, the attractiveness of "voting with your dollars" will increasingly become an attractive option to the socially aware and investment conscious generations to follow. If it can be proven that socially responsible investing is in fact lucrative *and* effective, as it appears it may be, responsible companies may see more fit to respond to the demands of the common investor rather than the campaign dollar.

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Appendix A: Monthly Returns of the DSI and S&P 500

Mth-Yr	DSI	S&P	Mth-Yr	DSI	S&P	Mth-Yr	DSI	S&P
May-90	10.97	9.75	Apr-93	-4.553	-2.417	Apr-96	1.793	1.473
Jun-90	-0.75	-0.7	May-93	3.057	2.675	May-96	2.567	2.577
Jul-90	-2.65	-0.32	Jun-93	0.186	0.293	Jun-96	0.252	0.406
Aug-90	-9.79	-9.03	Jul-93	0.014	-0.402	Jul-96	-4.484	-4.453
Sep-90	-5.46	-4.92	Aug-93	3.974	3.794	Aug-96	2.971	2.124
Oct-90	-0.85	-0.37	Sep-93	-0.451	-0.767	Sep-96	5.877	5.621
Nov-90	8.08	6.44	Oct-93	1.898	2.069	Oct-96	2.27	2.737
Dec-90	3.54	2.74	Nov-93	-1.087	-0.953	Nov-96	7.822	7.591
Jan-91	5.33	4.42	Jan-94	2.616	3.4	Dec-96	-2.119	-1.957
Feb-91	7.06	7.16	Feb-94	-1.82	-2.72	Jan-97	7.474	6.208
Mar-91	4.52	2.38	Mar-94	-4.475	-4.36	Feb-97	0.686	0.802
Apr-91	-0.02	0.28	Apr-94	1.074	1.282	Mar-97	-4.442	-4.159
May-91	4.13	4.28	May-94	1.08	1.64	Apr-97	7.663	5.966
Jun-91	-4.863	4.57	Jun-94	-2.24	-2.45	May-97	5.441	6.138
Jul-91	5.519	4.68	Jul-94	2.72	3.28	Jun-97	3.787	4.397
Aug-91	3.14	2.35	Aug-94	4.37	4.1	Jul-97	8.892	7.943
Sep-91	-1.97	-1.67	Sep-94	-2.43	-2.45	Aug-97	-5.672	-5.542
Oct-91	1.032	1.343	Oct-94	1.83	2.25	Sep-97	5.533	5.453
Nov-91	-2.95	-4.042	Nov-94	-2.697	-3.671	Oct-97	-3.134	-3.291
Dec-91	12.87	11.434	Dec-94	0.556	1.461	Nov-97	6.131	4.587
Jan-92	-0.942	-1.857	Jan-95	3.373	2.6	Dec-97	1.832	1.69
Feb-92	1.622	1.282	Feb-95	4.114	3.879	Jan-98	2.111	1.132
Mar-92	-2.557	-1.947	Mar-95	2.475	2.953	Feb-98	7.476	7.186
Apr-92	0.796	2.914	Apr-95	2.499	2.93	Mar-98	4.253	5.133
May-92	1.103	0.537	May-95	3.888	3.952	Apr-98	0.69	1.04
Jun-92	-1.96	-1.45	Jun-95	3.194	2.352	May-98	-1.83	-1.74
Jul-92	4.659	4.085	Jul-95	3.406	3.334	Jun-98	5.16	4.062
Aug-92	-1.464	-2.047	Aug-95	0.355	0.272	Jul-98	-0.462	-1.063
Sep-92	2.16	1.18	Sep-95	4.026	4.199	Aug-98	-14.807	-14.436
Oct-92	2.36	0.35	Oct-95	0.206	-0.353	Sep-98	6.605	6.476
Nov-92	4.177	3.405	Nov-95	4.561	4.402			
Dec-92	1.804	1.227	Dec-95	0.822	1.879			
Jan-93	1.386	0.836	Jan-96	3.14	3.44	Av.Ret.	1.54496	1.413317
Feb-93	0.795	1.363	Feb-96	1.747	0.961	Std. Dev	4.074672	3.804176
Mar-93	2.279	2.11	Mar-96	0.196	0.958			

Appendix B: Over and Under- Weighted Industries of the DSI Relative to the S&P

*Underweighted industries in the DSI 400 Relative to the S&P 500
(As a % of Portfolio Market Value)*

International Oil	-4.49
Electric Utilities	-3.88
Drugs, medicine	-2.78
Aerospace	-2.03
Producers of goods	-1.72
Tobacco	-1.64
Foreign petroleum reserves	-1.52
Motor vehicles	-1.27
Chemicals	-1.21
Liquor	-1.15

*Overweighted Industries in the DSI 400 Relative to the S&P 500
(As a % of Portfolio Market Value)*

Nonfood Retail	6.45
Insurance (excluding life)	2.55
Services	2.25
Banks	2.11
Beverages	1.82
Miscellaneous finance	1.59
Publishing	1.41
Hotels, restaurants	1.21
Apparel, textiles	1.08
Life insurance	1.00