How Much Does It Pay to be Socially Responsible?

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Abstract

How much does it pay to be socially responsible? In order to answer this question, we combined two components from two different streams of business scholarship. We employed the KLD SOCRATES Social Ratings database as our measure of corporate social performance (CSP), and we applied Carhart's four-factor model, a standard extension of the Fama-French 3-factor model in the field of finance, to quantify the relationship between CSP and financial performance. Our results show that, for large US corporations belonging to the S&P 500 Index, the stocks of companies in the top CSP quantile outperform those of companies in the bottom CSP quantile by as much as 6.24 percentage points annually for years 1991 through 2006, after adjusting for standard risk factors such as market risk, size, book to market ratio, and stock momentum. For a company in the S&P 500 Index with average market capitalization, this translates to $1.28 billion in additional shareholder wealth.

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Introduction

Recently, there has been a growing interest in corporate social responsibility (CSR). One of the main focuses of these inquiries has been the relationship between the outcome of CSR, i.e. corporate social performance (CSP) and corporate financial performance (CFP). According to the instrumental stakeholder theory, CSR is supposed to improve firm performance (Donaldson & Preston, 1995), where financial performance can be measured in survival, profitability in accounting terms, or stock valuation. The interest in this topic has produced more than a hundred

articles, the majority of which point to a positive relationship between CSP and CFP (Griffin & Mahon, 1997; Margolis *et al.*, 2007; Margolis & Walsh, 2003; Orlitzky *et al.*, 2003). Their main question can be stated as follows: "Does it pay for a corporation to be socially responsible?" This paper builds on the existing literature and goes one step further by adding the following question: "*How much does it pay to be socially responsible?*" In order to answer this new question, we combined two components from two different streams of business scholarship. We employed the KLD SOCRATES Social Ratings database, a standard CSP measure in the management discipline, as our measure of CSP, and we applied Carhart's four-factor model, a standard extension of the Fama-French three-factor model in the field of finance, to quantify the relationship between CSP and financial performance (Carhart, 1997; Fama & French, 1993; 1997). Our results show that, for large US corporations belonging to the S&P 500 Index, the stocks of companies in the top CSP quantile outperform those of companies in the bottom CSP quantile by as much as 6.42 percentage points annually for years 1991 through 2006, after adjusting for market risk, size, book to market ratio, and stock momentum. Given the fact that average market capitalization of an S&P 500 company during the sample period is about $20 billion, a 6.42% difference in annual stock return implies $1.28 billion in extra shareholder wealth in a given year.

The major contributions of this paper are threefold: first, most of the existing literature investigating the relationship between CSP and CFP use panel data regressions with a short time lag, such as one year between the independent and dependent variables (Surroca *et al.*, 2010; Waddock & Graves, 1997). However, there is no theoretical ground that the effect of CSP on CFP should last only short-term. In this paper, we fill this gap by using stock returns as our dependent variable in the four-factor model. Stock price is widely regarded as the best predictor of future profit stream; therefore, it provides a forward-looking, long-term measure of CFP. Second, it is difficult to establish a causal relationship using the panel data regression results because there is a strong possibility that the results suffer from firm-level unobserved heterogeneity. By constructing stock portfolios based on CSP and examining the performance of portfolios rather than that of individual stocks, this method reduces the problem caused by the aforementioned firm-specific unobserved heterogeneity; any firm-specific heterogeneous characteristics are supposed to be diversified away within each portfolio. Therefore, this portfolio approach can provide a better causal inference than an analysis based on firm-level observations. Third, this method can actually quantify the benefit of CSP to the firms in terms of stock return, after accounting for known factors that may also affect the stock return, namely, market risk, size, book-to-market ratio, and momentum. Simple stock return comparison does not provide meaningful information because the stock market rewards higher risk stocks with higher returns. Asset pricing literature provides a well established methodology for controlling the systematic risks, and we adapt that methodology in this study[1].

This paper progresses in the following way: in the next section, we develop our hypotheses by building on the existing literature. Then we discuss the data and our methodology, which is followed by our empirical results. Discussion and conclusion will follow.

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[1] Even though finance scholars are debating whether other factors such as liquidity also systematically affect stock price, Carhart's four-factor model is the most widely used methodology in current asset pricing literature, and we are convinced that our estimates quantify the return associated with CSP reasonably closely.

Literature and Hypotheses

Last year, we observed two of the most prominent global corporations in their respective industries, Toyota and BP, stumble due to mishandling of stakeholder issues, such as product safety in Toyota's case and environmental protection in BP's case. There are several CSR dimensions related to different stakeholder groups, such as natural environment, customer protection, employee relations, community relations, corporate governance, human rights and ethics, and conducting controversial businesses (Carroll, 1979; Wood, 1991). An extensive body of literature on CSR has provided logical grounds for how and why CSP may affect CFP in various aspects. In the following paragraphs, we would take a brief look at how each aspect of CSR can be related to CFP.

First, managing environmental concerns proactively can lower the costs of complying with existing and future environmental regulations, even though it can increase operating costs in the short-term (Delmas, 2001; Russo & Fouts, 1997). Managing employee relations proactively can reduce employee turnover and absenteeism and enhance productivity by improving commitment and effort. Increased diversity in the workforce means that the firm is not constrained by race or gender in selecting the best people for its jobs, thereby enabling the company to recruit better talent (Berman *et al.*, 1999).

It is also noted that managing a good inter-organizational relationship with a firm's suppliers can be the source of a competitive advantage (Dyer & Singh, 1998). Maintaining a good relationship with the community in which the firm operates can not only lessen the likelihood of a negative media event such as picketing, but also create the positive side effect of attracting desirable residents (Tiebout, 1956; Waldfogel, 2003). Similarly, customers may take actions to reward or punish a firm's policies in an attempt to change or reinforce such activities, thereby creating a positive link between CSP and CFP (Elfenbein & McManus, 2010; Lev *et al.*, 2010; Rowley & Berman, 2000; Schuler & Cording, 2006).

Shareholders are also influential stakeholders. Gompers, Ishii, and Metrick (2003) show that companies with a governance structure that protects shareholder rights exhibit better financial performance. There are also areas of social performance that are more closely related to the normative aspect of CSR, such as human rights issues and involvement in controversial businesses, which belong to the category of broad responsibility toward society (Hong & Kacperczyk, 2009; Wood, 1991). Following these arguments, we hypothesize that CSP is rewarded by the stock market.

Hypothesis 1. Overall, CSP is rewarded by the stock market.

It is possible to break down CSP into two parts: negative and positive (Mattingly & Berman, 2006; Moon & Bailey, 2010; Strike *et al.*, 2006). Negative CSP items can be either intrinsic (e.g., products such as alcohol and tobacco) within the business or extrinsic (e.g. tax disputes with federal or local governments or strikes), whereas positive CSP items such as engaging in philanthropy or being an R&D leader are the result of conscious efforts by the firm. A firm with low CSP in one part does not necessarily have low CSP overall. For example, a firm with intrinsically negative products may behave socially responsibly by providing charitable donations or being environmentally friendly. Therefore, a natural extension from Hypothesis 1 is to separately examine the effect of negative and positive CSP. By doing so, we can investigate

which CSP, positive or negative, has the stronger effect on CFP and examine whether the overall relationship between CSP and CFP is driven by either positive or negative CSP.

Frooman (1997) finds that firms deemed socially irresponsible also perform poorly in terms of profitability. A firm's negative CSP could harm a wide range of stakeholders, including consumers, employees, suppliers, and community members. This may bring immediate attention from stakeholders, the media, or social activists, which would affect firm value negatively. For example, inherently inferior firms in terms of negative CSP may always have to spend extra resources to resolve possible conflicts. Therefore, we expect that negative CSP is negatively associated with CFP. On the other hand, a company that achieves high marks in the positive side of CSP, such as charitable giving or generous retirement benefits, is spending its resources more on CSR-related programs and activities. In doing so, the company is directing resources away from its core operations, and that could put it at a financial disadvantage, as compared to competitors with similar capabilities and resources (Russo & Fouts, 1997). Therefore, we hypothesize that the stock market will reward efforts to offset or prevent negative CSP but may not do likewise for positive CSP. Following these arguments, we hypothesize the following:

Hypothesis 2. Low negative CSP is rewarded by the stock market.
Hypothesis 3. High positive CSP may not be rewarded by the stock market.

Methods

Data

Our sample is composed of S&P 500 firms that belonged to the KLD SOCRATES Social Ratings database from 1991 through 2006. Even though the coverage of the database is wider than S&P500, we restrict our attention primarily to the companies that belonged to the S&P 500 Index in each year of the sample period, as the number and composition of companies in the KLD SOCRATES Social Ratings database have continuously changed during the sample period, and we are trying to keep this trend from affecting our results.[2] The results from the analysis that utilizes the entire KLD database will also be discussed in order to provide a robustness check to our main results. We collected accounting data from the Compustat North America database, stock market data from the CRSP database, and social performance data from the KLD SOCRATES Social Ratings database.

The KLD Social Ratings database is published by KLD Research & Analytics, Inc. (now a member of the RiskMetrics Group), which specializes in measuring CSP. The KLD Social Ratings data are the most influential measure of CSP, and many investment managers refer to KLD's recommendations when citing social screening. The KLD Social Ratings data are also the most frequently cited source of CSP in academic research (Harrison & Freeman, 1999; Hillman & Keim, 2001; Hull & Rothenberg, 2008).

The KLD data cover approximately 80 indicators in seven major qualitative issue areas over the sample period: community, corporate governance, diversity, employee relations,

[2] The KLD database has expanded substantially since 2000. From its creation in 1991 through 2001, it covered the social ratings data of 650 large companies. In 2001 it expanded to include 1,100 companies, including the entire Russell 1000 Index companies. In 2003, it expanded once again to include a total of 3,100 companies, covering all of the Russell 2000 Index and the Broad Market Social Index.

environment, human rights, and product quality and safety. In addition, KLD data provide information for involvement in the following "controversial business issues:" alcohol, gambling, firearms, military, nuclear power, and tobacco. Business involvement in any of these sectors results in a negative indicator. Each issue area has a number of strength and concern items, where a binary measure indicates the presence or absence of that particular strength or concern. For example, the community category contains seven strength items (charitable giving, innovative giving, non-U.S. charitable giving, support for housing, support for education, volunteer programs, and other strength) and four concern items (investment controversies, negative economic impact, tax disputes, and other concern). Each year, KLD evaluates the companies in the database on each item through various sources, such as public records and media reports, monitoring of corporate advertising, surveys, and on-site evaluations. The complete list of strength and concern items by category is provided in the appendix.

We define the KLD index as the sum of all strength items minus the sum of all concern items. This is the simplest way of aggregating the social ratings data into a single index. In this paper, we group different companies into quantiles according to the KLD index, and the grouping is quite robust to different methods of index construction.

In addition to the KLD index, we also define the KLD positive ratings index as the sum of all strength items in the KLD database and the KLD negative ratings index as the sum of all concern items in the KLD database (Mattingly & Berman, 2006; Strike et al., 2006). Therefore, the KLD index is the difference between the KLD positive ratings index and the KLD negative ratings index. In a robustness check, we also define a sub-index that captures the stakeholder management dimension of social performance (KLD SM Index), following Hillman and Keim (2001). This index is the net sum of items in five stakeholder management categories: employee, diversity, community, environment, and product safety.

Variables and Specifications

We follow Carhart (1997) and use the four-factor model with the following specifications:

$$R_t = \alpha + \beta_1 RMRF_t + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 MOM_t + \varepsilon_t, \quad (1)$$

where R_t is the excess return to a stock in month t, $RMRF_t$ is the month t value-weighted market return minus the risk-free rate, SMB_t (small minus big) is the month t returns on zero-investment factor-mimicking portfolios designed to capture size effect, HML_t (high minus low) is the month t returns on zero-investment factor-mimicking portfolios designed to capture the effect of book-to-market ratio, and MOM_t is the month t returns on zero-investment factor-mimicking portfolios designed to capture momentum effect. The estimated intercept α captures the abnormal return in excess of what could have been obtained by passive investments in the factors.

Table 1 shows the summary statistics of selected variables. In comparing the firms in the top quantile to those in the bottom quantile, firms in the top quantile are larger and have more actively traded stocks but also have a lower book-to-market ratio. Therefore, controlling for size and book-to-market factors seem to be essential in comparing the stock performance of high CSP and low CSP companies, given that size and book-to-market are known to be important priced factors in asset pricing literature (Carhart, 1997; Fama & French, 1993).

----------Insert Table 1 about here----------

Results

Main Results

Table 2 presents the results of four-factor regression following specification (1). The top row reports the difference in abnormal returns between the top quantile and the bottom quantile. It corresponds to the abnormal return of investing equally in each firm in the top portfolio while selling each firm in the bottom portfolio, after controlling for the effects of the market return, book-to-market ratio, size, and stock momentum. The result is striking: such an investment strategy would yield the abnormal return of 52 basis points every month, which translates to 6.42% in annual abnormal returns.

The results also show the tendency for the alpha to decrease as we move from the top portfolio to the bottom. A Spearman rank-correlation test of the null hypothesis that there is no correlation between the KLD index quantile ranking and alpha ranking yields a test statistic of 0.6862 and is rejected at the 5% level. These results suggest that good CSP is clearly rewarded by the stock market and that the relationship is economically meaningful as well. Therefore, our first hypothesis is supported.

----------Insert Table 2 about here----------

Table 3 presents the results of four-factor regression using 5-quantile portfolios constructed from the KLD positive and negative ratings indices. When portfolios are sorted by the KLD positive ratings index, as shown in the top panel of Table 3, there is no statistically significant difference in the alpha between the top portfolio and the bottom portfolio. In fact, the bottom portfolio shows a significantly positive abnormal return of 18 basis points, something not present in any other portfolios. This shows that boasting a high positive CSP does not necessarily translate to high stock performance, a fact that supports our third hypothesis.

In the bottom panel of Table 3, portfolios are sorted by the KLD negative ratings index; the difference between top and bottom is 31 basis points, and it is statistically significant at the 5% level. In addition, there is a visible tendency for upper portfolios with a lower negative ratings index to show higher alphas. These results imply that displaying a low negative CSP is rewarded by the stock market, supporting our second hypothesis.

----------Insert Table 3 about here----------

Conclusion and Discussion

In this paper we try to answer whether and how much it pays for a corporation to be socially responsible. Our answer is striking: not only does it pay to be socially responsible, but it pays handsomely. For large U.S. corporations belonging to the S&P 500 index during the 1991-2006 period, those that are most socially responsible exhibit a 6.42% extra stock return annually over firms that are the least socially responsible after adjusting for market risk, size, book to

market ratio, and stock momentum, and this finding is robust to industry adjustments and to the usage of different investment strategies, a different sample, or a different CSP measure. By applying the average market capitalization of the S&P 500 index firms in this period, this turns out to be about $1.28 billion more in extra shareholder wealth for the most socially responsible companies as compared to those of the least socially responsible companies. Resorting to a widely-used CSP measure and a well-established methodology in finance, we claim that ours is the most accurately quantified benefit of corporations' being socially responsible to date. When we break down CSP into positive and negative parts, we can clearly see that having a low negative CSP is rewarded by the stock market. On the other hand, having a high positive CSP is not rewarded by the stock market.

The contributions of this paper are threefold. The first contribution is that, by using stock return as our dependent variable, we are able to measure the long-term effect of CSP on CFP. The second contribution is methodological. By constructing stock portfolios based on CSP and examining the performance of portfolios rather than that of individual stocks, our method reduces the problem caused by the firm-specific unobserved heterogeneity inherent in standard regression analysis, because any firm-specific heterogeneous characteristics are supposed to be diversified away within each portfolio. Therefore, this portfolio approach can provide a better causal inference than analysis based on firm-level observations, which all existing literature investigating the relationship between CSP and CFP have been resorting to so far. The final contribution is that our method can actually quantify the benefit of being socially responsible in terms of stock return, after accounting for known factors that may also affect the stock return systematically, specifically market risk, size, book-to-market ratio, and momentum.

The managerial implication of our findings is that our estimate can serve as the ceiling that an average S&P 500 corporation would be willing to spend on CSR operations. Even though the management of a corporation would agree to the idea that good CSR is also good for the bottom line in the long run, they still need to determine how much to spend on CSR-related activities. By coming up with a concrete number in terms of stock returns associated with being socially responsible, this paper provides the upper boundary for such expenditures.

Our work also has a strong implication with regard to socially responsible investment (SRI). Our results imply that there exists an arbitrage opportunity in using CSP for investors. By selling the bottom portfolio short and buying the top portfolio, an investor can risk zero dollars of his or her own money and make a positive return. In this regard, CSP is clearly a factor in stock pricing, and SRI seems like a good investment strategy if it is based on solid CSP measurements. Some readers may wonder about the precise meaning of alpha, the monthly abnormal return. It can be explained as the excess return after controlling for widely accepted "risk factors" that must be priced into stocks, such as market risk, size, book-to-market ratio, and stock momentum. Therefore, it is a more sophisticated measure of excess return, as compared to the ones measured in the capital asset pricing model (CAPM), as in Barnett & Salomon (2006) and Godfrey *et al.* (2009).

Finally, we would like to mention an unresolved issue in our results. One notable aspect of our findings is that our second-highest CSP quantile portfolio typically shows relatively low abnormal return compared to the third- or fourth-highest CSP quantile portfolios. At this point, we do not yet have an explanation for this phenomenon. This may be due to the fact that the firms in the second-highest CSP quantile are failing to receive public recognition even though they are diverting a substantial amount of corporate resources to CSR-related activities. It could

be conjectured that, in the minds of consumers and investors, there seems to be room for only 50 or so good corporate citizens but not more. The veracity of this conjecture will be something we must leave for future research.

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Table 1. Summary Statistics Correlation with KLD Index

	Correlation with KLD Index	Mean, Bottom Quantile (KLD≤-4)	Mean, Top Quantile (KLD≥4)	Difference
Book to Market	-0.0739***	0.6359	0.4688	-0.1671***
				(-6.19)
Total Assets	0.0774***	34,385	63,420	29,035***
				(4.20)
Price	0.0659***	43.712	49.574	5.862***
				(3.92)
Market Cap.	0.1052***	21,025	40,015	18,990***
				(5.74)
Volume	0.1257***	397,773	913,382	515,609***
				(6.73)

Note: t-statistics in parentheses; *, **, *** significant at 5%, 1%, and 0.1%, respectively;
Book to Market = Book value of common equity / Market value of common equity = (Book value of common equity + deferred taxes) / End of calendar year market cap; Total Assets (in million USD); Price = End of calendar year closing share price (USD); Market Cap = End of calendar year market cap (in million USD); and Volume = Average monthly trading volume

Table 2. Performance-Attribution Regressions for 9-Quantile Portfolios

	KLD Index	**alpha**	**RMRF**	**SMB**	**HML**	**MOM**
Top minus Bottom		0.0052***	-0.12167**	-0.11387**	-0.62301***	0.00283
t-stat		(2.79)	(-2.38)	(-2.16)	(-9.54)	(0.08)
Top	≥4	0.0039***	0.9814***	-0.0350	0.1461***	-0.1736***
t-stat		(3.17)	(28.24)	(-0.99)	(3.18)	(-6.89)
8th	3	0.0006	1.0034***	-0.0408	0.3537***	-0.0974***
t-stat		(0.45)	(26.91)	(-1.06)	(7.42)	-(3.57)
7th	2	0.0031**	1.0255***	0.0050	0.3208***	-0.0781**
t-stat		(2.40)	(28.90)	(0.14)	(7.08)	(-3.01)
6th	1	0.0017	1.0976***	-0.0122	0.3131***	-0.1829***
t-stat		(1.45)	(33.60)	(-0.36)	(7.50)	(-7.66)
5th	0	0.0004	1.0775***	0.1262***	0.3626***	-0.1426***
t-stat		(0.38)	(38.15)	(4.34)	(10.05)	(-6.91)
4th	-1	0.0016	1.0669***	0.1674***	0.2850***	-0.2374***
t-stat		(1.55)	(37.90)	(5.77)	(7.92)	(-11.53)
3rd	-2	0.0004	1.1165***	0.1663***	0.4301***	-0.2408***
t-stat		(0.33)	(30.39)	(4.39)	(9.16)	(-8.97)
2nd	-3	0.0007	1.0454***	0.0135	0.4312***	-0.1931***
t-stat		(0.43)	(24.37)	(0.30)	(7.87)	(-6.16)
Bottom	≤-4	-0.0013	1.1030***	0.0788**	0.7691***	-0.1764***
t-stat		(-0.91)	(28.63)	(1.99)	(15.63)	(-6.26)

Table 3. Performance-Attribution Regressions for 5-Quantile Portfolios by KLD Positive Ratings Index and KLD Negative Ratings Index

	KLD Positive	alpha	RMRF	SMB	HML	MOM
Top minus Bottom		-0.0007	-0.0827**	-0.1753***	-0.1095***	0.0037
t-stat		(0.77)	(-3.12)	(-6.42)	(-3.24)	(1.92)
Top	≥4	0.0011	1.1064***	0.1330***	0.4107***	-0.1847***
t-stat		(1.06)	(40.16)	(4.69)	(11.67)	(-9.17)
4th	3	0.0007	1.0920***	0.0901**	0.4311***	-0.1988***
t-stat		(0.62)	(35.73)	(2.86)	(11.04)	(-8.90)
3rd	2	0.0015	1.0467***	0.1168***	0.3882***	-0.1804***
t-stat		(1.48)	(37.97)	(4.11)	(11.02)	(-8.95)
2nd	1	0.0007	1.0851***	0.0579	0.4159***	-0.1675***
t-stat		(0.62)	(36.05)	(1.87)	(10.82)	(-7.61)
Bottom	0	0.0018*	1.0237***	-0.0422	0.3011***	-0.1474***
t-stat		(2.13)	(43.94)	(-1.76)	(10.12)	(-8.66)

	KLD Negative	alpha	RMRF	SMB	HML	MOM
Top minus Bottom		0.0031*	-0.1381***	-0.0273	-0.1397**	0.0830**
t-stat		(2.01)	(-3.26)	(-0.63)	(-2.58)	(2.68)
Top	0	0.0020	0.9154***	-0.0018	0.4519***	-0.0958**
t-stat		(1.32)	(21.94)	(-0.04)	(8.48)	(-3.14)
4th	1	0.0023*	1.0571***	0.0371	0.3060***	-0.0980***
t-stat		(2.14)	(36.55)	(1.25)	(8.28)	(-4.64)
3rd	2	0.0016	1.0984***	0.1481***	0.1733***	-0.2528***
t-stat		(1.52)	(37.38)	(4.89)	(4.62)	(-11.77)
2nd	3	0.0019	1.1352***	0.1154***	0.3639***	-0.2597***
t-stat		(1.63)	(35.32)	(3.49)	(8.86)	(-11.06)
Bottom	≥4	-0.0011	1.0534***	0.0255	0.5916***	-0.1788***
t-stat		(-1.01)	(35.54)	(0.83)	(15.62)	(-8.25)