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2008

WORKING PAPER SERIES

ISSUE THREE

NO. 08-003

MARKETING SCIENCE INSTITUTE

MSI Reports

2008

WORKING PAPER SERIES

ISSUE THREE

NO. 08-003

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The Debate over Doing Good: Corporate Social Performance and Firm-idiosyncratic Risk

Xueming Luo and C.B. Bhattacharya

By linking corporate social performance, advertising, and R&D to firm-idiosyncratic risk, this study finds that firms gain by "doing good." Higher levels of corporate social performance boost firm legitimacy to stakeholders, thus helping to stabilize firm stock prices.

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Report Summary

Are firms financially rewarded or punished for excelling in social responsibility initiatives? The debate over "doing good" has assumed critical significance in practitioners' minds, as more and more companies engage in such initiatives. This study seeks to address this debate by relating corporate social performance (CSP) to stock price volatility, a widely accepted measure of firm stock risk.

The authors argue that CSP boosts a firm's legitimacy in the eyes of stakeholders, thereby helping to stabilize firm stock prices.

They develop a multivariate model linking corporate social performance, advertising, and R&D to firm-idiosyncratic risk, and test it using data for a sample of *Fortune* magazine's "America's Most Admired Companies" and from Compustat and the Center for Research in Security Prices.

As expected, higher levels of CSP help reduce firm-idiosyncratic risk by boosting firm legitimacy to stakeholders and providing an insurance-like protection to shareholders. Further, advertising investments increase the salutary negative impact of CSP on idiosyncratic firm risk.

Because firms often face limited resources, Luo and Bhattacharya suggest that it may not be feasible to pursue all strategic goals at the same time. They find that simultaneously pursuing higher R&D and higher advertising and CSP levels induces higher firm-idiosyncratic risk.

Overall, this study suggests that the impact of CSP on firm-idiosyncratic risk is heterogeneous and different across firms with various levels of advertising stock and R&D intensity. To the extent that CSP can help stabilize a company's cash flow stream with reduced vulnerability, managers and investors can enjoy steady future stock returns by strategically promoting CSP. Thus, CSP merits careful consideration as part of the firm's repertoire of business and marketing strategy instruments, such as advertising and R&D. ■

Introduction

Corporate social responsibility (CSR) is a topic of hot debate in the business world today. On the one hand, a rapidly growing number of companies are "neck deep in social responsibility initiatives, spending billions, tackling everything from AIDS in Africa to deforestation in Brazil" (Yang 2007; Bonini, Mendonca, and Oppenheim 2006). Managers presume that good corporate social performance (CSP), earned by engaging in the "right" initiatives (e.g., cause-related marketing, corporate philanthropy, green marketing, minority support programs), enhances firms' performance outcomes. Indeed, existing research has suggested that CSP is a powerful "intangible asset" that delivers various benefits, such as "insurance-like" protection (Godfrey 2005, p. 777), customer-firm identification, and favorable firm image (Brown and Dacin 1997; Luo and Bhattacharya 2006), all of which help boost firm performance. In short, proponents claim that the question about investments in CSR has moved from "whether" to "how" (Smith 2003).

On the other hand, plenty of skepticism abounds on the merits of CSR. Along with the rise in CSR initiatives, there has been a growing number of detracting voices. According to the Friedmanesque economic view, shareholders entrust managers with investments solely to maximize long-term returns, not so that managers can use the proceeds to underwrite their urge to better the world (Friedman 1970). Indeed, because social responsibility programs can be costly and drain a firm's limited financial resources, critics claim that CSP is profitable neither in the short run nor in terms of improved long-term stock wealth.

No wonder then, that social responsibility "seems like an apple-pie virtue, but it's actually quite controversial" (Grow, Hamm, and Lee 2005, p. 77). At the heart of this provocative debate, the burning question on companies' minds today is whether social responsibility done right is worthwhile: does it hurt or benefit firms financially to excel in social responsibility initiatives, particularly in a context where CSR is typically offered to the market as part of an array of strategic levers, such as advertising and R&D, that compete for firm resources? Does the financial community recognize the importance and value of an intangible asset such as a company's performance in the corporate responsibility arena? Answers to these questions are important and powerful, because both investors and management are eager to know whether the market values CSP and thus whether the "goodwill refund" for investing in social responsibility is in the mail.

This study seeks to disentangle this debate by relating CSP to stock price volatility, a widely accepted measure of firm stock risk (Hamilton 1994). In responding to numerous recent calls for marketing to be relevant to the world of finance (Marketing Science Institute 2006; McAlister 2006), most extant studies have looked at whether marketing variables influence the size and growth of stock returns (Gupta, Lehmann, and Stuart 2004; Luo and Donthu 2006; Rust et al. 2004). However, less attention has been paid to the risk or volatility associated with stock returns. This lack of attention in the literature is significant because a firm's long-term shareholder value is influenced not only by the expected size and growth of stock returns (i.e., the first moment) but also by stock price volatility (i.e., the second moment; Srivastava, Shervani, and Fahey 1998). Specifically, stock volatility is an important metric, as higher volatility implies greater investment risk and more vulnerable future cash flows (Markowitz 1952; Fama and French 1992). Thus, without addressing volatility, financially savvy managers are not sure "whether expected returns offer adequate compensation for the inherent level of risk" (Anderson 2006, p. 587).

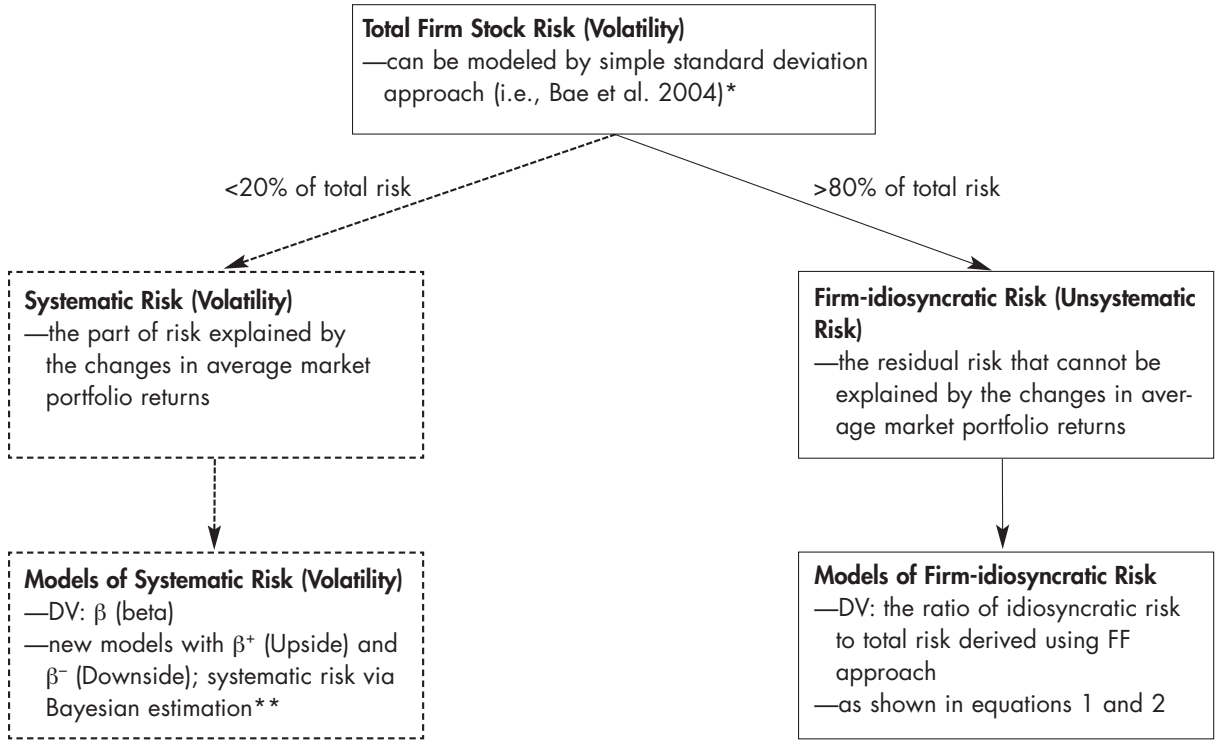
Against this background, we are among the first in marketing research to show that CSP

can affect firm-idiosyncratic risk. We argue that by boosting a firm's legitimacy in the eyes of stakeholders and providing an insurance-like protection to shareholders, CSP helps reduce firm-idiosyncratic risk, and we demonstrate this result even after controlling for a host of accounting, financial, and marketing variables. Additional analyses show that CSP also reduces firm systematic risk (McAlister, Srinivasan, and Kim 2007), adding more robust evidence for the stock risk implications of CSP. To the extent that high stock risk is undesirable, our findings offer practitioners a strategic lever, i.e., engaging in CSR practices like cause-related marketing in order to manage financial risk surrounding a firm's stock price. Our research also extends the literature by suggesting that the impact of CSP on firm-idiosyncratic risk is heterogeneous and different across firms with various levels of advertising stock and R&D intensity. Specifically, we find that the salutary impact of CSP on idiosyncratic risk is moderated by advertising and R&D, two marketing instruments that not only signal a firm's identity to the market but also compete for firm resources. Thus, our results help set the debate over doing good within the overall context of a firm's marketing strategy.

Before proceeding further, it is worth noting that over the years, there have been a few sporadic attempts in the finance and management literatures to relate CSR to firm risk. For example, McGuire, Sundgren, and Schneeweis (1988) compute correlation coefficients to show that both the standard deviation of total return as well as systematic risk (i.e., beta) are *negatively* correlated with firms' CSR ratings (as measured by firms' responsibility to the community and to the environment). Yet, their regression analyses show that CSR bears a *negative* relationship to the standard deviation of total return and a *positive* relationship to systematic risk. The second study in this area is by Boutin-Defresne and Savaria (2004), who conduct a correlational analysis on the Canadian Social Investment Database to show that a portfolio of "responsible firms" have lower idiosyncratic risk compared with a corresponding portfolio of "non-responsible" firms. But Boutin-Defresne and Savaria (1) did not conduct multivariate tests regarding the statistical significance of this difference in the context of advertising or R&D and (2) failed to explicitly control for various finance and accounting variables that are found to influence stock risk in the literature. Finally, Orlitzky and Benjamin (2001) conduct a meta-analysis and seem to support an overall negative relationship between CSP and firm risk.

The aforementioned studies raise important questions for marketing scholars who want to work on the marketing-finance interface. For example, will the negative relationship between CSP and firm risk hold in the presence of strategic marketing levers such as advertising and R&D? Specifically, is the relationship between CSP and firm risk different for firms that spend a lot on advertising and/or R&D versus those that don't? To our knowledge, these issues have not been addressed by McGuire, Sundgren, and Schneeweis (1988), Boutin-Defrense and Savaria (2004), or any other study in the literature. Second, will the negative relationship between CSP and firm risk hold when, rather than looking at the standard deviation of stock return and beta based on the simple market model with one market risk factor as McGuire, Sundgren, and Schneeweis (1988) and Boutin-Defrense and Savaria (2004) did, we decompose total volatility into two components—idiosyncratic and systematic, based on Fama-French asset-pricing models (with multiple market risk factors)? Third, rather than using the pair-wise correlation coefficients, we are specifically interested in developing a multivariate model in which firm risk is explained by prior CSP and other marketing variables after accounting for a host of finance and accounting fundamental variables. So, in other words, will the relationship hold when we model the incremental impact of lagged CSP, advertising, and R&D on future idiosyncratic

Figure 1
Flow Chart of Firm Stock Risk



Note: Solid line designates support from the finance literature for the models used to implement the data analyses for the main purpose of this study (CSP and firm-idiosyncratic risk). FF = Fama-French.

*Total Risk (Volatility) s.d. = $\sqrt{\frac{1}{n}\sum_{i}^{n}(r_i - r_{mean})^2}$

**Upside systematic risk: $\beta^+ = \frac{\text{cov}(r_i, r_m \mid r_m > r_f)}{\text{var}(r_m \mid r_m > r_f)}$, downside systematic risk: $\beta^- = \frac{\text{cov}(r_i, r_m \mid r_m < r_f)}{\text{var}(r_m \mid r_m < r_f)}$, where r_i is stock return for firm i; r is the average market return; and r_f is the risk-free rate according to FF4 model (Ang, Chen, and Xing 2007, p. 24).

and systematic risk? In essence, this study provides us a unique opportunity to do a rigorous analysis of the relationship between CSP and firm risk (both idiosyncratic and systematic) in the presence of marketing (i.e., advertising and R&D) as well as various finance and accounting variables.

In what follows, we first review the finance literature on stock risk. We then develop a set of hypotheses linking CSP, advertising, and R&D to firm-idiosyncratic risk. This framework is tested with secondary datasets: We marry CSP data for a sample of *Fortune* magazine's "America's Most Admired Companies" (MAC) with other marketing and financial data from Compustat and Center for Research in Security Prices (CRSP). We then look at the relationship between CSP and systematic risk, following the model of McAlister, Srinivasan, and Kim (2007). We conclude with a discussion of the findings' implications for theory and practice.

Background on Firm Risk

Firm stock risk is a fundamental metric in finance (Hamilton 1994). Greater risk as implied by increased firm stock price volatility

may suggest vulnerable and uncertain cash flows in the future, which not only throws corporate capital budgeting into disarray but also induces higher costs of capital financing, thus damaging firm stock wealth in the long term. As shown in the flow chart of Figure 1, total risk or volatility of a firm has two parts: systematic and idiosyncratic. Systematic refers to the firm's sensitivity to the changes in market returns or to news of broad market changes, like inflation, that are common to all stocks. Idiosyncratic (our focus in this study) reflects the risk associated with firm-specific strategies like CSP after the marketwide variation is accounted for.

Recently, financial economists Ang et al. (2006) empirically show that firm-idiosyncratic risk is priced by investors in financial markets. These authors show that, all else being equal, "there is a strongly significant difference of –1.06% per month between the average returns of the quintile portfolio with the highest idiosyncratic volatility and the quintile portfolio with the lowest idiosyncratic volatility stocks" (p. 261). In other words, firm-idiosyncratic risk is related to firm value. Further, firm-idiosyncratic risk also accounts for more share of total stock risk. Goyal and Santa-Clara (2003) report that "idiosyncratic risk constitutes almost 85% of the average stock variance measure, while systematic risk constitutes only 15%" (p. 980). Echoing this, Gaspar and Massa (2006) find that "the share of idiosyncratic volatility is about 81%, while that of systematic volatility is only about 19%" (p. 3131).

Indeed, due to asymmetric information, market inefficiency, and transaction costs, Brown and Kapadia (2007) note that "corporate risk managers pay attention to and carefully manage unsystematic risk" (p. 2). As such, firm-idiosyncratic risk does matter in stock markets, and there is robust evidence supporting the importance of examining firm-idiosyncratic risk for managers and investors alike. In fact, a rapidly expanding stream of research in finance relates unsystematic risk to firm profitability (Wei and Zhang 2006), institutional ownership (Xu and Malkiel 2003), growth options (Cao, Simin, and Zhao 2007), new listings (Brown and Kapadia 2007), and corporate governance (Ferreira and Laux 2007).

Given this financial value of firm-idiosyncratic risk, our primary focus here is on CSP as a driver of firm-idiosyncratic risk. In doing so, we follow a finance study by Ferreira and Laux (2007). Particularly, Ferreira and Laux suggested in a comprehensive study that firm-idiosyncratic risk is related to the following factors (all of which we will control for):

- Profitability, measured as return on asset: Because profitability has information content for firm future cash-flow stream, it would have a significant impact on firm-idiosyncratic risk.
- Profits volatility, measured as the volatility of return on asset: Because volatility of profits can signal the uncertainty of firm future cash-flows, it would affect firm-idiosyncratic risk.
- Leverage, measured as the ratio of long-term debt to total assets: Because a firm's capital structure with debt financing may affect firm future cash-flows via interest payment, leverage would influence firm-idiosyncratic risk.
- Market-to-book ratio, measured as the ratio of market value of equity to book value of equity: This ratio captures the value of intangible assets, which may also have some implications for firm-idiosyncratic risk.
- Market capitalization, measured as the log of total equity capitalization: This variable controls for size effects on firm-idiosyncratic risk.
- Dividend pay, measured as dividend dummy that equals 1 if the firms pay dividends and zero otherwise: Because dividend payment is valued by investors and shareholders, it would influence firm-idiosyncratic risk.
- Firm age, measured as the log of the number of months since the stock's inclusion in

CRSP: This variable controls for the effects of organizational cycle and evolution on firm-idiosyncratic risk.

- Firm diversification, a dummy variable that equals 1 if a firm operates in multisegments and 0 otherwise: Diversification controls for the effects of firm strategic choices and diversifying operations on firm-idiosyncratic risk.

Therefore, we control for these predictors of firm-idiosyncratic risk when relating CSP to firm-idiosyncratic risk. We propose our hypotheses in the next section.

Hypothesis Development

Corporate social performance

By and large, social responsibility initiatives refer to corporate prosocial behaviors. These initiatives are manifested in a wide variety of organizational programs ranging from cause-related marketing, corporate philanthropy, and green marketing practices to any activities that are intended to protect and improve societal welfare. While firms invest in social responsibility initiatives, what stakeholders reward the firm for, and therefore what is potentially linked to firm financial performance, is stakeholders' assessment of the performance and quality (i.e., CSP) of those responsibility programs and investments. The marketing literature has paid substantial attention to the beneficial impact of CSP. A common, implicit thread running through prior research is that CSP helps promote social welfare, customer-firm identification, and firm image and, consequently, boosts the levels and stability of future cash flows. Particularly, Brown and Dacin (1997) find that a company's social responsibility actions generate a favorable context that helps enhance consumers' attitude toward the company and its offerings. Bhattacharya and Sen (2003, 2004) note that CSP promotes customer–company identification, which in turn engenders favorable customer behaviors toward the company. Similarly, Lichtenstein, Drumwright, and Braig (2004) argue that "a way that social responsibility initiatives create benefits for companies appears to be by increasing consumers' identification with the corporation" (p. 17). Indeed, a recent study by Luo and Bhattacharya (2006) shows that "better social responsibility ratings go side-by-side with higher levels of stock returns via promoting the mediator of customer satisfaction" (p. 1). In this study, we uncover another mechanism that helps explain why CSP is related to shareholder wealth, i.e., the mechanism of decreasing firm-idiosyncratic risk.

CSP and decreasing firm-idiosyncratic risk

To understand the possible relationship between CSP and firm-idiosyncratic risk, we turn to risk management theory and institutional theory along with the prior corporate responsibility literature in marketing.[1] First, risk management theory would suggest that CSP reduces firm-idiosyncratic risk because (1) CSP generates "moral capital" among communities and stakeholders; (2) moral capital provides shareholders with an "insurance-like protection" that reduces firms' financial risk; and (3) this protection helps companies to reduce their stock price vulnerability and boost their shareholder wealth (Godfrey 2005, p. 777). Endorsing the link between insurance-like protection offered by CSR and shareholder wealth, Peloza (2006) notes that "social responsibility actions act as an insurance policy that can provide safety nets and mitigate harm from negative events" (p. 53). In other words, this insurance-like protection helps boost consumer–company identification and a favorable corporate image, which may decrease volatility in future cash flows and thereby reduce firm-idiosyncratic risk.[2]

Furthermore, from the lens of institutional theory (DiMaggio and Powell 1983; Scott 1987), CSP can boost a firm's legitimacy. Particularly, a firm's multiparty stakeholders—managers, customers, employees, channel members, and community—award more legitimacy to the firm if it shows a record of com-

munity outreach and do-good deeds (Handelman and Arnold 1999).[3]

This perceived goodwill and institutional legitimacy among customers, for example, may lead to more-positive company associations and provide a loyal customer base that serves as a bulwark against big peaks and valleys in firms' future sales. As a result, risk and vulnerability of the firm's expected cash flows are likely to be reduced.[4] Moreover, in protecting the company and its public image, CSP also relieves regulatory pressure and enables the firm to insulate itself from scrutiny (Boutin-Defresne and Savaria 2004; McGuire, Sundgren, and Schneeweis 1988). When corporate image is pummeled by consumer boycotts, regulatory agencies, and lawsuits, CSR helps the firm to "burnish its image" and mitigate risks. Indeed, Bansal and Clelland (2004) note that "in the event of a crisis, the firm's legitimacy will help to protect and decouple the illegitimate activity from the rest of the organization" (p. 95). As such, CSP may help enable the firm to ride out tougher times with more stable future cash flows, thereby likely lowering firm-idiosyncratic risk.

H1: All else being equal, the higher a firm's social responsibility performance (CSP), the lower the firm-idiosyncratic risk.

The moderated influence of CSP on firm-idiosyncratic risk

Because CSR, advertising, and R&D are all potentially value-creation and value-appropriation strategic investments for firms (Mizik and Jacobson 2003), it is instructive to understand the moderating effect of the advertising and R&D on the impact of CSP on firm-idiosyncratic risk.

CSP and Advertising. By and large, the marketing literature suggests that advertising is an intangible market-based asset that creates barriers to competition. Given the general financial benefits of advertising (Pauwels et al. 2004; Srinivasan et al. 2009), we suggest that advertising spending facilitates the impact of CSP on firm-idiosyncratic risk. Indeed, advertising helps promote corporate identity to the public (Luo and Bhattacharya 2006) and strengthens brand equity. These, in turn, aid CSP to create more insurance protection and therefore stability of future firm profits (Keller 1998). Specifically, coupled with more-positive consumer-related responses on the product front that were induced by advertising, the favorable identity and "safety net" effects generated by CSP should be more beneficial in stabilizing firms' future profits and thereby further reduce firm-idiosyncratic risk. Moreover, socially responsible advertising (Drumwright 1996) that provides information about responsibility initiatives helps sustain a firm's reputation for quality, reliability, and honesty, all of which would expectedly further trim down stock volatility and firm-idiosyncratic risk. Finally, advertising serves as an information channel to the firm's stockholders (McAlister, Srinivasan, and Kim 2007), likely helping CSP generate more public trust and institutional legitimacy. After all, firms with higher advertising expenditures typically have larger numbers of investors and greater liquidity of their common stock, which would also potentially expand the resilience and benefit-of-the-doubt effects of CSP, thus further decreasing firm-idiosyncratic risk. Taken together,

H2: CSP-induced decreases in firm-idiosyncratic risk are greater for firms that spend more (versus less) on advertising.

CSP and R&D. As with advertising, a number of studies have shown many benefits of R&D investments, including superior market value, high stock returns, and persistent profits. In keeping with prior research, given the general financial benefits of R&D, we suggest that R&D spending also facilitates the impact of CSP on firm-idiosyncratic risk. Specifically, we believe that the value-creation potential of R&D investments can expand the salutary moral capital and favorable firm image out-

comes of social responsibility initiatives. In particular, R&D investments may facilitate differentiating a firm's offerings via CSR-related processes as well as product innovations, both of which are valued by the market (Chan, Lakonishok, and Sougiannis 2001; McWilliams and Siegel 2001). This is especially true if part of the R&D investment advances the social responsibility mission of the firm, as in the case of continuous capital investments to improve environmental performance of firms (Bansal and Clelland 2004). As a result, R&D investments likely complement and expand the insurance-like protection benefits of CSP, consequently further reducing firm-idiosyncratic risk.

H3: CSP-induced decreases in firm-idiosyncratic risk are greater for firms that spend more (versus less) on R&D.

CSP, Advertising, and R&D. Although independent advertising and R&D facilitate the effects of CSP on firm-idiosyncratic risk, we posit that a push for building CSP, advertising, and R&D market-based assets simultaneously may not work financially. There are several reasons. First, there is a "dark" side of CSR. In particular, the core of the negative arguments of social responsibility is best described by a quote from the trade press: "But it [social responsibility] can come at the expense of other priorities, such as research and development, and is rarely valued by Wall Street. It also is misguided. Many corporate executives believe, as economist Milton Freidman does, that the role of business is to generate profits for shareholders—not to spend others' money for some perceived social benefit" (Grow, Hamm, and Lee 2005, p. 77).

Naturally, there is some tension and conflict between responsibility programs' social and economic dimensions. For example, Sen and Bhattacharya (2001) report that in many instances stakeholders perceive a certain "trade-off" between investments in responsibility programs and investments in the firm's core competencies such as product quality (which are typically deemed more important with higher strategic priority). We believe that this tension between social and economic dimensions are likely to be exacerbated if the firm pursues all strategic goals by heavily investing across CSP, advertising, and R&D at the same time. Specifically, because a firm often faces limited resources, it is difficult, if not infeasible, to pursue all strategic goals at the same time (Mizik and Jacobson 2003). Indeed, the resource-based view of the firm (Barney 1986) suggests that firms must devote resources to support the demands for CSR, advertising, and R&D. If these resources are in competition—as the case would be if the firm tries to maximize investment in all domains—again, it is possible that there would be misallocation and subsequent market confusion and uncertainty, which would thereby compromise the insurance-like benefits of CSP. In short, this discussion suggests that simultaneously pursuing higher CSP, advertising, and R&D may lead to more undesirable firm-idiosyncratic risk.

H4: The simultaneous pursuit of CSP, advertising, and R&D leads to increased firm-idiosyncratic risk.

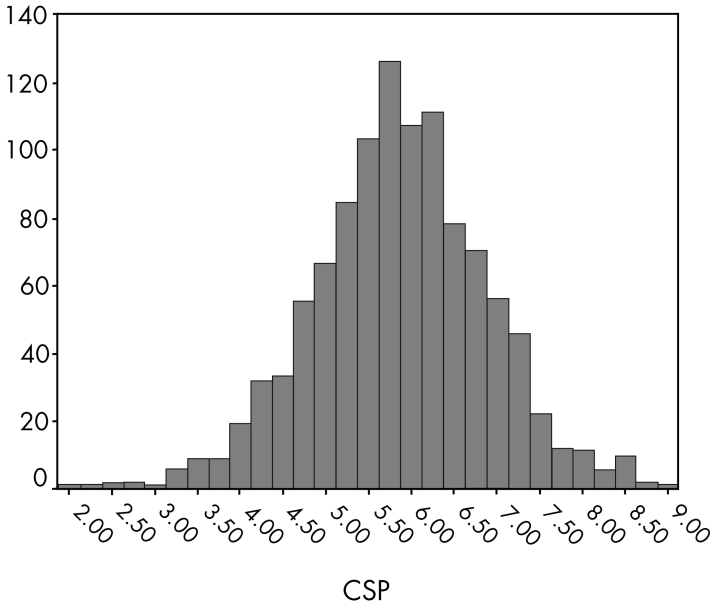
Data and Measures

To test the hypotheses, we used a comprehensive secondary dataset. This dataset is assembled from multiple sources, including Compustat, *Fortune* magazine's "America's Most Admired Companies" (MAC), and the Center for Research in Security Prices (CRSP).

CSP measure and data

We measured CSP for the years 2002 and 2003 with the MAC source, which is made available by *Fortune* magazine. Research across finance (see Margolis and Walsh 2003), strategy (McGuire, Sundgren, and Schneeweis 1988), and marketing (Houston and Johnson

Figure 2
Histogram of Corporate Social Performance (CSP)



2000; Luo and Bhattacharya 2006) provides detailed descriptions of the methodology. In general, this archival MAC source is deemed reliable and valid. Houston and Johnson (2000) consider this source the "best secondary" (p. 12) data source available.

Further, MAC seems comprehensive in measuring CSP because it polls more than 10,000 executives, directors, and financial securities analysts (rather than a small sample) to rate companies' CSP. The resultant CSP is defined as a company's overall performance in social responsibility in relation to the performances of its leading competitors in the industry. The sampling frame is Fortune 1000 large firms (ranked by sales revenue) across more than 70 industries. The results of the large-scale MAC surveys cover 541 large companies on their CSP in years 2002 and 2003, after teasing out the nonresponses and nondeliverable contacts of the Fortune 1000 large firms. For each firm-year observation, CSP is rated using an interval scale ranging from 0 to 10. Because there is a reverse causality concern between CSP and financial performance, we parcel out this potential bias by using the residual approach recommended by Roberts and Dowling (2002). We then relate this clean measure of CSP to firm-idiosyncratic risk derived from the FF4 model (described in the next section). Figure 2 presents a histogram of CSP in our dataset.

Firm-idiosyncratic risk measure and data

We estimate idiosyncratic risk for each firm for each year, using daily return data. Firm-idiosyncratic risk is typically measured (see, e.g., Durnev, Morck, and Yeung 2004) by the widely accepted four-factor approach (FF4), wherein the Fama French three-factor model is augmented by the momentum factor (Carhart 1997). The FF4 multifactor model generates better estimates of stock returns than the traditional single-factor capital asset pricing model (CAPM) approach (Fama and French 1992, 1996, 2006). Particularly, the FF4 approach suggests that the return on a typical stock for firm i on day d ($r_{i,d}$) is a function of the common FF4 factors and the idiosyncratic residual (u_{id}). The FF4 factors include market return (r_d^{MKT}),[5] the difference of returns between small and big stocks (r_d^{SMB}), the difference of returns between high and low book-to-market stocks (r_d^{HML}), and return momentum (r_d^{UMD}). The residual ($u_{i,d}$) of the model below is a measure of firm-idiosyncratic excess return (Ang et al. 2006; Cao, Simin, and Zhao 2007).

$$r_{i,d} = \alpha_i + \beta_i^{MKT} r_d^{MKT} + \beta_i^{SMB} r_d^{SMB} + \beta_i^{HML} r_d^{HML} + \beta_i^{UMD} r_d^{UMD} + u_{i,d}, \quad (1)$$

where, α_i is the intercept term and $u_{i,d} = \rho u_{i,d-1} + \delta_{i,d}$. We let $\delta_{d,i}$ be a normal random variable with a mean of 0 and variance of σ_δ^2. Thus, Equation 1 accounts for serial correlation in the residual term.

Based on Equation 1, our measure of firm-idiosyncratic risk is the variance of the residuals [$= 1/n * (\sum_{d=1}^{n} u_{i,d}^2)$], where n denotes the number of days (i.e., 252) over which the model is estimated in year t for a given firm.

Table 1
Summary Statistics for Key Measures

Measures	Data Source	Mean	Std. Dev.
Firm-idiosyncratic risk	CRSP	2.735	2.053
Corporate social performance (CSP)	"America's Most Admired Companies" (MAC)	5.859	1.018
Profitability	Compustat	.035	.104
Profits volatility	Compustat	.212	.237
Leverage	Compustat	.360	.151
Market-to-book ratio	Compustat	1.825	1.606
Market capitalization	Compustat	16.07	2.528
Dividend pay	Compustat	.625	.419
Firm age	Compustat	3.627	.811
Firm diversification	Compustat	.568	.425
R&D intensity (RD)	Compustat	.057	.050
Advertising spending (AD)	Compustat	.032	.045

This residual variance term, scaled relative to total firm risk (i.e., the variance of the r_{id} values over the year) is thus $1 - R^2_{it}$, where R^2_{it} is the coefficient of determination for Equation 1 in a given year for a given firm.[6] In other words, in line with the finance literature (e.g., Ferreira and Laux 2007, p. 955; Durnev, Morck, and Yeung 2004), our measure of interest is idiosyncratic risk relative to total firm risk. Scaling idiosyncratic risk by total risk accounts for possible industry differences in firms' proneness to economy-wide shocks and, thus, is a measure of firm-idiosyncratic risk that is comparable across industries.

Finally, because of the bounded nature of R^2_{it}, in line with accepted norms in finance, we conduct logistic transformation to obtain the final measure of firm-idiosyncratic risk:

$$v_{it} \equiv \ln\left(\frac{1 - R^2_{it}}{R^2_{it}}\right), \quad (2)$$

where R^2_{it} is the coefficient of determination of Equation 1 for firm i in year t.

The CRSP source supplied the daily stock price data (252 trading days each year) for deriving firm-idiosyncratic risk. Once we obtain the daily stock return for each firm from CRSP and match them with daily data for FF4 factors from French's website (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html), we calculate firm-idiosyncratic risk for each year with equations 1 and 2. Note that although we have estimates of firm-idiosyncratic risk for 3 years, due to the fact that we have the CSP measure for 2 years and given the desired lag structure between CSP and firm-idiosyncratic risk, we end up using a total of 1,082 observations (for 541 firms across 2 years) for hypothesis testing. Table 1 provides summary statistics of the key variables in our analysis.[7]

Note that it is important to account for momentum and reverse causality concerns in Equation 1. For example, firms that are performing well with lower firm-idiosyncratic risk are more likely to engage in CSR, which could reverse the direction of causality. Thus, we followed Carhart's (1997) suggestion and incorporated a "momentum" risk factor in the model in Equation 1. As an additional control for reverse causality, we introduce a time lag between CSP (in year $t - 1$) and firm-idiosyncratic risk (in year t) in the model below so as to ensure that the impact is running from CSP to firm-idiosyncratic risk (Boulding and Staelin 1995).

Hypothesis Testing: Measures, Analyses, and Results

In this section, we present the other measures included in the hypothesis-testing model, our analysis approach, and the hypotheses testing results. Results pertaining to model robustness tests and additional models are reported as well.

Other measures used in the hypothesis-testing model

In the hypothesis-testing model that we describe below, we included all the finance

variables that were controlled for in Ferreira and Laux (2007, p. 958) and that we described in the previous section. We have eight control variables: Profitability, Profits Volatility, Leverage, Market-to-Book Ratio, Market Capitalization, Dividend Pay, Firm Age, and Firm Diversification.

In addition, we have data for advertising stock and R&D intensity. Firm advertising is measured as advertising expenses (Data #45) divided by book assets. Firm R&D intensity is measured as research and development expenses (Data #46) divided by book assets. Because of missing data, we include *AD* dummy = dummy variable for advertising stock (missing data = 0, nonmissing = 1), and *RD* dummy = dummy variable for research and development intensity (missing data = 0, nonmissing = 1). We also control for the possible influence of the time trend and conditional heteroskedasticity by constructing a Time dummy (with 0 = year 2002, 1 = year 2003).

Analysis approach

For the analyses, the dependent variable is Firm-idiosyncratic Risk ($v_{i,t+1}$) as defined in Equation 2. The independent variables are lagged CSP, Advertising, R&D, and control variables as shown below:

$$\begin{aligned} v_{i,t+1} &= \eta X_{it} + \pi_{it+1} = \\ &\eta_0 + \eta_1 CSP_{it} + \eta_2 AD_{it} + \eta_3 RD_{it} + \\ &\eta_4 CSP_{it} * AD_{it} + \eta_5 CSP_{it} * RD_{it} + \\ &\eta_6 RD_{it} * AD_{it} + \eta_7 CSP_{it} * RD_{it} * \\ &AD_{it} + \eta_8 v_{i,t} + \eta_9 Control(1)_{it} + \ldots + \\ &\eta_{19} Control(11)_{it} + \eta_{it+1}, \end{aligned} \quad (3)$$

where i = 1, 2, . . . , 541 firms; t = 1, 2 years.[8] X_{it} = the independent variables modeled, π_{it} = the statistical noise with a mean of 0 and variance of σ^2_{π}, *CSP* = corporate social performance, *RD* = firm research and development intensity, *AD* = firm advertising stock, Control(1) to Control(11) = the eight control variables from finance (Profitability, Profits Volatility, Leverage, Market-to-Book Ratio, Market Capitalization, Dividend Pay, Firm Age, and Firm Diversification) described earlier and our own three additions (*AD* dummy, *RD* dummy, and Time dummy).

To test the hypotheses in a more parsimonious fashion, we apply robust regression to alleviate concerns like heteroskedasticity and autocorrelation. In particular, we specify our robust regression model with the Newey-West covariance matrix as follows:

$$\hat{\sum} nw = \frac{T}{T-k}(X'X)^{-1}\Omega(X'X)^{-1}, \quad (4)$$

where

$$\Omega = \frac{T}{T-k}\left[\sum_{t=1}^{T} u_t^2 x_t x_t' + \sum_{v=1}^{q}\left(\left(1 - \frac{v}{q+1}\right)\sum_{t=v+1}^{T}(x_t u_t u_{t-v} x_{t-v}' + x_{t-v} u_{t-v} u_t x_t')\right)\right],$$

and q (the truncation lag) = the number of autocorrelations used in examining the dynamics of residual u_t, and $q = floor(4(T/100)^{2/9})$. For the optimization algorithm, we use the quadratic Hill climbing in the robust model (Heckman 1979). Note also that all the independent variables were mean centered prior to conducting the regression analysis.

Hypothesis-testing results

The correlation results in Table 2 indicate some preliminary support for the relationship between CSP and firm-idiosyncratic risk. The correlation between CSP and firm-idiosyncratic risk was negative and significant (r = −.133, p < .01 as expected).

To formally test the hypotheses, we rely on the robust regression results discussed below. In testing our hypotheses, we adopt a stepwise approach. Model 1 is the simplest model; in this model we only add CSP to the control variables to see its relationship to firm-idiosyncratic risk. In Model 2, we also add the hypothesized moderators—advertising, R&D, and the respective interaction terms. Models 3

Table 2
Correlations among Key Variables Used in Hypothesis Testing

	Hypotheses	Firm-idiosyncratic Risk	Corporate Social Performance (CSP)	R&D Intensity	Advertising Spending
Firm-idiosyncratic risk	DV	1.000			
Corporate social performance (*CSP*)	H1	–.133	1.000		
R&D intensity (*RD*)	H2, H4	–.052	–.091	1.000	
Advertising spending (*AD*)	H3, H4	–.098	.107	.082	1.000

Note: *DV* = dependent variable used in hypothesis testing. It is the logistic transformed relative idiosyncratic risk. Correlation *r*-values > .09 are significant at *p*-value = .05 level.

and 4 are random coefficient counterparts to models 1 and 2.

In H1, we expect a negative influence of CSP on firm-idiosyncratic risk. As reported in Model 1 in Table 3, the robust regression results lend support for this prediction because lagged CSP indeed decreases firm-idiosyncratic risk ($b = -.205$, $p < .01$). Thus, the data seem to support H1; CSP helps reduce firm-idiosyncratic risk. In other words, CSP can indeed provide insurance-like protection and help stabilize the firm's future cashflows, as expected.

H2 predicts that CSP-induced decreases in firm-idiosyncratic risk are greater for firms that spend more (versus less) on advertising. As reported in Model 2 in Table 3, the results suggest that CSP has a stronger negative influence ($CSP * AD$: $b = -.046$; $p < .05$) on firm-idiosyncratic risk in firms with higher advertising spending.[9] Thus, H2 is supported.

H3 predicts that CSP induced decreases in firm-idiosyncratic risk are greater for firms that are more (versus less) intensive in R&D investment. As reported in Model 2 in Table 3, the interaction item between CSP and R&D intensity ($CSP * RD$: $b = -.025$) was significant at the $p < .10$ level; thus, H3 is supported. However, it seems that R&D intensity plays a relatively weaker moderating role in the impact of CSP on firm-idiosyncratic risk in this dataset.

To test H4—that the simultaneous pursuit of CSP, advertising, and R&D is positively related to firm-idiosyncratic risk—we created a three-way interaction term among CSP, R&D, and advertising. As shown in Model 2 in Table 3, the three-way interaction is positive and significant ($CSP * AD * RD$: $b = .032$; $p < .10$), providing support for H4. This indicates that the negative impact of CSP on firm-idiosyncratic risk is dampened in firms with higher R&D intensity *and* higher advertising stock. Thus, simultaneously pushing for higher CSP, advertising, and R&D is actually harmful and may induce higher firm-idiosyncratic risk.

Additional data analyses and validity checks

Reverse Causality Check. To check the time-based causal direction from CSP to firm-idiosyncratic risk, we conducted Granger causality tests (Hamilton 1994, p. 304–5). The Granger causality results suggest that changes in CSP leads to changes in firm-idiosyncratic risk ($F_{\text{Granger-causality}} = 18.056$, $p < .01$), confirming the predicted causal impact of CSP. Furthermore, we examined the face validity of our estimated firm-idiosyncratic risk results using the *Z*-score measure from Compustat. We find that the correlation between *Z*-score and firm-idiosyncratic risk is indeed significant ($p < .01$).

Table 3
Results of the Impact of CSP on Firm-idiosyncratic Risk

		Model 1 Robust Regression Model		Model 2 Robust Regression Model		Model 3 Random Coefficients Model		Model 4 Random Coefficients Model	
	Hypo.	**Coeff.**	**Sig.**	**Coeff.**	**Sig.**	**Coeff.**	**Sig.**	**Coeff.**	**Sig.**
Controls									
Profitability		.083	[b]	.085	[b]	.086	[b]	.082	[b]
Profits volatility		.0013	NS	.0013	NS	.0011	NS	.0012	NS
Leverage		.307	[c]	.311	[c]	.310	[c]	.309	[c]
Market-to-book ratio		–.0806	[c]	–.0807	[c]	–.0805	[c]	–.0805	[c]
Market capitalization		–.322	[c]	–.327	[c]	–.326	[c]	–.331	[c]
Dividend pay		.132	[c]	.131	[c]	.135	[c]	.133	[c]
Firm age		.043	[b]	.048	[b]	.049	[b]	.048	[b]
Firm diversification		–.176	[b]	–.177	[b]	–.176	[b]	–.181	[b]
RD dummy		.421	NS	.427	NS	.425	NS	.423	NS
AD dummy		.406	NS	.402	NS	.403	NS	.402	NS
Time dummy		.308	NS	.302	NS	.304	NS	.306	NS
Previous firm-idiosyncratic risk		.563	[c]	.567	[c]	.566	[c]	.564	[c]
Corporate social performance (*CSP*)									
	H1	–.205	[c]	–.201	[c]	–.209	[c]	–.202	[c]
Advertising spending (*AD*)				–.165	[b]			–.165	[b]
R&D intensity (*RD*)				–.117	NS			–.095	NS
CSP * *AD*	H2			–.046	[b]			–.067	[b]
CSP * *RD*	H3			–.025	[a]			–.013	NS
CSP * *AD* * *RD*	H4			.032	[a]			.036	[a]
AD * *RD*				.003	NS			.001	NS
Adjusted R^2		.537	[c]	.596	[c]	.539	[c]	.591	[c]
Change of R^2				.059	[b]			.052	[b]

Note: The Newey-West robust approach is used so as to correct possible heteroskedasticity and autocorrelation biases. NS, not significant.
[a]$p < .10$, [b]$p <. 05$, [c]$p < .01$

Random Coefficients Model Estimation. Because unobserved heterogeneity across industries may threaten our results (beyond the observed heterogeneity at the firm-, industry-, and time-levels captured via the control variables), we conduct more analyses with random coefficients models. This modeling technique allows firm-idiosyncratic risk to vary due to unobserved differences in both the constants (random intercepts) and the impact of CSP on firm-idiosyncratic risk (random slopes) across industries (j), as shown in the Appendix. The random coefficients estimation results are reported in models 3 and 4 in Table 3. Again, these additional results support the impact of CSP on firm-idiosyncratic risk. We find that CSP has a negative impact on firm-idiosyncratic risk in Model 3 (b = –.209;

$p < .01$), as expected. In addition, the results in Model 4 suggest that CSP has a stronger negative influence (*CSP* * *AD:* $b = -.067$; $p < .05$) on firm-idiosyncratic risk in firms with higher advertising spending. However, R&D does not moderate the influence of CSP on firm-idiosyncratic risk ($p > .10$). The three-way interaction term is positive and significant (*CSP* * *AD* * *RD:* $b = .036$; $p < .10$) as expected, but again at the $p < .10$ level. Again, this finding suggests that the impact of CSP on firm-idiosyncratic risk is compromised in firms that simultaneously pursue higher R&D intensity *and* higher advertising stock. Overall, these additional analyses support the robustness of the results.

The Dark Side of Too High CSP. Prior literature also suggests that "too much" CSP may not be optimal in reducing unsystematic risk. McWilliams and Siegel (2001) imply that there is an optimal level of CSP, beyond which it may less likely shield the firm against the uncertainty and vulnerability of future cash flows. At extremely high levels of CSP, the disadvantages of CSR in the context of the economic purposes of the firm may outweigh its benefits (Handelman and Arnold 1999; Smith 2003), thus likely inducing more unstable future profits and less insurance-like protection against firm stock risk. To test this curvilinear effect proposition, we entered *CSP*-squared in the regression models and indeed found that the *CSP*-squared was statistically significant ($p < .01$) and positive (i.e., leading to greater [harmful] stock risk). Thus, this additional result implies that it does not pay to depart from an optimal point. CSP, after reaching a certain level, may not generate enough social moral benefits to compensate for the incurred financial costs and missed opportunity costs. This insight also helps reconcile the hot debate of CSP: doing *enough* good, rather than too much good, is the key to stabilizing the volatility of firm stock prices. Thus, going forward, firms should strike a balance in CSR investments so that the net benefits from CSR are optimized for the firm.

The Impact of CSP on Systematic Risk

Can CSP affect the systematic risk of the firm? A recent study by McAlister, Srinivasan, and Kim (2007) highlights that systematic risk is an important financial metric of interest to both marketers and investors. Thus, as a complement to our analyses surrounding CSP and idiosyncratic risk, it is interesting to explore if CSP has a similar impact on systematic risk. If it does, then this research would be the first we know of to show that CSP is also important from the aspect of portfolio risk management. This would add further robustness to our conclusion regarding the stock risk implications of CSP. Indeed, our intuition is that if CSP provides insurance-like protection and boosts firm legitimacy, then it should help reduce a firm's sensitivity to marketwide shocks. That is, CSP should be negatively related to systematic risk.

As shown in Equation 1, systematic risk (β_i^{MKT}) is the part of firm stock risk that is explained by the changes in average market portfolio returns. Essentially, it is the firm's sensitivity to the changes in the market return (r_d^{MKT}) or to news of broad market changes (i.e., inflation, interest rate, etc.) that are common to all stocks. In contrast, firm-idiosyncratic risk reflects the risk associated with firm specific strategies (e.g., CSP), after accounting for the marketwide variation.[10]

To test the CSP–systematic risk relationship, we follow the McAlister, Srinivasan, and Kim (2007, p. 39) model. Particularly, their model tested the impact of advertising and R&D on systematic risk, controlling for several variables (Growth, Leverage, Liquidity, Asset Size, Earnings Variability, Dividend, Age, Competitive Intensity). We replicated their model with all their variables and added CSP. Interestingly, as summarized in Table 4, we find that CSP has a significant, negative impact on systematic risk ($b = -1.372$; $p < .01$) in the McAlister, Srinivasan, and Kim (2007, p. 39) model. Thus, CSP also helps reduce the

Table 4
The Impact of CSP on Systematic Risk

	McAlister et al. (2007) Model (p. 42, Column 1)		McAlister et al. (2007) Model Plus CSP	
Variables	**Coeff.**	**Sig.**	**Coeff.**	**Sig.**
Lagged advertising (*AD*)	–3.187	[a]	–2.719	[b]
Lagged R&D intensity (*RD*)	–.501	[a]	–.329	NS
Lagged corporate social Performance (*CSP*)	*Not modeled*	—	–1.372	[a]

NS, not significant. [a]$p < .01$; [b]$p < .05$

systematic risk of the firm, providing more evidence for the effects of CSP on firm stock risk. In addition, consistent with McAlister, Srinivasan, and Kim (2007), we also find that lagged advertising spending indeed significantly reduces the systematic risk of the firm ($b = –2.719$; $p < .05$). In contrast to McAlister, Srinivasan, and Kim's (2007) findings but in line with Sorescu and Spanjol's (2008), our findings show that lagged R&D is not related to the systematic risk of the firm ($p > .10$).

Overall, our results help extend McAlister, Srinivasan, and Kim's (2007) paper in three ways. First, by examining CSP in our context, we respond to their call for "relating other elements of marketing strategy to systematic risk" (p. 46). Second, we carry on the spirit of the 2007 paper and uncover new benefits of advertising (the lowering of both systematic and firm-idiosyncratic risk; synergistic interactions between advertising and CSP in gaining more insurance-like protection of firm shareholder wealth). Third, we extend the substantive domain of McAlister, Srinivasan, and Kim's pioneering study by expanding firm stock risk to include not only systematic risk but also idiosyncratic risk.

Implications

Does Wall Street care about CSP? In other words, are firms financially rewarded or punished for excelling in social responsibility initiatives? While proponents espouse that CSP panders to an increasingly socially conscious consumer population and enables companies to gain insurance-like protection, critics counter that managers should not spend others' money for perceived social good but rather generate profits for shareholders. This debate over doing good has assumed critical significance in practitioners' minds, as more and more companies engage in social responsibility initiatives. We directly respond to this debate. Based on large-scale secondary datasets, we show that CSP is indeed capable of boosting shareholder wealth by lowering the undesirable volatility of firms' stock prices. However, a simultaneous chase for CSP, advertising, and R&D may be detrimental financially because of increased stock risk. We discuss the implications of our findings next.

Implications for theory

First, this study extends prior research on CSR. We are among the first to rigorously demonstrate the role of CSP in reducing firm-idiosyncratic risk. CSP may offer benefits such as insurance protection, social legitimacy, and an overall safety net, thus helping stabilize firm stock prices. With the understanding that the finance model (Ferreira and Laux 2007) we built on controls for the relevant finance variables, we feel that this paper contributes to the field by showing CSP's robust impact on lowering firm-idiosyncratic risk.

We also deepen academic understanding of the contingent ways in which CSP works. Uncovering some nuanced moderating effects, we find that advertising spending facilitates the effect of CSP on firm-idiosyncratic risk. This suggests that CSP does not work in isolation but rather in tandem with other strategic instruments deployed by firms to create and appropriate market value. However, the findings suggest that an aspiration for simultaneous CSP, advertising, and R&D may not mesh well and thereby lead to more risk. Uncovering these moderation effects helps

disentangle the dispute over doing good. In other words, CSP is not functional in all situations but rather is beneficial in some firm contexts and disadvantageous in others. Future research should acknowledge and robustly model the heterogeneous impact of CSP and the trade-offs among various strategic assets in order to fully understand this debate. Future research can also advance our understanding of this phenomenon by more fully investigating the possible nonlinearities in the relationship between CSP and firm risk.

Furthermore, we advance research on the marketing-finance linkage by examining stock risk, an important metric ignored in the extant strategic marketing literature. Despite its relevance to the world of finance, the risk/volatility metric of stock returns has received relatively little attention in marketing research. Recently, the pioneering work by McAlister, Srinivasan, and Kim (2007) has begun to address related issues like systematic risk. Again, armed with the understanding that the McAlister, Srinivasan, and Kim (2007) model we followed is valid, we feel this paper also contributes to the literature by showing CSP's robust impact on lowering firm systematic risk as well. More generally, while prior marketing literature has typically focused on the level of stock return, that is, the first moment, our work uncovers an important relationship: strategic variables like CSP may also impact the variability of stock return, or the second moment. Our research coupled with extant studies (e.g., Luo and Bhattacharya 2006) put two pieces of the puzzle together and suggest the full strategic importance of CSP: i.e., CSP may not only increase the level of future cash flows but also reduce the risk of expected cash flows, both of which help boost firm long-term stock wealth.

Finally, we contribute to the finance literature on drivers of firm-idiosyncratic risk. That is, we propose and confirm a strategic marketing instrument (i.e., CSP) as another driver that has been omitted in prior finance literature but that significantly impacts stock risk. As such, our work (1) helps bridge the knowledge gap between finance and marketing and (2) enables financial executives or stock investors to more effectively communicate with marketers in a common language (i.e., both parties may be interested in valuing CSR from the aspect of stock price risk).

Implications for managers and investors

Our research suggests that managers and investors can exploit corporate responsibility programs to create desirable moral capital and provide an insurance-like protection for the firm's shareholder wealth. Indeed, the trade press has acknowledged that "risk management is the clearest benefit of doing good. . . . Doing the right thing doesn't only help protect the brand. It also can help secure your future resources and markets" (Engardio 2007).To the extent that CSP can help stabilize a company's cash flow stream with reduced vulnerability, managers and investors can enjoy steady future stock returns by strategically promoting CSP.

Of course, a pertinent concern refers to the economic significance of managing idiosyncratic risk via CSP. From our model, one standard deviation increase in CSP would reduce our dependent variable by .205 units (.201 * 1.018). Relative to the variability of the dependent variable (2.053), this represents about a 10% influence. In other words, our data suggests that by boosting a standard deviation more than average in CSP, firms could reduce their unsystematic risk by about 10%, which is quite meaningful and impactful from an economic perspective.

However, practitioners looking to use CSP for risk management purposes should note that the "goodwill refund" of CSP is not strictly proportional or unconditional. Thus, rather than being implemented in one-off fashion, CSP merits careful consideration as part of the firm's repertoire of business and marketing strategy instruments (such as

advertising and R&D). We urge managers to conduct rigorous research to determine stakeholder perceptions of firm actions before settling on the appropriate CSR initiative.

In conclusion, the supported role of CSP in lowering firm-idiosyncratic risk suggests beneficial effects of CSP for stock risk-management purposes. Given quickly rising social expectations, it has been a "rude awakening for companies that have not embraced a more strategic approach to social responsibility" (Grow, Hamm, and Lee 2005, p. 78). Executives should have less lingering doubt about CSP and its impact on firm stock prices. Smarter corporate giving (in the forms of targeted donations, community support, and employee responsibility alike) can protect brand equity and improve shareholder wealth for many companies, ranging from American Express, Bank of America, IBM, and The Home Depot to SAP (Luo and Bhattacharya 2006). This research suggests that managers and investors ought to seriously acknowledge the merits of CSP in promoting and *stabilizing* firms' stock prices over time.

Acknowledgments

The authors thank professors YeXiao Xu, Ben Ballay, Yong Li, Rui Albequerque, Jun Xu, and Erol Pekoz for their insightful comments, and Julian Chen, Daniel Korschun, Biao He, Thitikarn Rasrivisuth, Ailing Wang, and Wanyu Yang for their research assistance.

Appendix

Random Coefficients Model

The random coefficients model is specified below:

$$v_{i,t+1} = \xi X_{it} + \omega_{it} = \xi_{0j} + \xi_{1j} CSP_{it} + \xi_{2j} CSP_{it} * RD_{it} + \xi_{3j} CSP_{it} * AD_{it} + \xi_{4j} AD_{it} * RD_{it} + \xi_{5j} CSP_{it} * RD_{it} * AD_{it} + \xi_{6} v_{i,t} + \xi_{controls} Controls_{it} + \omega_{it},$$

where $\xi_{0j} = \phi_{00} + \upsilon_{00j}$ (unobserved heterogeneity in random intercepts),
$\xi_{1j} = \phi_{10} + \upsilon_{10j}$ (unobserved heterogeneity in random slopes),
$\xi_{2j} = \phi_{20} + \upsilon_{20j}$ (unobserved heterogeneity in random slopes),
$\xi_{3j} = \phi_{30} + \upsilon_{30j}$ (unobserved heterogeneity in random slopes),
$\xi_{4j} = \phi_{40} + \upsilon_{40j}$ (unobserved heterogeneity in random slopes),
$\xi_{5j} = \phi_{50} + \upsilon_{50j}$ (unobserved heterogeneity in random slopes).

This random coefficients model can account for unobserved heterogeneity in the data that may exist beyond the observed heterogeneity at the firm-, industry-, and time-levels captured via the control variables.

Notes

1. A premise in the relationship between CSP and firm-idiosyncratic risk is that the market reacts to CSP information. This premise is supported by Margolis and Walsh (2003).

2. Echoing this, the trade press explicitly notes that "risk management is the clearest benefit of doing good" (Kher 2005).

3. Bansal and Clelland (2004, p. 101) note that "volatility, and its converse, stability, are central to the logic of institutional theory."

4. Relatedly, from a stakeholder perspective, in the current corporate climate, managerial actions in the interest of shareholders increasingly require fair treatment of all institutional stakeholders, including environmentalists, regulators and activists, as in an "expanded social contract" (Drumwright 1996). In managing these relationships proactively through savvy corporate social initiatives, firms may be in a better position to decrease the vulnerability of their stock returns.

5. $r_{i,d}$ and r_d^{MKT} are excessive to the risk-free Treasury-bill rate.

6. The *R*-square (R^2_{it}) of Equation 1 is a measure of market synchronicity as it gauges the extent to which the variation in the stock return of the company is explained by the variation in the FF4 factors.

7. The mean of this logistic transformed idiosyncratic risk measure (from Table 1) is 2.735. If we transform this back to compute *R*-square, we get 1 – *R*-square of Equation 1 = 93.906%. This is consistent with Ferreira and Laux (2007), who find that the average share of firm-idiosyncratic risk = 93.883%. We also checked the robustness of our firm-idiosyncratic risk results by using weekly stock price data. We find that the firm-idiosyncratic risk results based on daily price data and weekly data are similar (i.e., smallest $r = .922$, $p < .01$).

8. By including the lagged dependent variable as an independent variable, our model is more conservative in testing the impact of CSP than the corresponding Ferreira and Laux (2007) model. Additional analyses show that the impact of CSP on idiosyncratic risk does not change with the lagged dependent variable in the model or without. Our model results also hold when we use variance of residuals in Equation 1 without logistic transformation, adding more evidence for our conclusion.

9. The incremental variance explained by adding the mean-centered interaction terms was statistically significant ($\Delta R^2 = .059$, $F_{diff} = 16.39$, $p < .01$). We also conducted more analyses by scaling other variables like *AD* and *RD* to the industry means (i.e., relative to competition in the industry). Our conclusion related to the hypothesis testing does not change. Because the highest variance inflation factor was 4.293 (less than 10.0), it seems that multicollinearity is not a serious threat to our results.

10. If this distinction between the two risk metrics is valid (Miller, Wiseman, and Gomez-Mejia 2002), then it is reasonable to believe that the relationship between CSP and firm-idiosyncratic risk is stronger than the relationship between CSP and systematic risk. Further, theoretically, firm-specific strategies can affect systematic risk as long as these strategies are somehow related to the stock market (i.e., when firms buy back their own stocks from the market or issue more stocks or when there is active marketing of IPOs; see Cook, Kieschnick, and Van Ness 2006). While some studies have found that firm-idiosyncratic marketing strategies affect systematic risk (McAlister, Srinivasan, and Kim 2007), other studies have not (e.g., Sorescu and Spanjol 2008).

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