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ABSTRACT

This study treats firm productivity as an accumulation of productive intangibles and posits that stakeholder engagement associated with better corporate social performance helps develop such intangibles. We hypothesize that because shareholders factor improved productive efficiency into stock price, productivity mediates the relationship between corporate social and financial performance. Furthermore, we argue that key stakeholders' social considerations are more valuable for firms with higher levels of discretionary cash and income stream uncertainty. Therefore, we hypothesize that those two contingencies moderate the mediated process of corporate social performance with financial performance. Our analysis, based on a comprehensive longitudinal dataset of U.S. manufacturing firms from 1992 to 2009, lends strong support for these hypotheses. In short, this paper uncovers a productivity-based, context-dependent mechanism underlying the relationship between corporate social performance and financial performance.

KEYWORDS: corporate social responsibility, corporate financial performance, total factor productivity, stakeholder management, discretionary cash, organizational risk

Introduction

The competition for and consumption of scarce resources in the global markets put great pressures on companies to achieve desirable ends beyond maximizing shareholder value. These pressures arise from the increased demands of external stakeholders that hold companies accountable for social and environmental issues. Many companies respond positively to increased stakeholder interest in corporate social responsibility (CSR). Others see a tension between value maximization proposition of the firms (Jensen, 2001) and CSR because they become concerned about the legitimacy of corporate involvement in social affairs and the possibility of misappropriating and misallocating scarce resources (Margolis and Walsh, 2003; Garriga and Melé, 2004).

To legitimize CSR on sound economic grounds and alleviate managers' concerns, numerous studies attempt to identify the relationship between corporate social performance (CSP, a measure of CSR) and corporate financial performance (CFP). Despite these empirical inquires (Margolis et al., 2009; Margolis and Walsh, 2003; Orlitzky et al., 2003), debate and controversy remain about whether and how CSP influences CFP (Luo and Bhattacharya, 2009; Barnett and Salomon, 2006; Luo et al., 2015). Therefore, exploring and unpacking the blackbox linking CSP and CFP becomes critically important to better understand the underlying mechanisms that create competitive advantages and better integrate CSR engagement with a firm's core business and operations (Porter and Kramer, 2006).

This study uncovers a productivity-based mechanism by investigating the mediating role of total factor productivity (TFP) in the CSP-CFP relationship. Firm-level TFP is normally estimated as the residual from a Cobb-Douglas production function with capital, labor, and materials as inputs. Therefore, TFP captures the productive efficiency determined by how a firm

utilizes inputs to produce output. Treating TFP as the accumulation of productive intangibles, we argue that CSR-related stakeholder management helps firms develop such intangibles. Given that improvements in productivity have permanent and lasting effects on firm financial performance, we examine in greater depth the productivity-based mechanism through which CSP influences firm financial performance (Edmans 2013). Using a comprehensive longitudinal dataset of all publicly traded U.S. manufacturing firms from 1992 to 2009, we document a significant and positive relationship between CSP and TFP. More importantly, the mediation analysis reveals that TFP significantly mediates the CSP-CFP relationship, and our findings are robust to a host of model specifications controlling for endogeneity.

Adopting a contingency perspective (Barnett 2007), we take our findings one step further. In particular, we identify two contextual variables, namely discretionary cash (Russo 1991; Kim and Bettis, 2014) and organizational risk (Godfrey et al., 2009), which can potentially moderate the mediated process. Defined as firm undistributed cash flow, discretionary cash is a fungible strategic asset which allows a firm to embrace technologic advancements and investment opportunities. Nonetheless, discretionary cash can be deviated to other unproductive uses due to managerial opportunism. In this paper, we posit that CSR engagement is more valuable to firms with high levels of discretionary cash because better stakeholder engagement greatly limit managerial opportunism (Jo and Harjoto, 2012) and facilitate the transformation of liquid assets into firm-specific productive assets. In addition, firms are exposed to different levels of organizational risk which is defined as income stream uncertainty (Palmer and Wiseman, 1999). Likewise, we argue that the social legitimacy (Suchman 1995; Du and Vieira, 2012) and moral capital (Godfrey 2005; Godfrey et al., 2009) derived from better CSR engagement can stabilize and enhance a firm's competitiveness and mitigate adverse consequences of negative events. We

argue that the effect of CSP on TFP is stronger for firms with higher organizational risk. Our moderated mediation analyses lend strong support to our hypotheses.

The main contribution of this paper is to demonstrate the role of an economically relevant variable, TFP, as an important mediator of the CSP-CFP relationship. Our analysis reveals a significant productivity-based mechanism, which sheds further light on how CSR creates shareholder value. We recognize that not all types of CSR involvements are driven by motives to improve productivity. Nevertheless, as long as CSR activities are not categorized as pure social issue participations (Hillman and Keim, 2001), our analytic framework allows corporate managers to assess and quantify the instrumental value embedded in a portfolio of CSR activities.

Second, drawing on multiple lines of research, we show that CSR engagement and its economic and financial outcomes are context dependent. Recent literature emphasizes the advantages of CSR as an effective corporate governance mechanism (Jo and Harjoto, 2012), a way to gain social legitimacy (Du and Vieira, 2012), and a means to generate moral capital (Godfrey, 2005). Our findings reveal that under certain contextual circumstances, CSR engagement may allow firms to better materialize the benefits of their involvement in social issues and justify the significant costs of CSR activities incurred to shareholders. We thereby offers new insights in CSR through a contingency lens and calls for future research to identify other contingencies in the CSP-CFP relationship.

Third and last, the findings in this paper highlight the importance of integrating a social perspective with core business strategies to create shareholder value. Although social considerations by corporations are increasingly desirable, firms as economic agents cannot and should not address all social issues. Allocating scarce firm resources to CSR creates more value if carefully selected CSR activities address the demands of key stakeholders that are crucial for

firm operation and production (Porter and Kramer, 2006). Therefore, our paper suggest that the match between a firm's CSR strategies and its value chain is crucial for firms' survival and success, especially when firm managers recognize the contingent nature of CSR in a competitive context.

Theory and hypotheses

Since the seminal paper by Freeman (1984), stakeholder theory has emerged and evolved as the dominant paradigm in CSR literature (Margolis and Walsh, 2003). Although stakeholder theory has a strong moral foundation (Freeman et al., 2010), the instrumental version receives considerable attention (McWilliams and Siegel, 2001; Surroca et al., 2010). Instrumental stakeholder theory views corporate social activities as a means (an instrument) to achieve the ultimate objective of maximizing shareholder value (Donaldson and Preston, 1995; Jones 1995). CSR-related stakeholder management contains instrumental value if such activities create value for shareholders (Mitchell et al., 1997; Ogden and Watson, 1999). Consequently, a firm will pursue productive stakeholder relationships to achieve better social performance that is intrinsically valuable, and discontinue those that are unproductive (Berman et al., 1999).

To better assess the instrumental value of CSR and to apply the broad principles of CSR in value-maximizing firms, three questions are extremely important: (1) What is the mean effect of CSR on firm financial performance? (2) What are the underlying mechanisms through which CSR affects firm financial performance? (3) What are the contingencies when CSR has varying effects on firm financial performance? To address the first question, empirical literature investigates the relationship between CSR and firm value. Among those recent inquiries along this line, Edmans (2011, 2013) finds a positive relation between employee satisfaction and long-

term shareholder returns. Focusing on a sample of U.S. mergers, Deng et al. (2013) show that high CSR acquirers realize higher abnormal returns at their merger announcements. Servaes and Tamayo (2013) suggest that CSR adds value for firms with high customer awareness proxied by advertising expenditures. Krüger (2015) documents that investors react negatively to negative CSR events and react positively to events associated with improving stakeholder relations. Flammer (2015) conducts a quasi-experiment on CSR proposals that pass or fail with a small margin of votes and reports that the passage of close-call proposals is associated with positive abnormal announcement returns. Dimson et al. (2015) provide evidence that CSR activism focusing on a broad range of stakeholders and successful CSR engagements are associated with positive abnormal returns. Additionally, instead of directly gauging the impact of CSR on firm value, a line of recent research reveals that CSR participation alleviates firm financial constraints (Cheng et al., 2014) and reduces the cost of financing (Goss and Roberts, 2011; Ghoul et al., 2011; Oikonomou et al. 2014; Dhaliwal et al. 2011).

Nonetheless, despite the large literature on the first question, only recently do researchers raise the importance of the second and third questions (Porter and Kramer, 2006; Harrison and Bosse, 2013). Specifically, researchers intend to achieve better understanding on how (i.e., mechanisms) and when (i.e., contingences) CSR leads to greater shareholder value creation. Therefore, in this paper, we intend to shed further light along this line of research.

The mediating role of TFP in the CSP-CFP relationship

Building on instrumental stakeholder theory, we draw on various lines of research and posit that TFP can provide crucial but missing clues about the CSP-CFP relationship. Economists have related output to inputs for a long time and argue that TFP is an important source of growth

(Miller and Upadhyay, 2000; Beck et al., 2000). TFP is generally defined as the residual of a production function, which is the fraction of output that factor inputs cannot explain (Griliches 1994). In other words, TFP captures productive efficiency as well as capital misallocation for microproduction units (e.g., firms or plants). TFP is not directly observable and needs to be estimated. Therefore, it represents a collection of important, productive, intangible assets (Battisti et al, 2015). TFP improvements reflect phenomena such as technological innovations (Färe et al., 1994), better allocation and utilization of resources, accumulation of human capital (Steindel and Stiroh, 2001), and demand fluctuations (Prucha and Nadiri, 1981). Correspondingly, we argue that as a multidimensional and complex construct (Barnett 2007), CSP can affect productivity and help to development of such intangible assets in multiple ways.

First, CSR activities enable firms to forge strong relationships with key stakeholders, and such relational capital greatly enhances the capacity to create new technologies, develop new products, and penetrate new markets (Thomson and Heron, 2006; Tsai and Ghosha, 1998; Chan, et al. 1997). Moreover, firms with better innovation capabilities can pursue proactive social and environmental strategies (Sharma and Vredenburg, 1998; Buysse and Verbeke, 2003). CSR-related stakeholder engagement can facilitate the development of productive innovations, and thus is an important source of competitive advantage because it is difficult for rivals to copy and imitate (Barney 1991; Surroca et al. 2010).

Second, although technological innovation is a major component of TFP, productivity growth is not merely a high-tech phenomenon (Steindel and Stiroh, 2001). Strong stakeholder relationships give firms access to various resources and help them utilize resources efficiently (Hanbrick, 1983). Firms with better CSR performance face significantly lower capital constraints (Cheng et al., 2014) and can raise cheaper funds from debtholders (Goss and Roberts, 2011;

Oikonomou et al., 2014) and equityholders (Ghoul et al., 2011). Relational-specific investment in stakeholder relationships also facilitates transactions between suppliers and customers with better terms (Banerjee et al., 2008) and attracts financial resources from socially responsible investors (Hockerts and Moir, 2004).

Third, in a highly dynamic and competitive environment (Goll and Rasheed, 2004), strategic decisions that create shareholder value require fair treatment of all stakeholders (Berman et al., 1999). For instance, social-exchange theory (Eisenberger et al., 1986; Whitener, 2001) suggests that good stakeholder management nurtures mutual trust and cooperation, which leads to strong organizational commitment and loyalty in a reciprocal way (Bosse et al., 2009). Furthermore, CSR activities can be an effective way for firms to gain social legitimacy (Suchman, 1995; Jamali, 2008; Du and Vieira, 2012; Hawn et al., 2011). As a result, firms with better CSP can positively engage stakeholders (e.g., supplier and customers) and enhance their willingness to participate in the production process with better efficiency (Jones, 1995).

Fourth, CSR-related programs (e.g., ESOPs or long-term employee benefit plans) can help firms build human capital to improve productivity (Faleye and Trahan, 2011; Edmans, 2011). Specifically, firms with better CSP are able to attract talented employees (Jones et al., 2014; Turban and Greening, 1996), have lower absenteeism rates (Gellatly, 1995), and have lower voluntary turnover rates (Huselid and Becker, 2011; Somers, 1995). Such increases in labor stability are necessary for employers and employees to share the costs and returns of investment in firm-specific human capital (Becker and Gerhart, 1996), which not only improves productivity (Hatch and Dyer, 2004), but also mitigates the potential risk of transferring knowledge to rivals.

Last, as McWilliams and Siegel (2001) illustrate, CSP can be a differentiation strategy by integrating socially responsible attributes into firm products (Hanbrick, 1983). Moreover, CSR can function as an advertising tool that increases awareness of firm products and softens consumer price sensitivity (Milgrom and Roberts, 1986; Sen and Bhattacharya, 2001; Servaes and Tamayo, 2013). Consequently, CSR can smooth demand fluctuations, create new demand, or command a price premium, thus positively shifts the firm production function (Prucha and Nadiri, 1981; McWilliams and Siegel, 2001).

In this paper, we argue that by forging strong relationships with key stakeholders through participation in social issues, a firm can develop productive intangibles such as technological innovations, organizational legitimacy, better access to resources, and human capital, all of which help firms to efficiently utilize the assets, obtain competitive advantages over rivals and create shareholder value. Put it other way, CSR activities have instrumental value in help firms to accumulate productive intangibles as reflected by TFP. Accordingly, shifts in TFP are factored into the pricing-formation process (Fare et al., 1994; Faleye and Trahan, 2011). Given that productivity improvement has a direct and long-lasting effect on firm financial performance (Steindel and Stiroh, 2001; Huselid, 1995), our analysis of the CSP-TFP-CFP relationship permits us to investigate in greater depth the mechanism through which CSP influences firm financial performance. Therefore, we propose the following two hypotheses:

Hypothesis 1*: Corporate social performance is positively related to firm total factor productivity.*

Hypothesis 2*: The relationship between corporate social performance and financial performance is mediated by firm total factor productivity.*

The contingences for CSR and its associated outcomes

Investment decisions are generally believed to be the most important decisions made by corporations because the choices of investment projects and the consequences are important not only firm stakeholders but also the economic well-being of the entire society (Harris and Raviv, 1996). From a financial-management perspective, CSR investment is not an isolated decision but is part of the overall investment strategy firm managers pursue to serve the best interests of stakeholders (Jones, 1995; McWilliams and Siegel, 2001). Existing studies largely focus on the mean effect of CSP on CFP in order to justify CSR investment (Margolis and Walsh, 2003). Nevertheless, regardless of the sign of the mean effect, firms pursue CSR with different outcomes. The financial merit of CSR investment is uncertain because CSR activities accumulate a variety of intangibles in different contexts, which necessitates a contingency perspective (Barnett, 2007; Berman et al., 1999; Goll and Rasheed, 2004). Therefore, in this paper, we attempt to shed further light on the literature by focusing on firm discretionary cash and organizational risk as contextual variables moderating the mediated CSP-CFP relationship.

A large finance literature documents the significant amount of cash held by U.S. firms for their transactional needs (Bates et al., 2009; Opler et al., 1999). With precautionary mind-sets, firm managers hoard liquid assets to cope with increasingly volatile and competitive environment (Bates et al., 2009; Irvine and Pontiff, 2009; Opler et al., 1999). In this paper, we focus on discretionary cash as a context variable which is defined as undistributed cash flow (Russo, 1991; Lehn and Poulsen, 1989), and posit that firm discretionary cash can potentially moderate the mediated CSP-CFP relationship. On the one hand, cash, especially undistributed cash flow, is a fungible asset with little specificity (Kim and Bettis, 2014; Russo, 1991). Liquid assets allow firm managers to be sensitive and responsive to embrace production technologies

and achieve sustainable strategic competitiveness (Kim and Bettis, 2014). Discretionary cash thereby has economic and strategic value when investment opportunities exist. On the other hand, discretionary cash is subject to great managerial opportunism (Jensen, 1986; Kim and Bettis, 2014), thus creates significant agency issue because firm managers can divert it to unproductive investments (Harford et al., 2008; Lehn and Poulsen, 1989).

Recent literature emphasizes the important role of CSR as an effective corporate-governance mechanism to resolve conflicts among various stakeholder groups and reduce agency costs (Freeman, 1984; Jensen, 2001; Jo and Harjoto, 2012; Cespa and Cestone, 2007). The typical agency problem arises because managers use firm resources to pursue private benefits at the cost of shareholders (Jensen and Meckling, 1976). Corporate governance is a system of internal and external mechanisms through which funds providers deal with agency issues and "assure themselves of getting a return on their investment" (Shleifer and Vishny, 1997). In this sense, CSR requires firm managers to understand both the organizational process and demand of stakeholders, as well as work with stakeholders to achieve their strategic goals (Freeman, 1984; Freeman et al., 2010). Because of their vested interests in the firms, engaged nonshareholder stakeholders carefully scrutinize managers' actions and react accordingly (Jo and Harjoto, 2012). Therefore, high-quality relationships with key stakeholders not only contribute to productivity, but also reduce agency and transaction costs (Cheng et al., 2014). From the instrumental stakeholder theory perspective, CSR engagement as an ethical solution to commitment problems (Cespa and Cestone, 2007; Jones, 1995; Cheng et al., 2014) is a more efficient contracting mechanism because it relies on mutual trust and cooperation.

In the production function, inputs are generally not interchangeable and require continuous and efficient transformation of nonspecific resources (e.g., liquid assets) into firm-

specific assets. This process is highly reliant on relationship-based governance mechanisms because various stakeholder groups are involved in the production process (Wang et al., 2009). Nonshareholder stakeholders oversee this transformational process, especially when a firm has large amount of undistributed cash flow and is more vulnerable to managerial opportunism. Therefore, we argue that superior CSR performance is associated with better stakeholder engagement, which, in turn, alleviate managerial opportunism (Eccles et al., 2012; Benabou and Tirole, 2010) and allows firms to undertake more productive and financially viable investments. We posit this effect will be stronger for firms with higher levels of discretionary cash, and, accordingly, we present our third hypothesis.

Hypothesis 3*: The mediated relationship of corporate social performance with corporate financial performance is moderated by firm discretionary cash. Specifically, the relationship between corporate social performance and firm total factor productivity is stronger for firms with higher levels of discretionary cash.*

Firm risk represents one of major contingencies for firms operating in a competitive environment (Miller, 1998; Miller and Bromiley, 1990; Miller and Leiblein, 1996). In this study, following Godfrey et al. (2009), we focus on organizational risk as another contextual variable, which is defined as income stream uncertainty (Palmer and Wiseman, 1999). Organizational risk is important to strategic management because it reflects risk exposure determined by external environment factors as well as managerial decisions (Godfrey et al., 2009). Existing research indicates that the economic and strategic outcomes of CSR activities are largely context dependent (Barnett, 2007; Goll and Rasheed, 2004). Given the significant differences in income

stream uncertainties from firm to firm, it seems natural to suggest that the mediated process of CSP with CFP may vary as well for the following two reasons.

First, firms proactively seeking organizational legitimacy engage in activities that are deemed socially desirable by various external stakeholder groups (Basu and Palazzo, 2008). Enhanced social legitimacy through stakeholder engagement can stabilize or improve a firm's competitive position in the product markets because stakeholders with vested interests are likely to support the firm when its actions meet the expectation of societal stakeholders (Suchman, 1995). For example, CSR is well documented as a product differentiation strategy that involves adding socially responsible attributes to attract socially conscious consumers (McWilliams and Siegel, 2001; Bagnoli and Watts, 2003; Hillman and Keim, 2001). Moreover, CSR activities can effectively signal product quality, and influence consumer perception and response (Öberseder et al., 2013). Researchers find that CSR also helps to enhance customer satisfaction and loyalty (Luo and Bhattacharya, 2006, 2009). Consequently, CSR features embedded in products give firms better pricing power and allow firms to command a price premium (Elfenbein and McManus, 2010; Ailawadi et al., 2014). Moreover, CSR-induced trust and cooperation help maintain sustainable supply chain relationships (Roberts, 2003; Maloni and Brown, 2006). From a risk management perspective, CSR-based social legitimacy provides some protection from unpredictabilities (Godfrey et al., 2009), and support from engaged stakeholders is more valuable for productive efficiency and hence shareholder value when a firm faces greater income stream uncertainty (Stultz, 2002).

Second, CSR can signal to important stakeholder groups that firms participating in socially responsible activities are willing to act altruistically or at least not completely in their own self-interest (Godfrey et al., 2009). Because of its voluntary nature, CSR helps to improve

firm social conditions when stakeholders recognize such signal (Mackey et al., 2007). As a result, socially desirable CSR participation generates moral capital that provides "insurance-like" protection (Godfrey, 2005; Godfrey et al., 2009; Simon, 1995; Minor and Morgan, 2011). Inevitably, some managerial choices and strategic decisions will have unfavorable impacts (e.g., product recalls) on important stakeholder groups, and stakeholders may respond in ways (e.g., boycotts) that negatively affect the firm (Luo and Bhattacharya, 2009; Clarkson, 1994). The moral capital derived from CSR investment, however, can effectively alleviate these stakeholder sanctions and mitigate unfavorable consequences, thus insuring a firm against the loss of valuable intangibles important for production (Minor and Morgan, 2011; Godfrey et al., 2009). CSR-related moral capital is particularly important for firms exposed to significant organizational risk because such firms are more likely to experience negative events (Freeman et al., 2007).

Drawing upon research on firm risk and organizational legitimacy, we argue that, confronting significant organizational risk, CSR investment derives its instrumental value from obtaining social legitimacy (Suchman, 1995) and generating moral capital (Godfrey, 2005), which facilitate efficient contracting with nonshareholder stakeholders (Jones, 1995; Freeman et al., 2010). Particularly, we posit that this effect is stronger for firms with higher levels of organizational risk, and accordingly, we present our fourth hypothesis.

Hypothesis 4*: The mediated relationship of corporate social performance with corporate financial performance is moderated by organizational risk. Specifically, the relationship between corporate social performance and firm total factor productivity is stronger for firms with higher levels of organizational risk.*

Methods

Data and sample

To test our hypotheses, we supplement the Compustat database with the NBER-CES Manufacturing Industry database and estimate firm-level TFP for all publicly traded U.S. firms in the manufacturing sector (SIC 2000-3999).[1] We rely on the MSCI ESG KLD STATS (KLD) dataset for information on firm social performance. Because the KLD database has better coverage on firm social performance after 1991 and the NBER-CES database ends in 2009, we merge the Compustat and KLD data for 1992 to 2009. We also retrieve stock price information from the Center for Research in Security Prices (CRSP) to calculate firm market-based financial performance. After dropping observations with incomplete information, our matching procedure yields a final sample of 5,516 firm-year observations including 986 unique firms.

Measures

Our main explanatory variable is an index of CSP (a measure of CSR), which we derive from the KLD dataset. The KLD dataset is widely used by academics and practitioners as a source of information on corporate social responsibility (Berman et al., 1999; Ghoul et al., 2011; Goss and Roberts, 2011; Hillman and Keim, 2001; Waddock and Graves, 1997). Companies in the KLD dataset are evaluated in seven major qualitative issue areas: environment, community, corporate governance, diversity, employee relations, human rights, and product quality and safety. KLD assigns ratings according a wide variety of data sources, including company filings, government and nongovernment data, general media press, and direct communications with company officers. In addition, KLD dataset also records concerns in six dimensions including alcohol,

gambling, firearms, military, tobacco and nuclear power. Because these six dimensions do not deal with specific stakeholder groups, we exclude them for our analysis. KLD dataset has expanded its firm coverage over time. During 1991-2000, KLD covered the S&P 500 and the Domini Social Index. It added the Russell 1000 Index in 2001, the Large Cap Social Index in 2002, and the Russell 2000 Index and the Broad Market Social Index in 2003.

Following existing literature (Ghoul et al*.,* 2011), we exclude the "corporate governance" category, and focus on six of the seven qualitative categories emphasizing important nonshareholder stakeholder relations.[2] For each qualitative issue area in the KLD dataset, a binary (0/1) rating is assigned to a set of strengths and concerns. Given that there is no theoretical underpinning for and consensus of applying a weighting scheme to different categories (Mitchell et al., 1997; Surroca et al., 2010), we sum up the strengths and concerns of the six dimensions of the KLD ratings. We calculate *CSP_Net* by subtracting the total number of concerns from the total number of strengths to construct a representative measure of CSR-related stakeholder management (Choi and Wang, 2009; Hillman and Keim, 2001; Wolfe and Aupperle, 1991). KLD claims that its ratings reflect the status of a firm's CSR activities at calendar year-end, and we thereby measure CSP_Net with a one-year lag.

We measure corporate financial performance by *Tobin's Q* which is calculated as the book value of assets minus the book value of equity plus the market value of equity, divided by the book value of total assets. To test the mediating role of TFP, we follow the procedure proposed by Olley and Pakes (1996) to estimate firm-level TFP as the residual from a log-linear Cobb-Douglas production function with capital, labor, and materials as input factors (Yasar et al., 2008).[3] Our procedure deals with two critical issues in TFP estimation: heterogeneity bias and selection bias. Specifically, we allow for changes in firm-specific idiosyncratic productivity over

time, and we generate an exit rule to account for the liquidation choices endogenously made by sample firms. In addition, we deflate factor inputs for each four-digit industry-year using industry-level indexes from the NBER CES database (Bartelsman and Gray, 2001). Therefore, our measures of TFP are free of industry effect and year effect (Yasar et al., 2008; Olley and Pakes, 1996). We detail our estimation approach in appendix A.

In the current study, we development theoretical arguments that the mediated process can be moderated by firm discretionary cash and organizational risk. Accordingly, we follow existing literature (Russo, 1991; Lehn and Poulsen, 1989) and measure *discretionary cash* (i.e., firm undistributed cash flow) as operating income before depreciation, minus total income taxes, changes in deferred taxes from previous year, gross interest expense on total debt, total preferred dividend requirement on cumulative preferred stock, dividends paid on noncumulative preferred stock, and the total dollar amount of dividends declared on common stock. We then scale discretionary cash by firm total sales. In addition, we measure *organizational risk* as the standard deviation of ROAs over the past five years on a rolling basis for our sample firms (John et al., 2008; Palmer and Wiseman, 1999). In line with previous research (Bettis and Mahajan, 1985; Cool et al., 1989), this measure captures an important aspect of the empirical distribution of income streams in terms of their variability and hence firm risk exposure.

In the regression analysis, we enter a set of control variables that are documented determinants of productivity and firm financial performance (Faleye and Trahan, 2011; Schoar, 2002). Specifically, *firm size* is the natural logarithm of the book value of firm total assets. *Leverage* is the ratio of book value of debt to book value of firm assets. We measure *assets tangibility* as the value of property, plant, and equipment, plus the value of inventory divided by firm total assets. *Sales growth* is the percentage change in sales over the previous year.

It is plausible that a firm may engage in CSR activities because of competition within its business segment (Zhang et al., 2010). In turn, we measure *industry competition* using the sales-based Herfindahl-Hirschman index (HHI) index, which is the sum of squared market shares (firm sales divided by industry total sales) at the three-digit SIC level (Tirole, 1988). When there is only one firm in a particular industry, the HHI index is equal to 1. For a perfectly atomistic market, HHI will approach 0. Additionally, we use *G-index* to measure corporate governance (Gompers et al., 2003), which is based on 24 management-favoring provisions followed by the Investor Responsibility Research Center (IRRC). The G-index captures firm-level investor protection, with higher (lower) G-indexes indicating worse (better) investor protection.

Model specifications and identification strategies

To test hypotheses 1 and 2, we follow a three-step procedure proposed by Muller and Judd (2005). In the first step, we model Tobin's Q as a function of CSP. In the second step, we model TFP as a function of CSP, and make inference about hypothesis 1. In the third step, we include both TFP and CSP as determinants of Tobin's Q. We assess the mediating role of TFP in the relationship between CSP and Tobin's Q by examining the significance and magnitude of the coefficients of CSP in all three steps (Baron and Kenny, 1986). To support hypothesis 2, CSP should significantly explain Tobin's Q (step 1) and TFP (step 2). In addition, inclusion of TFP (step 3) should take away the significant of CSP in explaining Tobin's Q. If the coefficient of CSP is insignificant in the third step, we conclude a full mediation. If the coefficient of CSP is significant with reduced magnitude in the third step, we conclude a partial mediation.

The major concern for the regression analysis is endogeneity issue because CSR engagement is a conscious and voluntary managerial decision (Berman et al., 1999). Following

Antonakis et al. (2014), we thereby take several cautious steps to address endogeneity. In the regression analysis, if unobserved characteristics correlate to our CSR measure but are excluded from the model (i.e., omitted variable problem), it is inappropriate to draw causal inferences based on ordinary least square (OLS) estimation due to the biased estimation. Therefore, we include firm fixed effects to control for the micro-level, unobservable, and time-invariant heterogeneity across firms for all model specifications. In addition, we enter year fixed effects to control for economy-wide shocks and timely trends in all models.

Furthermore, as Rubin (2008) reports, companies with high CSR rankings tend to be in states that vote Democrat in presidential elections, and low-CSR firms tend to be in Republican states. We therefore use state voting records to instrument CSP because state-wide preferences for Democrats or Republicans are likely affect firms' attitudes about CSR strategies but are unlikely to affect firm-level outcomes (Rubin, 2008; Goss and Roberts, 2011; Deng et al., 2013). Specifically, we use the percentage vote for Democrat to capture Democrat strength in each state, and we employ an instrumental-variable approach to perform our analysis based on a two-stage-least-square (2SLS) estimator.

As an alternative approach to address endogeneity issue, we adopt a propensity-score matching (PSM) method to form a matched sample (Dehejia and Wahba, 2002; Heckman et al., 1998). PSM method is widely applied in empirical research to pair treatment and nontreatment groups on a set of observable characteristics to remove relevant differences (Bharath et al., 2011; Drucker and Puri, 2005), which provides a natural weighting scheme that yields unbiased estimates of the treatment effect (Dehejia and Wahba, 2002).

To test mediated moderation process detailed in hypotheses 3 and 4, we adopt the approach by Muller and Judd (2005) and Preacher et al. (2007), and use the following system of equations to perform our analysis.

$$Y = \beta_{10} + \beta_{11}X + \beta_{12}Mo + \beta_{13}XMo + Controls + \varepsilon_1 \quad \text{.....(1)}$$

$$Me = \beta_{20} + \beta_{21}X + \beta_{22}Mo + \beta_{23}XMo + Controls + \varepsilon_2 \quad \text{.....(2)}$$

$$Y = \beta_{30} + \beta_{31}X + \beta_{32}Mo + \beta_{33}XMo + \beta_{34}Me + \beta_{35}MeMo + Controls + \varepsilon_3 \quad \text{.....(3)}$$

Specifically, *Y* is the outcome variable measured as Tobin's Q, and *X* is CSP_Net. In addition, *Me* is the mediator (i.e., TFP), whereas *Mo* is the moderator (i.e., discretionary cash or organizational risk). Because our tests of the moderated mediation process involve interaction terms, we follow the convention (Muller and Judd, 2005; Dawson, 2014) and center relevant variables (i.e., *X*, *Me*, and *Mo*) to avoid the potential multicollinearity problem. Note that, for those variables not involved in interaction terms, centering does not change the estimated regression coefficients (Dawson, 2014; Aiken and West, 1991). According to Muller and Judd (2005), a significant moderated mediation process supporting our hypotheses 2 and 3 requires the following conditions to be satisfied:[4]

(1) $\beta_{11} \neq 0$. A significant β_{11} reveals an overall treatment effect;

(2) $\beta_{13} = 0$. An insignificant β_{13} implies no overall moderating effect. In other words, the overall treatment effect on the outcome variable does not depend on the moderator;

(3) $\beta_{23} \neq 0$. A significant β_{23} indicates that the treatment effect on the mediator depends on the moderator;

(4) Implicitly, $\beta_{23} \neq 0$ requires $\beta_{34} \neq 0$;

Results

Table I reports summary statistics and pairwise correlations for variables in the regression analysis. We examine the correlations as well as the variance inflation factors in the regression analysis and conclude that multicollinearity is not a major concern.

[Insert Table I here]

The mediating role of TFP in the CSP-CFP relationship

Table II provides the results of the regression analysis testing the mediating role of TFP in the relationship between CSP and Tobin's Q. We conduct hierarchical regression analysis in three steps, and report baseline regression results in columns 1-3 of table II. In column 1, we relate Tobin's Q to *CSP_Net*, along with a set of control variables, firm fixed effects, and year fixed effects. The result reveals a significant positive effect of CSP on Tobin's Q (p<0.01). In column 2, we test whether CSP is also an important determinant of TFP. The result reveal a significantly positive relationship between CSP and TFP ($p<0.01$) According to existing literature (Muller and Judd, 2005; Dawson, 2014; Preacher et al., 2007), to validate the mediating role of TFP, the treatment effect of CSP on the outcome (i.e., Tobin's Q) and mediator (i.e., TFP) must be significant. In addition, controlling for CSP, TFP must have a significant effect on CFP, and the main effect of CSP should decrease substantially. In column 3, TFP has a significant positive coefficient (p<0.01), and both the statistical significance ($p<0.01$) and magnitude ($\beta = 0.071$) drop substantially. We conduct a Sobel test (Sobel, 1986, 1982; Preacher and Hayes, 2004) to assess the magnitude of mediation effect, which reveals a significant decline of the main effect (24.2%, $p<0.01$). Thus, the data support hypotheses 1 and 2.

In columns 4-6 of table II, we perform similar analysis as in columns 1-3 using an instrumental variable approach and only report the second-stage regression results (Goss and

Roberts, 2011; Deng et al., 2013). Our mediation analysis reveals a significant direct effect of CSP on TFP ($p<0.01$) and a significant mediated main effect of CSP (26.4%, $p<0.01$).

In columns 7-9, we use the PSM method to adjust for pretreatment observable differences and perform a one-to-one match to construct our matched sample (Leuven and Sianesi, 2014; Dehejia and Wahba, 2002). Specifically, we use a probit model to estimate the propensity score (the conditional treatment probability of having a positive KLD rating) on a multidimensional set of variables including firm size, leverage, asset tangibility, sales growth, G-index and industry competition. The first-stage probit model yields a log-likelihood of -2839.3 and a McFadden's pseudo R-squared of 0.1483.[5] The probit model has a 72% correct prediction, which is an 18% improvement over blind guessing (Hoetker, 2007).[6] These statistics indicate the appropriateness of the choice of independent variables and the overall fit of our first-stage probit model. Using the matched sample, we report a significant and even stronger mediation effect (51.9%, $p<0.01$).

[Insert Table II about here]

The firm-stakeholder relationship can be complicated. Firms taking socially responsible actions may prioritize different stakeholder groups to retain their willful participation in the firm's productive activities (Harrison et al., 2010). Better relationships with primary stakeholders create shareholder value by helping firms develop productive intangible assets (Hillman and Keim, 2001). Without the continuing participation of various stakeholders, the corporation cannot survive as a going concern (Clarkson, 1995). Secondary stakeholders are generally not engaged in direct transactions with the corporation (Jamali, 2008). Therefore, following existing literature (Clarkson, 1995; Hillman and Keim, 2001; Buysse and Verbeke, 2003), we classify CSR activities according to their target stakeholder groups. The items for *Primary Stakeholder Relationship* are from KLD categories including employee relations, diversity dimensions, and

product relations. The items for *Secondary Stakeholder Relationship* are from KLD categories including community relations, environmental, and human rights.

In table III, we recalculate our CSP measures to reflect firm efforts to engage different stakeholder groups and test the mediating role of TFP accordingly. We report our mediation analysis for primary stakeholders and secondary stakeholders in columns 1-3 and columns 4-6, respectively. We find the direct effect of CSP on TFP is significant for both primary stakeholders and secondary stakeholders. More importantly, the mediation effect of TFP is also evident for both primary and secondary stakeholder groups. Nonetheless, the mediation effect is much stronger for primary stakeholders. The mediated main effect is 20.6% for primary stakeholders ($p<0.01$) and only 9.5% for secondary stakeholders ($p<0.05$).

[Insert Table III about here]

Taken as a whole, our findings in tables II and III document a significant correlation between CSP and TFP as well as a significant *partial* mediation effect of TFP on CSP-CFP relationship, thus lending strong support for hypotheses 1 and 2. Moreover, through various procedures, we conclude that the endogeneity issue is unlikely to drive our findings. Consequently, we use the entire sample and the original CSP measure (instead of the predicted measure) in the balance of our analysis.

Moderated mediation analyses

We further investigate the contingencies of the mediation model tested in the previous section. Specifically, we consider two contingencies: discretionary cash and organizational risk. Although we hypothesize that these two contextual variables moderate the CSP-TFP relationship, our method allows us to test the path models and investigate whether the treatment

effect on the mediator depends on the moderators, or if the mediator's effect on an outcome variable depends on the moderator, or both. We use hierarchical regression analysis (see equations 1-3) to test a moderated-mediation model (Muller and Judd, 2005; Preacher et al., 2007) and report results based on discretionary cash in columns 1-3 of table IV.

In column 1, we document a significant positive effect of CSP on Tobin's Q ($\beta_{11} = 0.107, p < 0.01$). In addition, we test the overall moderating effect of discretionary cash and cannot reject the null hypothesis (i.e., $\beta_{13} = 0$). In column 2, we document a significant and positive moderating effect of discretionary cash on the relationship between CSP and TFP ($\beta_{23} = 0.174, p < 0.01$). Combined with the fact that the coefficient of CSP (β_{34}) in column 3 is positive and significant, our results reveal that discretionary cash moderates the treatment effect of CSP on the mediator. Particularly, our findings indicate the positive effect of CSP on TFP is stronger for firms with higher levels of discretionary cash. Thus, the data supports hypothesis 3.

[Insert Table IV about here]

Similarly, we test the moderated-mediation process when firm organizational risk is the moderator and report our results in table V. As shown in columns 1-3 of table IV, we document that β_{13} is insignificant, and β_{11}, β_{23} and β_{34} are significant and positive. An insignificant β_{13} indicates the nonexistence of an overall moderating effect of organizational risk. The significance of β_{11}, β_{23} and β_{34} suggests that organizational risk moderates the treatment effect of CSP on TFP. To be specific, our data reveals that the effect of CSR engagement to enhance firm productive efficiency is stronger for firms with higher levels of organizational risk. Therefore, the data supports hypothesis 4.

[Insert Table V about here]

Discussion and conclusion

Empirical researchers have put tremendous effort into establishing a connection between corporate social and financial performance using a vast array of methods. Despite the abundant empirical evidence on the CSP-CFP relationship (Margolis and Walsh, 2003; Orlitzky et al., 2003), the underlying mechanisms through which CSR engagement affects firm financial performance is not well understood (Luo et al., 2015).

To answer this call, we build mainly on instrumental stakeholder theory, and propose firm total factor productivity as an important mediator in the relationship between CSR engagement and Tobin's Q, which is a widely used measure of financial performance. The premise is that we treat TFP, the portion of production output that cannot be explained by factor inputs, as the accumulation of firm intangibles that improve the efficiency of unitizing firm resources. We argue that CSR investment possesses instrumental value because it helps firms build productive intangibles that ultimately create value for shareholders (Jones, 1995; Freeman et al., 2010). In this paper, we use a large longitudinal dataset and employ multiple approaches, including fixed effects regression, instrumental variable estimation, and propensity score matching method, to control for endogeneity issues and ensure making proper causal inferences (Margolis et al., 2009; Wood and Jones, 1995). We report robust evidence showing that CSP positively affects TFP and TFP mediates the CSP-CFP relationship.

Many companies allocate significant resources to improve their social performance. However, these efforts do not completely translate into productive efficiency or economic value. Porter and Kramer (2006) point out that CSR is treated in generic ways and is fragmented from business strategies. There is a missing link between CSR and firm core business, which prevents corporate managers from making decisions on CSR in conjunction with other critical operational

decisions. In this sense, our paper can be a critically useful tool for firms intending to design and implement CSR-related strategies as a source of competitive advantage in two ways.

The first major managerial implication is that the integration of CSR strategies with firm core business and production is critical to materialize the instrument value in stakeholder engagement and maximize shareholder value. CSR activities are multidimensional and often represent a collection of uncoordinated initiatives. Although stakeholder theory links CSR closely to stakeholder management to achieve strategic objectives (Freeman, 1984; Freeman, et al. 2010), corporate managers still lack a coherent framework to commit and package various CSR activities to "reach explicit performance targets" in a forward-looking sense (Porter and Kramer, 2006). We provide robust evidence to help corporate managers better understand the productivity-based mechanism underlying the impact of firm CSR performance on shareholder value creation. Though it is not the only channeling factor in the CSP-CFP relationship, TFP lies at a point where a firm's value chain interacts with key stakeholders. With the strategic objective to improve productivity, we provide some clues for corporate managers to identify, prioritize, and address the demands of various stakeholder groups to obtain desirable outcomes. More importantly, our research offers a framework to, at least partially, assess and quantify the instrumental value embedded in CSR engagement.

The second major managerial implications is that corporate managers managing for stakeholders through CSR engagement need to understand its contingent nature to better allocate and utilize firm resources. Every firm operates in a competitive environment which presents great heterogeneity in terms of the limited availability of inputs (e.g., financial and human capital) with various quality, as well as the demand of customers with different preferences. Channeling crucial resources to CSR surely comes at the expense of shareholders. Corporate

managers are oftentimes confronted with the question in terms of CSR investment: how much is too much? The findings in our paper clearly show that CSR participation creates more value under certain circumstances. Only when social considerations of stakeholder benefits align with the firm value chain will CSR engagement create value beyond its cost. Consequently, adopting a contingency perspective, a firm can engage in CSR activities responsively so that it can adjust its socially desirable actions to address the evolving concerns of external stakeholders. We thereby encourage future research to identify and uncover the underlying mechanisms in the CSP-CFP relationship and associated contingences to shed further light in this area.

Notes

[1] Please refer to the NBER website for more information (http://www.nber.org/nberces/)

[2] We include the qualitative category of "human rights" to measure CSR because many U.S. firms have significant non-U.S. operations involving indigenous employees as an important group of stakeholders. To be consistent with existing literature (Berman et al., 1999; Hillman & Keim, 2001), we also construct our CSP measures without the "human rights" category. However, such modification does not change our results in a material way.

[3] Note that our TFP measure is logged because it is estimated from a log-linear production function.

[4] According to existing literature (Muller and Judd, 2005), we recognize that the combination of $\beta_{11} \neq 0$, $\beta_{13} = 0$, $\beta_{21} \neq 0$, and $\beta_{35} \neq 0$ implies another possible moderated mediation process which we do not hypothesize. Specifically, the indirect effect of the mediator (TFP) on outcome variable (Tobin's Q) may depend on the moderator. However, we do not find evidence supporting this moderated mediation process for moderators in our empirical analysis.

[5] To save space, we do not report the first-stage probit model result, which is available upon request.

[6] We report the fraction correctly predicted is 72%. As Hoetker (2007) indicates, this percentage can be misleading because it does not account for the fact that around 66% of sample firms have positive CSP scores. Therefore, the percentage needs to be adjusted. Following Veall (1996), we calculate $\lambda'=(0.72-0.66)/(1-0.66) = 0.18$ and compare the performance of our model (0.72) with a blind guess (0.66), which reveals a very significant 18% improvement.

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Appendix A: Measuring Total Factor Productivity

Total factor productivity, or TFP, is the conventional measure of firm-level productivity (Schoar, 2002). Productivity is often estimated as the deviation between observed output and output predicted by a Cobb-Douglas production function estimated by ordinary least squares (OLS). Such estimates, however, may suffer from simultaneity and selection biases (Olley and Pakes, 1996) (hereafter OP). Simultaneity arises because profit-maximizing firms can choose their input levels to accommodate productivity shocks (Marschak and Andrews, 1944). Firms can increase their use of inputs where there are positive productivity shocks, which makes the input factors endogenous. Consequently, OLS yields biased estimations because of the simultaneity issue.

Another endogeneity concern, selection bias, needs to be addressed in order to estimate production-function parameters. Selection bias results from the fact that firms' decisions to exit markets are correlated with productivity shocks. For example, if there is a positive relation between a firm's profitability and its capital stock, a firm with lots of capital stock may continue to operate despite a low productivity shock. In other words, a firm with a low productivity shock but a high capital stock can still survive because it can produce greater future profits based on its large capital stock. Therefore, the estimated coefficient on the capital variable can be biased downward because of the negative relation between capital stock and likelihood of exit for a given productivity shock.

To estimate the production-function parameters and firm-level productivity, OP propose a novel approach to control for the simultaneity and selection issues. To be specific, OP use investment to proxy for the unobserved time-varying productivity, with the assumption that firms invest more in observing a positive productivity shock. In addition, the OP approach generates an exit rule to account for the selection problem. Notably, the OP approach allows firm-specific

productivity to vary over time, and it endogenizes exit decisions induced by inefficient operation. These features address two major concerns in estimating productivity.

Following OP, we estimate the output as a log-linear Cobb-Douglas production function of several input factors for all U.S. manufacturing firms in the Compustat database from 1992 to 2009 (Schoar, 2002). Specifically, using a Stata code (opreg) developed by Yasar, Raciborski, and Poi (2008), we estimate the following log-linear function:

$$logSales_{ijt} = \propto + \beta_1 logCapital_{ijt} + \beta_2 logLabor_{ijt} + \beta_3 logMaterial_{ijt} + a_{ijt} + \varepsilon_{ijt}$$

where *i* indexes firms, *j* indexes industries, and *t* indexes years. We measure output by company sales (Compustat data #12). *Capital* is the value of property, plant, and equipment net of depreciation (Compustat data #8). *Labor* is the number of employees using Compustat data #29. *Material* is total expenses (Compustat data #12-Compustat data #13) minus labor expenses (Compustat data #29 multiplied by average industry wage). TFP is the residual difference between predicted and actual outputs (α_{ijt}). Thus, TFP reflects the output that input factors cannot explain.

To proxy for the unobserved time-varying productivity and to facilitate the estimation, we measure investment as total capital expenditures (Compustat #128). We further obtain deflating factors for each four-digit industry-year from the NBER CES database (http://www.nber.org/nberces/) to deflate the sales, capital, materials, and investment measures (Bartelsman and Gray, 2001). Because coefficients on capital, labor, and material inputs vary by industry and year, this model specification allows for different industry-level factor intensities. Note that our TFP measure is a logged measure of raw productivity in the log-linear Cobb-Douglas production function. In the regression analysis, we use the logged measure instead of

raw measure as our dependent variable, and thereby we interpret the estimated coefficients as percentages.

TABLE I

Summary statistics and pairwise correlation matrix

	Variables	Obs	Mean	St Dev	1	2	3	4	5	6	7	8	9	10
1	TFP	5,516	0.406	1.700	1.000									
2	CSP_Net	5,516	0.116	2.192	0.016	1.000								
3	Firm size	5,516	6.966	1.805	-0.593*	0.120*	1.000							
4	Leverage	5,516	0.188	0.182	-0.274*	-0.053*	0.255*	1.000						
5	Assets tangibility	5,516	0.448	0.153	0.441*	-0.007	-0.433*	-0.291*	1.000					
6	Sales growth	5,516	0.178	0.93	0.074*	-0.01	-0.131*	-0.001	0.082*	1.000				
7	G-index	5,516	9.229	2.322	-0.261*	0.053*	0.163*	0.089*	-0.177*	-0.024*	1.000			
8	Industry competition	5,516	0.164	0.180	-0.202*	-0.029*	0.137*	0.140*	-0.144*	-0.039*	0.066*	1.000		
9	Organizational risk	5,516	0.024	0.067	0.194*	-0.053*	-0.289*	-0.024*	0.206*	0.218*	-0.052*	-0.053*	1.000	
10	Discretionary cash	5,516	0.097	0.076	0.101*	0.149*	0.072*	-0.093*	-0.054*	0.012	-0.036*	-0.121*	0.078	1.000

* $p<0.05$

TABLE II

CSR and firm performance: the mediating role of TFP

Independent variables	Dependent variables								
	Entire sample: OLS			Entire sample: IV estimation (2S)			PS-matched sample		
	Tobin's Q	TFP	Tobin's Q	Tobin's Q	TFP	Tobin's Q	Tobin's Q	TFP	Tobin's Q
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
CSP_Net	0.094**	0.030***	0.071*	2.176**	0.598***	1.601*	0.109**	0.032***	0.079*
	[2.223]	[8.776]	[1.674]	[2.279]	[7.824]	[1.670]	[2.356]	[8.725]	[1.707]
TFP			0.767***			0.962***			0.904***
			[4.131]			[5.196]			[4.281]
Firm size	-0.616***	-0.135***	-0.512***	0.355***	-0.097***	0.448***	-0.811***	-0.177***	-0.651***
	[-4.261]	[-11.721]	[-3.497]	[3.220]	[-11.001]	[4.025]	[-4.695]	[-12.747]	[-3.691]
Leverage	8.404***	-0.142***	8.513***	8.886***	-0.264***	9.139***	8.147***	-0.134**	8.268***
	[14.032]	[-2.966]	[14.225]	[14.360]	[-5.324]	[14.766]	[11.464]	[-2.344]	[11.654]
Assets tangibility	2.817***	0.375***	2.529***	3.973***	0.471***	3.520***	0.785	1.004***	1.693
	[3.745]	[6.245]	[3.354]	[5.302]	[7.854]	[4.679]	[0.608]	[9.668]	[1.297]
Sales growth	0.055	0.043***	0.022	-0.001	0.040***	-0.04	0.037	0.012	0.026
	[0.757]	[7.384]	[0.303]	[-0.017]	[6.878]	[-0.545]	[0.390]	[1.629]	[0.272]
G-index	-0.133	-0.013*	-0.123	-0.259***	-0.033***	-0.227***	-0.138	-0.026***	-0.115
	[-1.560]	[-1.945]	[-1.443]	[-3.053]	[-4.865]	[-2.680]	[-1.479]	[-3.431]	[-1.230]
Industry competition	-0.291	-0.010	-0.283	-0.408	-0.070	-0.340	0.319	-0.059	0.373
	[-0.529]	[-0.237]	[-0.516]	[-0.753]	[-1.614]	[-0.630]	[0.452]	[-1.037]	[0.529]
Constant	5.486***	-2.086***	7.087***	-1.07	-2.175***	1.022	8.125***	-1.375***	9.368***
	[4.340]	[-20.672]	[5.369]	[-0.870]	[-22.102]	[0.792]	[5.328]	[-11.207]	[6.049]
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,516	5,516	5,516	5,516	5,516	5,516	4,020	4,020	4,020
Adjusted R-squared	0.442	0.969	0.494	0.442	0.967	0.487	0.358	0.968	0.432
Sobel test			p<0.01			p<0.01			p<0.01
Indirect effect			0.023			0.575			0.02
Direct effect			0.071			1.601			0.018
Total effect			0.094			2.176			0.038
Mediated total effect			24.2%			26.4%			51.9%

** p<0.10, ** p<0.05, *** p<0.01*

TABLE III
Mediation analyses: primary stakeholders vs. secondary stakeholders

Independent variables	Dependent variables					
	Primary stakeholders			Secondary stakeholders		
	Tobin's Q	TFP	Tobin's Q	Tobin's Q	TFP	Tobin's Q
	(1)	(2)	(3)	(4)	(5)	(6)
CSP_Net (Primary)	0.110**	0.034***	0.087*			
	[2.102]	[6.940]	[1.664]			
CSP_Net (Secondary)				0.149*	0.029***	0.135*
				[1.951]	[3.730]	[1.765]
TFP			0.668***			0.490***
			[4.238]			[3.357]
Firm size	-0.707***	-0.174***	-0.591***	-1.321***	-0.164***	-1.240***
	[-4.822]	[-12.706]	[-3.967]	[-9.336]	[-11.490]	[-8.654]
Leverage	8.358***	-0.217***	8.503***	9.058***	-0.167***	9.139***
	[14.049]	[-3.902]	[14.295]	[15.213]	[-2.772]	[15.355]
Assets tangibility	0.220	1.037***	0.913	-0.231	1.042***	1.521
	[0.197]	[9.931]	[0.810]	[-1.651]	[8.889]	[1.301]
Sales growth	0.058	0.045***	0.028	0.036	0.040***	0.016
	[0.786]	[6.551]	[0.376]	[0.499]	[5.502]	[0.226]
G-index	-0.132	-0.016**	-0.121	-0.08	-0.019**	-0.071
	[-1.540]	[-2.044]	[-1.415]	[-0.940]	[-2.203]	[-0.831]
Industry competition	-0.345	0.008	-0.350	-0.384	-0.080	-0.344
	[-0.632]	[0.148]	[-0.642]	[-0.692]	[-1.433]	[-0.622]
Constant	7.330***	-1.386***	8.255***	11.701***	-1.399***	12.386***
	[5.809]	[-11.744]	[6.457]	[9.251]	[-10.956]	[9.679]
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,516	5,516	5,516	5,516	5,516	5,516
Adjusted R-squared	0.438	0.958	0.498	0.446	0.953	0.487
Sobel test			p<0.01			p<0.05
Indirect effect			0.023			0.014
Direct effect			0.087			0.135
Total effect			0.110			0.149
Mediated total effect			20.6%			9.5%

** p<0.10*
*** p<0.05*
**** p<0.01*

TABLE IV

Moderating the mediation process: the effect of firm discretionary cash

Independent variables	Dependent variables					
	Tobin's Q		TFP		Tobin's Q	
	Coefficient	(1)	Coefficient	(2)	Coefficient	(3)
CSP_Net	β_{11}	0.107**	β_{21}	0.030***	β_{31}	0.086**
		[2.521]		[9.070]		[2.019]
Discretionary cash	β_{12}	5.657***	β_{22}	0.576***	β_{32}	5.014***
		[5.037]		[6.494]		[4.284]
CSP_Net × Discretionary cash	β_{13}	0.084	β_{23}	0.174***	β_{33}	0.017
		[0.189]		[4.939]		[0.039]
TFP					β_{34}	0.646***
						[3.414]
TFP × Discretionary cash					β_{35}	0.540
						[0.823]
Firm size		-0.714***		-0.149***		-0.615***
		[-4.868]		[-12.897]		[-4.124]
Leverage		8.794***		-0.091*		8.843***
		[14.630]		[-1.926]		[14.719]
Assets tangibility		3.055***		0.394***		2.774***
		[4.067]		[6.635]		[3.678]
Sales growth		0.07		0.046***		0.042
		[0.952]		[8.031]		[0.575]
G-index		-0.102		-0.012*		-0.096
		[-1.201]		[-1.803]		[-1.123]
Industry competition		-0.392		-0.092**		-0.326
		[-0.697]		[-2.078]		[-0.579]
Constant		5.771***		1.023***		5.109***
		[4.520]		[10.149]		[3.961]
Year fixed effects		Yes		Yes		Yes
Firm fixed effects		Yes		Yes		Yes
Observations		5,516		5,516		5,516
Adjusted R-squared		0.446		0.971		0.498

* *p<0.10*
** *p<0.05*
*** *p<0.01*

Table V
Moderating the mediation process: the effect of organizational risk

Independent variables	Dependent variables					
	Tobin's Q		TFP		Tobin's Q	
	Coefficient	(1)	Coefficient	(2)	Coefficient	(3)
CSP_Net	β_{11}	0.092**	β_{21}	0.030***	β_{31}	0.074*
		[2.089]		[8.713]		[1.672]
Organizational risk	β_{12}	6.008**	β_{22}	0.522***	β_{32}	8.323***
		[2.353]		[2.602]		[2.756]
CSP_Net × Organizational risk	β_{13}	1.184	β_{23}	0.239***	β_{33}	1.183
		[1.113]		[2.857]		[1.108]
TFP					β_{34}	0.634***
						[3.354]
TFP × Organizational risk					β_{35}	-2.008
						[-1.640]
Firm size		-0.837***		-0.180***		-0.725***
		[-5.391]		[-14.756]		[-4.567]
Leverage		8.387***		-0.133***		8.469***
		[13.971]		[-2.821]		[14.114]
Assets tangibility		3.009***		0.394***		2.736***
		[3.992]		[6.654]		[3.617]
Sales growth		0.066		0.045***		0.042
		[0.909]		[7.778]		[0.566]
G-index		-0.175**		-0.024***		-0.163*
		[-2.042]		[-3.604]		[-1.896]
Industry competition		-0.092		0.032		-0.098
		[-0.165]		[0.742]		[-0.176]
Constant		7.549***		1.367***		6.790***
		[5.580]		[12.863]		[4.931]
Year fixed effects		Yes		Yes		Yes
Firm fixed effects		Yes		Yes		Yes
Observations		5,516		5,516		5,516
Adjusted R-squared		0.445		0.972		0.486

* *p<0.10*
** *p<0.05*
*** *p<0.01*

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