



Corporate Social Responsibility and Access to Finance

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CORPORATE SOCIAL RESPONSIBILITY AND ACCESS TO FINANCE

Abstract

In this paper, we investigate whether superior performance on corporate social responsibility (CSR) strategies leads to better access to finance. We hypothesize that better access to finance can be attributed to a) reduced agency costs due to enhanced stakeholder engagement and b) reduced informational asymmetry due to increased transparency. Using a large cross-section of firms, we find that firms with better CSR performance face significantly lower capital constraints. Moreover, we provide evidence that both of the hypothesized mechanisms, better stakeholder engagement and transparency around CSR performance, are important in reducing capital constraints. The results are further confirmed using an instrumental variables and a simultaneous equations approach. Finally, we show that the relation is driven by both the social and the environmental dimension of CSR.

Keywords: corporate social responsibility, sustainability, capital constraints, ESG (environmental, social, governance) performance, stakeholder engagement, disclosure

INTRODUCTION

In recent decades, a growing number of academics as well as top executives have been allocating a considerable amount of time and resources to Corporate Social Responsibility (CSR) strategies – i.e. the voluntary integration of social and environmental concerns in their companies’ operations and in their interaction with stakeholders (European Commission, 2001). According to the latest UN Global Compact – Accenture CEO study¹ (2010), 93 percent of the 766 participant CEOs from all over the world declared CSR as an “important” or “very important” factor for their organizations’ future success. On the demand side, consumers are becoming increasingly aware of the firms’ CSR performance: a recent 5,000-people survey² by Edelman revealed that nearly two thirds of those interviewed cited “transparent and honest business practices” as the most important driver of a firm’s reputation. Despite this large amount of attention, a fundamental question still remaining unanswered is whether CSR leads to value creation, and if so, in what ways? The extant research so far has failed to give a definitive answer (Margolis, Elfenbein and Walsh, 2007). In this paper, we argue for and provide empirical evidence for one specific mechanism through which CSR may generate value in the long-run: by lowering the idiosyncratic constraints that a firm faces in financing operations and strategic projects.

In particular, by “capital constraints” we refer to those market frictions that may prevent a firm from funding all desired investments. This inability to obtain finance may be “due to credit constraints or inability to borrow, inability to issue equity, dependence on bank loans, or

¹ “A New Era of Sustainability. UN Global Compact-Accenture CEO Study 2010” last accessed July 28th, 2010 at: (https://microsite.accenture.com/sustainability/research_and_insights/Pages/A-New-Era-of-Sustainability.aspx)

² Mckinght, L., 2011. “Companies that do good also do well”, Market Watch, *The Wall Street Journal (Digital Network)*, last accessed April 11th, 2011 at: <http://www.marketwatch.com/story/companies-that-do-good-also-do-well-2011-03-23>

illiquidity of assets” (Lamont et al., 2001). Prior studies found that capital constraints play an important role in strategic decision-making by directly affecting the firm’s ability to undertake major investment decisions and, also by influencing the firm’s capital structure choices (e.g., Hennessy and Whited, 2007). Moreover, capital constraints are associated with a firm’s subsequent stock market performance (e.g. Lamont et al., 2001).

The thesis of this paper is that firms with better CSR performance face lower capital constraints. This is due to several reasons. First, superior CSR performance is linked to better stakeholder engagement, limiting the likelihood of short-term opportunistic behavior (Benabou and Tirole, 2010; Eccles et al., 2012) and as a result reducing overall contracting costs (Jones, 2005). Second, firms with better CSR performance are more likely to disclose their CSR activities to the market (Dhaliwal et al., 2011) to signal their long-term focus and differentiate themselves (Spence, 1973; Benabou and Tirole, 2010). CSR reporting creates a positive feedback loop: a) increases transparency around the social and environmental impact of companies, and their governance structure and b) may change the internal control system that further improves the compliance with regulations and the reliability of reporting. Therefore, the increased availability and quality of data about the firm reduces the informational asymmetry between the firm and investors (e.g. Botosan, 1997; Khurana and Raman, 2004; Hail and Leuz, 2006; Chen et al., 2009; El Ghouli et al., 2011), leading to lower capital constraints (Hubbard, 1998). In sum, because of lower agency costs through stakeholder engagement and increased transparency through CSR reporting, we hypothesize that a firm with superior CSR performance will face lower capital constraints.

To investigate the impact of CSR on capital constraints, we use a panel data set from Thompson Reuters ASSET4 for 2,439 publicly listed firms during the period 2002 to 2009.

Thompson Reuters ASSET4 rates firms' performance on three dimensions ("pillars") of CSR: social, environmental and corporate governance. The dependent variable of interest is the "KZ index", first advocated by Kaplan and Zingales (1997) and subsequently used extensively in the corporate finance literature (e.g. Lamont et al., 2001; Baker et al., 2003; Almeida et al., 2004; Bakke and Whited, 2010; Hong et al., 2011) as a measure of capital constraints.

The results confirm that firms with superior CSR performance face lower capital constraints. We test the robustness of the results in several ways: by substituting the KZ index with an indicator variable for stock repurchase activity and with an equal-weighted KZ index, to proxy for capital constraints, we find similar results. Moreover, we construct measures and test empirically for the two hypothesized mechanisms – stakeholder engagement and CSR disclosure - and we find that both variables are significantly related to capital constraints. Importantly, the results remain unchanged when we implement a two-stage feasible efficient Generalized Method of Moments (GMM) estimation and a three-stage least squares simultaneous equations model with validity-tested instruments, mitigating potential endogeneity concerns or correlated omitted variables issues and increasing confidence in the directionality of our results. Furthermore, in subsample analysis, we find that the link between CSR performance and capital constraints is economically larger and highly significant for the subsample of firms that are most capital constrained. This result is inconsistent with lower capital constraints causing higher CSR performance because this causal mechanism would suggest that the relation between CSR and capital constraints should be stronger for the least capital constrained firms. Finally, we explore the impact of the three components of CSR individually and find that the impact on capital constraints is driven by social and environmental performance.

This paper contributes to both the theoretical and empirical literature on CSR. Although many studies have explored the link between CSR and value creation, few have focused on the crucial role of capital markets as a mechanism through which CSR may translate into tangible benefits (e.g. Derwall and Verwijmeren, 2007; Goss and Roberts, 2011; Sharfman and Fernando, 2008; Chava, 2010). We contribute to this literature by showing the impact that superior CSR performance has on the firm's ability to access finance in capital markets. Furthermore, we argue that differential ability to implement CSR strategies results in substantial variation in terms of CSR performance which in turn, significantly and differentially affects the firm's ability to access capital. This differential ability to access finance leads to variation in the ability of firms to finance major strategic investments, and therefore can have direct performance implications. However, we note that our study does not take into account other potential costs of CSR and as a result we cannot conclude from this study whether better CSR performance leads to net benefits for corporations.

Corporate Social Responsibility

Numerous studies have investigated the link between CSR and financial performance through a theoretical as well as an empirical lens. In particular, research rooted in neoclassical economics argued that CSR unnecessarily raises a firm's costs, putting the firm in a position of competitive disadvantage vis-à-vis its competitors (Friedman, 1970; Aupperle et al., 1985; McWilliams and Siegel, 1997; Jensen, 2002). Predominantly based on agency theory, some studies have argued that employing valuable firm resources to engage in CSR results in significant managerial benefits rather than financial benefits to the firm's shareholders (Brammer and Millington, 2008).

In contrast, other scholars have argued that CSR can have a positive impact by providing better access to valuable resources (Cochran and Wood, 1984; Waddock and Graves, 1997), attracting and retaining higher quality employees (Turban and Greening, 1997; Greening and Turban, 2000), allowing for better marketing of products and services (Moskowitz, 1972; Fombrun, 1996), creating unforeseen opportunities (Fombrun et al., 2000), and contributing towards gaining social legitimacy (Hawn et al., 2011). Furthermore, CSR may function in similar ways as advertising does, increasing demand for products and services and/or reducing consumer price sensitivity (Dorfman and Steiner, 1954; Navarro, 1988; Sen and Bhattacharya, 2001; Milgrom and Roberts, 1986) and even enabling firms to develop intangible assets (Gardberg and Fombrun, 2006; Hull and Rothernberg, 2008; Waddock and Graves, 1997). From a stakeholder theory perspective (Freeman, 1984; Freeman et al., 2007; Freeman et al., 2010), which suggests that CSR includes managing multiple stakeholder ties concurrently, scholars have argued that CSR can mitigate the likelihood of negative regulatory, legislative or fiscal action (Freeman, 1984; Berman et al., 1999; Hillman and Keim, 2001), attract socially conscious consumers (Hillman and Keim, 2001), or attract financial resources from socially responsible investors (Kapstein, 2001). Additionally, CSR may also lead to value creation by protecting and enhancing corporate reputation (Fombrun and Shanley, 1990; Fombrun, 2005; Freeman et al., 2007).

Empirical work investigating the link between CSR and corporate financial performance, measured by various accounting or stock market measures, has resulted in contradictory findings, ranging from a positive to a negative relation, to a U-shaped or even to an inverse-U shaped relation (Margolis and Walsh, 2003; Margolis, Elfenbein and Walsh, 2007). According to McWilliams and Siegel (2000), such conflicting results were due to “several important theoretical and empirical limitations” (p.603) of prior studies; some have argued that prior work

suffered from “stakeholder mismatching” (Wood and Jones, 1995), the neglect of “contingency factors” (e.g. Ullmann, 1985), “measurement errors” (e.g. Waddock and Graves, 1997) and, omitted variable bias (Aupperle et al., 1985; Cochran and Wood, 1984; Ullman, 1985).

More recent work focuses on understanding the role of capital markets as an intermediate mechanism through which CSR can create long-term value.³ For example, Lee and Faff (2009) show that firms with high CSR scores have lower idiosyncratic risk, while Goss (2009) shows that firms with low CSR scores are more likely to experience financial distress. Moreover, Ioannou and Serafeim (2010a) show a positive impact of CSR on sell-side analysts’ recommendations while Goss and Roberts (2011) find that firms with the worst CSR scores pay between 7 and 18 basis points more on their bank debt compared to firms with higher scores. Relatedly, Dhaliwal et al. (2011) find that the voluntary disclosure of CSR activities leads to a reduction in the firm’s cost of capital, while attracting dedicated institutional investors and analyst coverage. El Ghoul et al. (2011) focus on a sample of US firms and find that firms with better CSR scores exhibit lower cost of equity capital.

In this paper, we contribute to this emerging literature that investigates the relation between capital markets and socially responsible firms by focusing on the critical impact that CSR has on idiosyncratic firm capital constraints. Unlike prior studies that mainly focused on US firms only, our findings are based on a broad sample of firms originating from 49 countries.

³ Investors would take into account a firm’s CSR strategies in their investment decisions if they believe that integration of CSR data would improve their risk-adjusted performance. A growing number of investors use CSR information as an important criterion for their investment decisions – what is currently known as “socially responsible investing” (SRI). For example, in 2007 mutual funds that invested in socially responsible firms had assets under management of more than \$2.5 and \$2 trillion dollars in the United States and Europe respectively. In Canada, Japan and Australia, the corresponding numbers were \$500, \$100 and \$64 billion respectively (Ioannou and Serafeim, 2010a). The emergence of several CSR ratings firms (such as Thomson Reuters ASSET4 and KLD), the widespread dissemination of data on CSR performance by Bloomberg terminals (Eccles, Krzus and Serafeim, 2011), and the formation of teams to analyze CSR data within large banks, highlight the growing demand for CSR information. Furthermore, projects like the Enhanced Analyst Initiative (EAI) that allocate a minimum of 5 percent of trading commissions to brokers that integrate analysis of CSR data into their mainstream research has increased sell-side analyst incentives to incorporate CSR data in their analysis.

Moreover our study adds to prior work by considering other forms of capital constraints beyond the cost of equity or debt, including the inability to borrow, the inability to issue equity, the dependence on bank loans, or the illiquidity of assets (Lamont et al., 2001). More importantly, this paper identifies the mechanisms through which better CSR performance contributes to lower capital constraints. As we explain in the following section, understanding the impact of CSR on capital constraints is important since prior literature has documented a critical link between capital constraints and firm performance.

Capital Constraints

Predominantly, companies engage in strategic investments with the goal of achieving superior performance. The ability to finance such strategic investments is directly linked to the idiosyncratic capital constraints that each firm is facing. Therefore, we first review the long literature that has explored the impact that capital constraints have on investments. The economic theory of investment was greatly influenced by Modigliani and Miller's seminal 1958 paper, which postulated that “a firm's financial status is irrelevant for real investment decisions in a world of perfect and complete capital markets.” In neoclassical economics, the investment function is derived from the firm's profit-maximizing optimization and postulates that investment depends on the marginal productivity of capital, interest rate, and tax rules (Summers et. al., 1981; Mankiw, 2009). However, subsequent studies in equity and debt markets show that cash flow (i.e. internal funds) also plays a key role in determining the firm's level of investment (Blundell et. al., 1992; Whited, 1992; Hubbard and Kashyap 1992). Importantly, prior work has shown that firms that are financially constrained are more likely to diminish investments in a wide range of strategic activities (Hubbard, 1998; Campello et al., 2010), including investments

in inventory (Carpenter et al., 1998) as well as investments in R&D activities (Himmelberg and Petersen, 1994; Hall and Lerner, 2010), thus significantly and adversely the capacity of the firm to grow over time.

A second set of studies has explored how capital constraints affect the firm's entry and exit decisions into markets or industries. More specifically, using personal tax-return data on entrepreneurs, Holtz-Eakin, Joulfaian, and Rosen (1994a) find that the size of an individual's inheritance – regarded as an exogenous shock to one's wealth – had a significant positive effect on the probability of becoming an entrepreneur. A follow-up paper (Holtz-Eakin, Joulfaian, and Rosen 1994b) shows that firms founded by entrepreneurs with a larger inheritance (thus, lower capital constraints) are also more likely to survive. Aghion, Fally and Scarpetta (2007) document a similar mechanism using firm-level data from 16 economies, comparing new firm entry and their subsequent post-entry growth trajectory.

A third stream of literature accounting for both incumbents and new entrants (see Levine (2005) for a comprehensive review) argues that capital constraints affect smaller, newer and riskier firms relatively more, channeling capital to where the marginal return is highest. As a result, countries with better-functioning financial systems that can ease such constraints, experience faster industrial growth. Given the idiosyncratic levels of constraints faced by companies of various sizes, scholars turned to capital constraints as an explanation for why small companies pay lower dividends, become more highly levered and grow more slowly (Cooley and Quadrini 2001; Cabral and Mata 2003). For example, Carpenter and Petersen (2002) show that the asset growth of small U.S. firms is constrained by their internal capital, and that firms who are able to raise additional external funds enjoy a higher growth rate. Becchetti and Trovato (2002) find qualitatively similar results using a sample of Indian firms, and Desai, Foley and

Forbes (2008) confirm the same relation in a currency crisis setting. Finally, Beck et al. (2005), using survey data from global companies, document that firm performance is vulnerable to various financial constraints and that small companies are disproportionately affected due to tighter limitations. In sum, the literature to date has revealed that seeking ways to relax capital constraints is crucial to the firm-level survival and growth, the industry-level expansion and even the country-level development.

The Link between CSR and Capital Constraints

Based on neoclassical economic assumptions that postulate a flat supply curve for funds in the capital market at the level of the risk-adjusted real interest rate, Hennessy and Whited (2007) argue that “a CFO can neither create nor destroy value through his financing decisions in a world without frictions”. However, in reality, the supply curve for funds is effectively upward sloping rather than horizontal⁴ - at levels of capital that exceed the firm’s net worth –because of market imperfections such as informational asymmetries (Greenwald, Stiglitz and Weiss 1984; Myers and Majluf 1984) and agency costs (Bernanke and Gertler 1989, 1990). In other words, when the likelihood of agency costs is high and the amount of capital that the firm requires for investments exceeds its net worth (and it is therefore uncollateralized), capital providers are compensated for their information (and/or monitoring) costs through pricing capital a higher interest rate. Consequently, the greater these market frictions are, the steeper the supply curve and the higher the cost of external financing.

It follows then, that the adoption and implementation of firm strategies that reduce informational asymmetries or reduce the likelihood of agency costs make the supply curve for funds effectively less steep. Therefore, better access to funds lowers the idiosyncratic capital

⁴ For a full exposition of the model, based on neoclassical assumptions, see Hubbard (1998), p. 195-198.

constraints the firm is facing, favorably impacting its strategic objectives by allowing it to undertake major investments that would not otherwise have been profitable, and/or by influencing the capital structure choices of the firm (e.g., Hennessy and Whited, 2007).

We argue that the adoption and implementation of CSR strategies that lead to superior CSR performance result in lower idiosyncratic capital constraints for the firm because of two complementary mechanisms. First, superior CSR performance captures the firm's commitment to and engagement with stakeholders on the basis of mutual trust and cooperation (Jones, 1995; Andriof and Waddock, 2002). Consequently, as Jones (1995) argues, "because ethical solutions to commitment problems are more efficient than mechanisms designed to curb opportunism, it follows that firms that contract with their stakeholders on the basis of mutual trust and cooperation [...] will experience reduced agency costs, transaction costs and costs associated with team production" (Foo, 2007). Such agency and transaction costs according to Jones (2005) would include "monitoring costs, bonding costs, search costs, warranty costs and residual losses." Moreover, superior engagement with stakeholders can enhance a firm's revenue or profit generation – also contributing towards the persistence of superior profitability (Choi and Wang, 2009) – through higher quality of relationship with customers, business partners and among employees; which in turn improves interaction with customers and new product development.⁵ In other words, superior stakeholder engagement may directly limit the likelihood of short-term opportunistic behavior (Benabou and Tirole, 2010; Eccles et al., 2012), and it also represents a more efficient form of contracting with key stakeholders (Jones, 1995) that could lead to enhanced revenue or profit generation, which in turn is rewarded by the markets.

Secondly, prior studies have shown that firms with superior CSR performance are more likely to publicly disclose their CSR strategies by issuing sustainability reports (Dhaliwal et al.,

⁵ We thank an anonymous referee for suggesting this point.

2011) and are also more likely to provide assurance of such reports by third parties, therefore increasing the credibility of such reports (Simnett et al., 2009; Benabou and Tirole, 2010). Consequently, CSR reporting: a) increases transparency with regards to the social and environmental impact of companies, and their governance structure and b) may lead to changes in internal control system that further improves the compliance with regulations and the reliability of reporting. As a result, the extended availability of credible data about the firm's CSR strategies, in addition to its financial disclosures, further reduces informational asymmetry and results in lower capital constraints (Hubbard, 1998)⁶. Moreover, the resulting changes in internal managerial practices (Ioannou and Serafeim, 2011) may also reduce the likelihood of agency costs in the form of short-termism.

To summarize, we postulate that firms with superior CSR performance will face lower idiosyncratic capital constraints because of two mechanisms: a) reduced agency costs and revenue/profit generating potential resulting from more effective stakeholder engagement and b) reduced informational asymmetry resulting from more extended and more credible CSR disclosure practices and transparency.

DATA AND SAMPLE

Dependent Variable: The KZ index of capital constraints

⁶ Indicatively, we note that the rapid growth of available capital for investment through SRI funds in recent years (Ioannou and Serafeim, 2010a), and the corresponding expansion of potential investors that base their investment decisions on non-financial information (Kapstein, 2001), may well be due, to an extent, to the increased availability of information about the firm, and the resulting investor endorsement of the long-term focus that firms with superior CSR performance adopt. For example, many SRI funds use a positive screening model in which they overweight firms with good CSR performance in their portfolio, or a negative screening model in which they exclude from their investment universe companies with bad CSR performance, or an ESG integration model in which they integrate ESG data into their valuation models. Under all these investment models, SRI funds fully incorporated non-financial information in their decision making, over and above the traditional use of financial information.

We follow the extant literature in corporate finance (e.g. Lamont et al. 2001; Almeida et al., 2004; Bakke and Whited, 2010) in measuring the level of capital constraints by constructing the KZ index for every firm-year pair in our sample utilizing estimates from Kaplan and Zingales (1997)⁷. As reported in Lamont et al. (2001), Kaplan and Zingales (1997) classified firms into discrete categories of capital constraints and then employed an ordered logit specification to relate their classifications to accounting variables. Consistent with prior literature, in our empirical approach, we use their regression coefficients to construct the KZ index in every year and for each firm, consisting of a linear combination of five accounting ratios⁸: a) cash flow to total capital, b) the market to book ratio, c) debt to total capital, d) dividends to total capital, and e) cash holdings to capital. Firms with higher values of cash flow to total capital, higher values of dividends to total capital, and higher values of cash holdings to capital, and with lower values of the market to book ratio and lower values of debt to total capital are less capital constrained. Therefore, higher values of the KZ index imply that the firm is more capital constrained.

The intuition behind these variables is that firms with high cash flows and large cash balances have more internal funds to deploy for new projects and as a result they are less capital constrained (Baker et al., 2003). Firms with high dividend payments and low market-to-book have fewer growth options and investment opportunities and as a result they do not need as much new financing (Lamont et al, 2001). Finally, firms with high leverage are less capable of obtaining more debt financing because the probability of default is already high and as a result

⁷ A variety of approaches including investment-cash flow sensitivities (Fazzari et al., 1988), the Whited and Wu (WW) index of constraints (Whitted and Wu, 2006) and other sorting criteria based on firm characteristics have been proposed in the literature as measures of capital constraints. Here, we use the KZ index because it has been the most prevalently used measure in the literature to date (Hadlock and Pierce, 2010).

⁸ More specifically we calculate the KZ index following Baker, Stein and Wurgler (2003) as: $-1.002 CF_{it}/A_{it-1} - 39.368 DIV_{it}/A_{it-1} - 1.315 C_{it}/A_{it-1} + 3.139 LEV_{it} + 0.283 Q_{it}$, where CF_{it}/A_{it-1} is cash flow over lagged assets; DIV_{it}/A_{it-1} is cash dividends over lagged assets; C_{it}/A_{it-1} is cash balances over assets; LEV_{it} is leverage and Q_{it} is the market value of equity (price times shares outstanding plus assets minus the book value of equity over assets). The original ordered logit regression and full exposition of the index may be found in Kaplan and Zingales (1997).

the cost of financing is high as well (Baker et al., 2003). As a robustness check, we also construct an *equally-weighted* KZ index, where the five accounting variables still enter the specification linearly, but they are assigned equal weights (as opposed to being weighted with the Kaplan and Zingales (1997) estimates). All of our firm-level data were collected from Worldscope. We winsorize each of the five elements of the KZ index at the 99 percentile to avoid extreme ratios.

Independent Variables: Measuring CSR and the Thomson Reuters ASSET4 Dataset⁹

Prior studies have suggested a number of measures for CSR performance: forced-choice survey instruments (Aupperle, 1991; Aupperle et al., 1985), the Fortune reputational and social responsibility index or Moskowitz' reputational scales (Bowman and Haire, 1975; McGuire et al., 1988; Preston and O'Bannon, 1997), content analysis of corporate documents (Wolfe, 1991), behavioral and perceptual measures (Wokutch and McKinney, 1991), and case study methodologies (Clarkson, 1991).

For our empirical analysis, and to measure CSR performance, we use a panel dataset with environmental, social and governance (ESG) performance scores obtained from Thomson Reuters ASSET4; a Swiss-based company that specializes in providing objective, relevant, auditable and systematic ESG information and investment analysis tools to professional investors¹⁰ who built their portfolios by integrating ESG (non-financial) data into their traditional investment analysis. Specially trained research analysts collect 900 evaluation points per firm, where all the primary data used must be objective and publically available. After gathering the ESG data every year – that lacks fully accepted reporting standards worldwide – the analysts

⁹ This section draws extensively from various public documents found at the firm's website (www.asset4.com) as well as personal communication with our contacts at the firm. For more detailed information, see Appendix.

¹⁰ It is estimated that investors representing more than €2.5trillion assets under management use the ASSET4 data, including prominent investment houses such as BlackRock.

transform it into consistent units to enable quantitative analysis of this qualitative data. Indicatively, we note that: a) for environmental factors the data would typically include information on energy used, water recycled, CO2 emissions, waste recycled, and spills and pollution controversies and b) for social factors the data would typically include employee turnover, injury rate, accidents, training hours, women employees, donations, and health & safety controversies.

The data points that are collected are categorized as “drivers” or “outcomes”. Drivers “track policies that cover issues such as emission reduction, human rights, and shareholder rights” whereas outcomes “track quantitative results such as greenhouse gas emissions, personnel turnover and highest remuneration package”. Based on these data points, Thomson Reuters (ASSET4) offers a comprehensive platform for establishing customizable benchmarks (e.g. sector, country etc) for the assessment of corporate performance. Annually, these 900 data points are used as inputs to a default equal-weighted framework to calculate 250 key performance indicators (KPIs), to be further organized into 18 categories within four pillars (see appendix): a) environmental performance score, b) social performance score c) corporate governance score and d) economic performance score. In year t , a firm receives a z-score for each of the pillars, benchmarking its performance against the rest of the firms based on all the information available in fiscal $t-1$; therefore, by construction, our independent variable is lagged by one year. So, our final sample is an unbalanced panel dataset where the unit of observation is the firm-year dyad and where every firm receives a score on each of these pillars in every year.

For our analysis, we use the annual environmental, social and corporate governance scores to construct a composite CSR index for every year and each focal firm. However, when constructing such an index an aggregation issue arises: what weights should one assign to these

three dimensions of CSR performance? The same issue was faced in the past by scholars that used the Kinder, Lydenberg and Domini (KLD) dataset. Some studies used differential category weights based on either (subjective) academic opinions about category importance (Graves and Waddock, 1994; 1997) or used the analytic hierarchy process to derive weights (Ruf, et al., 1993). The literature to date however, has not identified a theoretically derived ranking of importance for the various stakeholder groups as a guide for empirical work. In fact, Mitchell, Agle and Wood (1997) claim that finding such a universal ranking is not even possible theoretically. In this paper, we follow the convention established by Waddock and Graves (1997) and Sharfman (1996), followed by Hillman and Keim (2001) and Waldman, Siegel and Javidan (2006) among others, in constructing a composite CSR index by assigning equal importance (and thus, equal weights) to each of the three pillars.¹¹ In particular, the variable *CSR Index* is the equally weighted average of the social, the environmental and the governance score for the focal firm for every year in our panel dataset.

We construct two additional variables to test for the two theoretical mechanisms of how CSR impacts capital constraints. First, in order to measure stakeholder engagement we construct an index of policies around environmental, social and governance issues that the corporation has adopted. In particular, we identify 29 corporate policies for each firm that relate to ESG issues.¹² These policies define the boundaries of organizational actions, by making clear what are the goals and the acceptable practices inside the organization. Prior work has in fact argued that the adoption of such policies represents a distinct type of corporate culture that characterizes the way the corporation engages with its key stakeholders and embeds the values, norms and expectations

¹¹ We note that the papers cited here used the KLD database instead, but the concept of assigning equal weights to the various aspects of corporate social responsibility, is the same.

¹² Eight of these policies relate to environmental issues, such as energy, waste, and water, seventeen to social issues, related to employees, products, customers and the community, and four to governance issues. The detailed list of these policies is available by the authors upon request.

of the organization collectively (Eccles, et al., 2012). Therefore, we expect that firms that have adopted more of these policies will enjoy superior stakeholder engagement. The variable *Stakeholder Engagement* then, is the annual average of indicator variables that measure whether each of these 29 ESG policies has been adopted by the corporation, and as a result it ranges from zero to one. Second, we measure ESG disclosure by identifying in our dataset all the metrics (i.e. data points) for which the focal company failed to provide information. Therefore, the variable *CSR Disclosure* is equal to the average of indicator variables that measure whether a company has disclosed an information item or not in any given year, and as a result it ranges from zero to one. We note here that this measure is qualitatively distinct from the *Stakeholder Engagement* variable: rather than accounting for the adoption of certain corporate policies, in measuring *CSR Disclosure* we focus on the extent to which several ESG-related metrics are being reported publicly by the firm.

RESULTS

Table 1 provides descriptive statistics for the entire sample. Panel A presents the distribution of observations across years, Panel B across sectors and Panel C across countries. Panel D presents descriptive statistics for the *KZ index*, alternative dependent variables, as well as for the independent variables of interest. The sample includes firm-year pairs from a total of 49 countries across the world and a large number of unique firms: 486 firms in 2002, 495 firms in 2003, 1,049 firms in 2004, 1,376 firms in 2005, 1,400 firms in 2006, 1,537 firms in 2007, 1,544 firms in 2008 and 2,191 firms in 2009. Three sectors – light and heavy manufacturing (2, 3) and transportation, communications, electric, gas and sanitary services (4) – represent a large portion of the total number of observations, although the remaining sectors are also populated.

Approximately 50 percent of the sample originates from Japan, the USA and the UK. Approximately 500 observations are firms from East and Southeast Asian countries such as China, Indonesia, Thailand, India, Hong Kong and Singapore, and about 100 observations are firms from Latin America. Most of the remaining observations are firms from Continental European countries. Panel D shows that the mean value of the *KZ index* is 0.07 and the standard deviation is 1.46 suggesting that significant variation exists across firms in terms of the idiosyncratic capital constraints they are facing. About half of the firms in our sample have repurchased their own stock (mean of *No Repurchase indicator* is 0.48) during the period of the study. The average *CSR Index* in the sample is 0.52 and firms seem to perform slightly better on the *Environmental* and the *Social*, compared to the *Corporate Governance* dimension. Both average *Stakeholder Engagement* and *CSR Disclosure* are 0.41. Moreover, substantial variation exists with standard deviations being 0.19 and 0.12 for these two variables respectively.

Univariate correlations for the variables of interest are presented in Table 2. The *CSR Index*, as well as *Stakeholder Engagement* and *CSR Disclosure*, and the components of *CSR* (i.e. *Environmental*, *Social* and *Governance*) are negatively correlated with the *KZ index*. Not surprisingly, *Stakeholder Engagement* and *CSR Disclosure* are also positively correlated (0.73). *Social* performance is highly correlated with *Environmental* performance (0.73) whereas *Corporate Governance* is positively correlated with both environmental (0.14) and social (0.35) performance.

Table 3 presents our baseline specifications that explore the relation between capital constraints and CSR performance. In column (1), the coefficient on *CSR Index* is negative and highly significant (-1.034, p-value<0.01), suggesting that on average firms with better CSR performance face lower capital constraints. Since larger firms have better CSR performance

(Ioannou and Serafeim, 2010b) and lower capital constraints (Hadlock and Pierce, 2010), the model controls for firm size as well country, industry, and year fixed effects. The estimated relation suggests that firms that score on the 75th percentile of the *CSR Index* have a *KZ Index* that is lower by 0.40 compared to firms that score on the 25th percentile of the *CSR Index*. This estimate is economically significant as it is equal to approximately 28% of the standard deviation of the *KZ index*. In column (2), we use a *No Repurchase Indicator* variable for the absence of stock repurchases as an alternative, albeit less coarse proxy for idiosyncratic firm capital constraints. We follow Hong, Kubik and Sheinkman (2011) in calculating this indicator by deducting preferred stock reduction from expenditure on the purchase of common and preferred stocks. Again, the coefficient on *CSR Index* is negative and significant (-0.401, p-value<0.01). In column (3), we use an equal-weighted *KZ Index* to test whether our results are sensitive to the empirically derived weights assigned to each of its five components in past literature. Specifically, in constructing the equal-weighted *KZ Index*, all five ratios are first standardized to have a normal distribution with a mean of zero and a standard deviation of one, therefore eliminate differences in scale across them. The equal-weighted *KZ Index* exhibits a high positive correlation with the weighted *KZ Index* (0.77, p-value<0.01), suggesting that the measure of capital constraints is only moderately affected by changing the weights on each component. The results in column (3) are consistent with the results in columns (1) and (2) and confirm that firms with better CSR performance have lower capital constraints (-0.204, p-value<0.01).¹³

In column (4), we introduce firm fixed effects in the specification to mitigate concerns that our results are driven by an unidentified time-invariant firm characteristic. In other words, for this specification the coefficient of interest is estimated through changes over time within a

¹³ The decrease in the coefficient on CSR is consistent with the equal-weighted KZ index exhibiting only 35% of the standard deviation of the weighted KZ index.

focal firm. Moreover, for a particular firm to be included in this analysis, we require that we have complete data for all eight years (i.e. we generate a balanced panel of observations). We impose this criterion to ensure that there is enough variation in both dependent and independent variables within a firm. After imposing these restrictions, we perform the analysis on a subsample that includes 327 unique firms. Consistent with columns (1), (2), and (3), we find that firms with better CSR performance face lower capital constraints (-0.457, p-value<0.05).¹⁴ The estimated relation suggests that firms that score on the 75th percentile of the *CSR Index* have a *KZ index* that is lower by 0.18 compared to firms that score on the 25th percentile of the *CSR Index*, with this estimate being approximately 12% of the standard deviation of the *KZ Index*, for this subsample. Finally, in unreported results, we included one or more time lags of the *CSR Index* and in all specifications the coefficient of the non-lagged variable remained negative and highly significant. Moreover, up to two lags of the *CSR Index* load with a negative and significant coefficient.

In table 4 we further explore the mechanisms through which CSR performance impacts capital constraints as stated in hypotheses 2 and 3. In particular, we provide evidence that both *Stakeholder Engagement* and *CSR Disclosure* have a significant impact. Since firms with better stakeholder engagement also tend to have better CSR disclosure (Dhaliwal et al., 2011), we include the two variables individually and simultaneously in our model. Column (1) shows the estimated association between *Stakeholder Engagement* and the *KZ index*. The coefficient on *Stakeholder Engagement* is negative and significant (-1.539, p-value<0.01); firms with better stakeholder engagement face lower capital constraints. Column (2) shows that the estimated coefficient on *CSR Disclosure* is also negative and significant (-2.224, p-value<0.01); firms with

¹⁴ Because the KZ index was developed and tested primarily within the US setting, we also performed our analysis only with US data. The results were very similar when we restricted the sample only to US firms.

better CSR disclosure face lower capital constraints. Column (3) shows the estimated coefficients on *Stakeholder Engagement* and *CSR Disclosure* when both variables are included simultaneously. Both coefficients are negative and significant, suggesting that even when we hold stakeholder engagement constant, CSR disclosure has a significant association with capital constraints. Similarly, holding CSR disclosure constant, stakeholder engagement has a significant association with capital constraints.¹⁵ Column (4) shows coefficient estimates when we control for the quality of financial disclosures. We include this control to mitigate concerns that the *CSR Disclosure* variable is capturing the effect of financial disclosures on capital constraints. We use an earnings quality measure constructed by McNichols (2002) who estimate total current accruals as a function of lag, current, and previous cash flow from operations, changes in revenues, and gross value of property plant and equipment separately for each industry-year pair. We find that, as expected, better earnings quality (lower volatility of accounting accruals) is associated with lower capital constraints. Importantly, the coefficient on *CSR Disclosure* remains negative and significant.

One potential concern with the findings presented so far is simultaneous causality and as a result, possible endogeneity of our CSR variable. Specifically, firms that are less capital constrained might invest in more CSR initiatives and achieve better CSR performance (Hong, Kubik and Sheinkman, 2011). This hypothesis would suggest that engagement with CSR initiatives is a form of a luxury good that firms can afford only when firms face no or very low capital constraints. If this is the case then CSR is correlated with the error term and the coefficient on the *CSR Index* is biased and inconsistent. The analysis in Table 4 is unlikely to suffer from this problem since it is rather unlikely that stakeholder engagement will be

¹⁵ Because the variables exhibit a high univariate correlation we estimate variance inflation indexes (VIFs) to test whether the model is affected by multicollinearity. All VIFs are lower than three, a number much lower than ten which is usually the number that suggests that a model is affected by multicollinearity.

determined¹⁶ by capital constraints. First, prior studies showed that in fact stakeholder engagement is the result of an embedded corporate culture of sustainability and as such it represents a ‘sticky’ and institutionalized feature of the organization and unlikely to respond to capital market conditions (Eccles et al., 2012). In other words, a corporation would not adopt policies related to the environment, its employees, products, and customers simply because financing is more widely available. Similarly, a corporation is not likely to abandon these policies because financing is less readily available. Moreover, CSR disclosure is to a large extent determined by laws and regulations at the country and industry level, or by initiatives in which firms voluntarily participate in and that commit corporations to high levels of disclosure, independent of capital market conditions (Ioannou and Serafeim, 2011).

In table 5 we perform additional subsample analyses to empirically investigate the argument that CSR may be a form of luxury good that only less capital constrained firms can afford. If this argument holds, one would expect the relation between CSR and capital constraints to be stronger for firms facing the lowest capital constraints. This is because under the luxury good argument a higher proportion of an additional dollar of financing will be deployed to CSR strategies if the firm is already facing very low capital constraints rather than if a firm faces high capital constraints and as a result it is likely to deploy that additional source of financing to other projects that are not luxury goods. We categorize the firms in our sample into three groups based on the level of capital constraints that they face (i.e. the *KZ Index*) compared to their sector peers’ located in the same country and year, and run the same baseline model as in table 3 (column 1). Column 1 of table 5 shows that contrary to what one would predict based on the luxury good argument, for the subgroup of firms that are least capital constrained, the coefficient of interest is negative but insignificant; the coefficient of interest becomes significant and in the expected

direction only for the moderate and the most financially constrained firms. These results further increase our confidence in the hypothesized directionality of the relation between CSR and capital constraints.

However, capital constraints could potentially causally affect some other aspects of CSR performance, such as health and safety performance, emissions, employee turnover, waste produced, risk management systems, customer satisfaction, product quality and community development. To further address this potential endogeneity problem we complement the subsample analysis of table 5 with two additional approaches: a) an instrumental variables and b) a simultaneous regressions approach. The advantage of the instrumental variables approach is that the estimated coefficients are more likely to be consistent (Wooldridge, 2002). However, the estimates from an instrumental variables approach are less efficient because the standard errors are large (Wooldridge, 2002). The advantage of the simultaneous regressions model is that it is a more efficient estimation procedure because it uses the errors from two or more equations. However, the estimates are less likely to be consistent because the instruments used in both equations need to be exogenous, compared to the instrumental variables approach that requires exogenous instruments only for the endogenous variable (Wooldridge, 2002).

One additional issue with our data is the presence of heteroskedasticity, which we detected through a test proposed by Pagan and Hall (1983) for panel data. In the presence of heteroskedasticity or clustered errors, although the standard IV coefficient estimates remain consistent, their standard errors and the usual forms of the diagnostic tests are not (Baum, Schaffer and Stillman, 2003). To address this issue, we specify a GMM option in our implementation to make efficient estimation, valid inference and diagnostic testing, allowing for clustering the errors at the firm level.

We generate two instruments by calculating the average *CSR Index* (excluding the contribution of the focal firm) for each country-sector pair and country-year pair¹⁷. The rationale behind these two instruments is that the firm's CSR performance is influenced by a time-invariant component that is associated with its membership in the country-industry pair, and a time-varying component at the country level. The intuition is that a focal firm's CSR performance is systematically influenced by the CSR performance of other firms within the same industry-country pair, and by the CSR performance of other firms in the same country over time. In fact, previous research has shown that CSR performance is determined by both country and industry characteristics (Ioannou and Serafeim, 2010b). Moreover, CSR performance might systematically vary over time within countries as a result of laws and regulations that mandate CSR disclosure (Ioannou and Serafeim, 2011). Because for both instruments the contribution to the *CSR Index* by the focal firm is excluded, the instruments vary across firms even within the same country-industry and country-year pairs. More importantly, because we are using two instruments we are able to perform a number of tests to assess the validity and the relevance of our instruments. The instruments are exogenous if they have no explanatory power for capital constraints beyond their ability to explain the CSR performance of the focal firm.

Table 6 presents the results from the first and second stage of the instrumental variables regression. We report results for three post-estimation tests. First, the under-identification test is essentially an LM test of whether our equation is identified. In the presence of heteroskedasticity, the more traditional Anderson LM and Cragg-Donald Wald statistics are no longer valid. Instead, table 6 present the LM and Wald versions of the Kleibergen-Paap (2006) rk statistic, which is a generalization of the more traditional tests. For our data, the model is always identified. Second,

¹⁷ Previous papers have also used as instruments the industry or country mean of the independent variable (Lev and Sougiannis, 1996; Nevo, 2000; Friedberg, 2003; Hanlon, Rajgopal, and Shevlin, 2003).

the weak identification test estimates how relevant and how strong our instruments are. In the presence of heteroskedasticity, the traditional Cragg-Donald-based F-statistic is not valid so instead, we report again the Kleibergen-Paap Wald rk F-statistic. For our sample, the F-statistic is at least 20, warranting that our instruments are relevant and strong. Finally, we report on the over-identification test. For this test, the null hypothesis is that the instruments are exogenous (uncorrelated with the error term), so if the statistic is significant and the p-value is small enough, this suggests that the instruments are not exogenous. Since the traditional Sagan test is no longer valid, we report in table 6 a Hansen's J statistic (1982), which remains consistent when the error is heteroskedastic. For our specification, the test statistics are insignificant and the p-value is very high. Therefore the null hypothesis is not rejected.

These tests show that the instruments satisfy the conditions of exogeneity and relevance and as a result they are valid. The coefficient on the *CSR Index* is negative and significant (-2.348, p-value<0.01), suggesting that the exogenous component of the CSR performance negatively impacts capital constraints. As a robustness check, we run the same specification on a balanced panel which allowed us to include firm fixed effects in our specifications. Despite the reduction of observations to 2,616 in unreported results the coefficient on *CSR Index* remains negative and highly significant. We also note that in the construction of our instruments, some bias may have been introduced by the fact that some country-sector or country-year pairs were not sufficiently populated to generate a meaningful instrument. In unreported results, we drop those observations for which the instruments were generated in a country-sector or country-year cell with fewer than 10 observations. Our results remain virtually unchanged.

In order to eliminate any remaining endogeneity problem resulting from simultaneity bias (i.e. if the causal effects obtain in both directions), we endogenize both the *CSR Index* as well as

the *KZ Index* by implementing a simultaneous equations estimation method (one for each plausible causal direction). In doing so, we use the constructed instruments as explained above for the *CSR Index*, and by constructing similar instruments for the *KZ Index* (i.e. the average *KZ Index* for each country-sector pair and country-year pair). More specifically, we use a three-stage least squares (3SLS)¹⁸ estimation method where we first use an instrumental variables approach to produce consistent estimates and subsequently use generalized least squares (GLS) to account for correlated error terms across our two equations (Wooldridge, 2002). For this system of simultaneous equations to be identified, there must be at least as many non-collinear exogenous variables in the remaining system as there are endogenous right-hand-side variables in an equation (Wooldridge, 2002). This condition is satisfied in our system of equations, where there is only one right-hand-side endogenous variable in each equation, and two exogenous variables in the remaining system.

Table 7 shows that implementing this simultaneous equations methodology produces similar results as our baseline specifications¹⁹. The coefficient on the *CSR Index* is negative and significant (-1.545, p-value<0.01). The coefficient on the *KZ Index* is also negative and significant (-0.048, p-value=0.01). These results suggest that superior CSR performance leads to lower capital constraints but also that lower capital constraints lead to an improvement in CSR performance. However, closer inspection of the estimated coefficients reveals that CSR performance has a much higher economic effect compared to capital constraints. Firms that score on the 75th percentile of the *CSR Index* have a *KZ Index* that is lower by 0.60 compared to firms that score on the 25th percentile of the *CSR Index*, an estimate that is equal to 41% of the

¹⁸ To be more specific, we implement this technique using the ‘reg3’ command in the statistical package STATA.

¹⁹ In unreported results, we utilized a transformed (logarithmic) version of the *KZ Index* to account for the fact that CSR performance could potentially be more important for the firms that are least capital constrained (i.e. a non-linear relation). Our findings were robust to this specification as well, and therefore we do not report them here.

standard deviation of the *KZ index*. In contrast, firms that score on the 75th percentile of the *KZ Index* have a *CSR Index* that is lower by 0.059 compared to firms that score on the 25th percentile of the *KZ Index*, an estimate that is equal to 24% of the standard deviation of the *CSR Index*.

Finally, we note that CSR comprises of three pillars: the environmental, the social, and the governance performance of a corporation. To better understand the distinct impact of these pillars on capital constraints, we estimate separate models for each one. Table 8, columns (1), (2), and (3) show that the coefficients on environmental (-0.770, p-value<0.01), social (-0.727, p-value<0.01) and governance (-0.397, p-value<0.01) performance are negative and highly significant. In the fourth column we consider the effect of all three pillars simultaneously and we find that both social and environmental performances are negatively and significantly related to capital constraints. In contrast, corporate governance exhibits an insignificant relation to capital constraints after we control for the social and environmental performance of a corporation. An explanation for the weaker effect of corporate governance is that corporate governance is primarily driven by variation in nation-level institutional structures, that include the political system, the education and labor system, the financial system and the cultural system (Ioannou and Serafeim, 2010b); as a result it is likely that the relation between corporate governance and capital constraints is stronger across countries rather than within a country. Indeed, when we remove country fixed effects from the model, the coefficient on corporate governance becomes negative and significant across all specifications.

DISCUSSION AND CONCLUSION

In this paper, we investigate whether CSR strategies affect the firm's ability to access finance in capital markets. Although it has been argued in the past that CSR may impose

unnecessary costs to a firm (e.g. Galaskiewicz, 1997; Clotfelter, 1985:190; Navarro, 1988) and thus hinder its ability to access capital, here we provide evidence that in fact the reverse is true: firms with better CSR performance face lower capital constraints. We argue that this negative relation between CSR performance and capital constraints materializes via two distinct mechanisms. First, better CSR performance is associated with superior stakeholder engagement (Choi and Wang, 2009) that in turn significantly reduces the likelihood of opportunistic behavior and introduces a more efficient form of contracting with key constituents (Jones, 1995). In other words, stakeholder engagement based on mutual trust and cooperation reduces potential agency costs by pushing managers to adopt a long-term rather than a short-term orientation (Eccles, et al., 2012). Moreover, superior stakeholder engagement enhances the revenue or profit generating potential of the firm through the higher quality of relationships with customers, business partners and among employees.

Secondly, firms with better CSR performance are more likely to publicly disclose their CSR activities (Dhaliwal et al., 2011) and consequently become more transparent and accountable. Higher levels of transparency reduce informational asymmetries between the firm and investors, thus mitigating perceived risk. Since the literature to date has argued that market frictions such as informational asymmetries and agency costs are the main reasons why firms face upward sloping supply curves in the capital markets, our results show that firms with better CSR performance face a capital supply curve that is effectively less steep.

These results have implications for the current debate on whether and in what ways CSR initiatives lead to value creation. Here, we document that firms with better CSR performance are better positioned to obtain financing in the capital markets. In turn, relaxation of capital

constrains positively impacts the ability of firms to undertake major strategic investments and stock market performance (e.g., Lamont et al., 2001).

With this study we contribute to an emerging literature within CSR that highlights the important role that capital markets play in evaluating the potential for long-run value creation by firms that adopt CSR strategies (e.g. Lee and Faff, 2009; El Ghoul et al., 2010; Goss and Roberts, 2011). Allocating scarce financial capital to their most productive uses is the fundamental role that financial markets play and in this paper we show that CSR has a significant impact on this capital allocation process: market participants are more willing to allocate scarce capital resources to firms with better CSR performance. Moreover, by disaggregating the CSR performance into its components, we are able to show at a more fine-grained level that both the social and the environmental aspect of CSR activities reduce capital constraints.

With our work we also contribute to the extant literature on capital constraints. Prior studies in this area typically considered a portfolio of financially constrained versus a portfolio of financially unconstrained firms and investigated how the two portfolios exhibited different sensitivities of investment to either cash flow (Fazzari, Hubbard and Petersen, 1988; Kaplan and Zingales, 1997; Hubbard, 1998; Cleary, 1999; Alti, 2003; Gatchev, Pulvino and Tarhan 2010) or to non-fundamental movements in stock prices (Baker, Stein and Wurgler, 2003). However, few studies (e.g. Lamont et al., 2001) have investigated which firms are more likely to be financially unconstrained and what characteristics, if any, the firms in each portfolio share. Our paper contributes to this literature by showing that firms that engage in CSR activities face lower capital constraints, thus identifying tangible firm characteristics that are linked to the capital constraints a firm faces.

We recognize a number of limitations to our work. Firms could be in a position to game CSR ratings so as to gain access to the increasingly available SRI funds. This is surely plausible but unlikely due to a number of reasons. First, company-reported data is all but one of the many sources that are being used by Thompson Reuters ASSET4 to gather information. The list of sources would also include NGOs (and NGO websites), stock exchange filings, and independent news sources. As much as the company could ‘game’ their own reporting, it is unlikely that it would be able to influence to the same degree all of these third-party sources. Therefore, there is a significant degree of triangulation that occurs across numerous information originators.

Second, the Thompson Reuters ASSET4 data have been used extensively for investment purposes by professionals and thus have been ‘verified’, to an extent, by the capital markets. In fact, it is estimated that investors representing more than €2.5trillion assets under management use the ASSET4 data, including major investment houses. Furthermore, according to Thomson Reuters, “every answer to every data point question goes through a multi-step verification and process control, which includes a series of data entry checks, automated quality rules and historical comparisons, in order to ensure a high level of accuracy, timeliness and quality”. This later issue also relates to a second potential limitation of this study: the quality of our data. Whereas a comprehensive validity test of this new dataset falls outside the scope of this paper, this is surely one possible avenue through which our work could be extended in the future. Especially when compared to existing studies and datasets, and accounting for our own extensive conversations with Thompson Reuters, we maintain a sufficient amount of confidence in the data.

Another potential issue with our work relates to the emergence of the SRI market and how such funds may influence the capital markets and CSR ratings. First we note that despite the impressive *growth* of SRI funds in recent years, when compared to total assets under

management globally, the level of SRI funds is still relatively small. As an additional robustness check, we constructed a country-level indicator variable capturing the existence (or lack thereof) of an SRI stock index in every country of our sample. We used this control variable as a proxy for the availability of SRI funds, and across all specifications, the coefficient remained insignificant. As SRI funds grow over time and in importance, future work adopting a more dynamic approach could seek to understand their potential impact on both the functioning of capital markets as well as the construction of CSR ratings.

Moreover, with regards to a potential link between SRIs and our independent variable, the *CSR Index*, we argue that although plausible, it is unlikely that investor behavior may be driving managerial decision-making. Since stakeholder relations and CSR actions more broadly take several years to build, and materialize in terms of profitability, the probability of a large enough SRI base retaining ownership for a sufficiently long amount of time to originate an organizational shift towards CSR strategies is relatively low. This would also require SRIs themselves to engage with the company over a long period of time in such a way as to actively push the corporation towards better CSR practices. In other words, it appears more likely that SRI funds will be attracted to organizations that score high on the CSR dimensions rather than SRI funds directly influencing firm practices, directing them towards being more socially responsible.

While we show that superior CSR performance may relax idiosyncratic capital constraints for firms, several issues remain open for future research. First, using data at the level of strategic projects, it would be interesting to explore whether, and in what ways, increased access to capital affects the type of strategic investments that firms decide to undertake. For example, do firms with better CSR performance pursue strategic projects that are more long-term

oriented and more likely to incorporate environmental and social issues in their objectives? Second, whereas capital constraints is one important aspect of capital markets, more research needs to be undertaken in this domain for a better understanding of how capital markets perceive, evaluate and reward or punish firms that voluntarily engage in CSR initiatives. Moreover, since we do find some evidence that capital constraints may in fact affect CSR performance, future research could adopt a more dynamic approach, and investigate over a longer time frame how the causal relationship evolves in the long-run, particularly so for firms that are most constrained with low CSR performance, after they decide to undertake such investments in CSR initiatives.

Finally, in a business environment where an increasing number of CEOs consider CSR to be strategically critical, and where the general public increasingly appreciates or even demands transparent, honest and ethical business practices, our results have important managerial implications. We suggest that managers that are able to develop successful CSR strategies and, by extension, engage productively with key stakeholders can generate tangible benefits for their firms in the form of better access to financing.

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Table 1: Descriptive Statistics

Panel A: Sample Distribution across Years

<i>Year</i>	<i>N</i>
2002	486
2003	495
2004	1,049
2005	1,376
2006	1,400
2007	1,537
2008	1,544
2009	2,191
Total	10,078

Panel B: Sample Distribution across Sectors

<i>First Digit of Primary SIC Code²⁰</i>	<i>Industry Categories</i>	<i>N</i>
1	Mining and Construction	1,221
2	Manufacturing of Food, Textile, Lumber, Publishing, Chemicals and Petroleum Products	2,019
3	Manufacturing of Plastics, Leather, Concrete, Metal Products, Machinery and Equipment	2,814
4	Transportation, Communications, Electric, Gas and Sanitary Services	1,743
5	Trade	1,080
7	Personal, Business and Entertainment Services	924
8	Professional Services	275
9	Public Administration	2
	Total	10,078

²⁰ For a detailed list of SIC codes and what they represent, please see http://www.osha.gov/pls/imis/sic_manual.html.

Panel C: Sample Distribution across Countries (sorted by three-letter country code)

<i>Country</i>	<i>N</i>	<i>Country</i>	<i>N</i>
Australia	409	Italy	169
Austria	77	Japan	1,874
Belgium	84	Korea, Republic of	62
Bermuda	13	Kuwait	1
Brazil	46	Luxembourg	36
Canada	426	Morocco	2
Switzerland	285	Mexico	32
Chile	15	Malaysia	17
China	70	Netherlands	175
Cayman Islands	2	Norway	107
Czech Republic	4	New Zealand	49
Germany	361	Philippines	4
Denmark	123	Poland	8
Egypt	2	Portugal	45
Spain	150	Qatar	2
Finland	145	Russian Federation	42
France	448	Saudi Arabia	11
United Kingdom	1,388	Singapore	136
Greece	65	Sweden	230
Hong Kong	225	Thailand	11
Hungary	3	Turkey	10
Indonesia	10	Taiwan, Province of China	36
India	38	United States	2,517
Ireland	74	South Africa	21
Israel	18		
Total		10,078	

Panel D: Summary Statistics

<i>Variable</i>	<i>Mean</i>	<i>Median</i>	<i>Std. Dev.</i>	<i>Min.</i>	<i>25th Percentile</i>	<i>75th Percentile</i>	<i>Max.</i>
KZ index	0.07	0.32	1.46	-8.08	-0.35	0.87	4.39
No Repurchase Indicator	0.48	0.00	0.50	0.00	0.00	1.00	1.00
CSR Index	0.52	0.52	0.24	0.05	0.33	0.72	0.98
Stakeholder Engagement	0.41	0.41	0.19	0.00	0.28	0.55	0.83
CSR Disclosure	0.41	0.39	0.12	0.16	0.34	0.47	0.85
Environmental	0.54	0.56	0.32	0.09	0.19	0.87	0.97
Social	0.53	0.54	0.31	0.00	0.23	0.83	0.99
Corporate Governance	0.49	0.53	0.31	0.01	0.18	0.77	0.99
Size	8.59	8.50	1.40	2.01	7.63	9.53	12.81

Table 2: Pearson correlations (N=10,078)

<i>Variable</i>		1	2	3	4	5	6	7	8
1	KZ index	1.00							
2	No Repurchase Indicator	0.029 (0.00)	1.00						
3	CSR Index	-0.05 (0.00)	-0.04 (0.00)	1.00					
4	Stakeholder Engagement	-0.09 (0.00)	-0.03 (0.01)	0.78 (0.00)	1.00				
5	CSR Disclosure	-0.12 (0.00)	0.03 (0.01)	0.71 (0.00)	0.73 (0.00)	1.00			
6	Environmental	-0.02 (0.03)	-0.06 (0.00)	0.81 (0.00)	0.69 (0.00)	0.50 (0.00)	1.00		
7	Social	-0.07 (0.00)	-0.03 (0.00)	0.89 (0.00)	0.77 (0.00)	0.62 (0.00)	0.73 (0.00)	1.00	
8	Corporate Governance	-0.01 (0.23)	-0.01 (0.21)	0.63 (0.00)	0.36 (0.00)	0.54 (0.00)	0.14 (0.00)	0.35 (0.00)	1.00
9	Size	0.18 (0.00)	-0.09 (0.00)	0.43 (0.00)	0.42 (0.00)	0.32 (0.00)	0.47 (0.00)	0.44 (0.00)	0.09 (0.00)

Table 3: Capital Constraints and CSR Performance: Baseline Specification

Dependent Variable	<i>KZ Index</i> (1)	<i>No Repurchase Indicator</i> (2)	<i>KZ Index Equal-weighted</i> (3)	<i>KZ Index</i> (4)
CSR Index	-1.034*** (0.120)	-0.401*** (0.109)	-0.204*** (0.035)	-0.457** (0.204)
Size	0.222*** (0.027)	-0.079*** (0.021)	0.067*** (0.008)	0.124 (0.110)
Constant	-0.973*** (0.166)	0.445 (0.770)	-0.244 (0.187)	-0.921 (1.313)
Country FE	Yes	Yes	Yes	No
Industry FE	Yes	Yes	Yes	No
Year FE	Yes	Yes	Yes	Yes
Firm FE	No	No	No	Yes
Observations	10,078	10,017	10,078	2,616
R-squared	(Adjusted) 0.213	(Pseudo) 0.142	(Adjusted) 0.175	(Adjusted) 0.612

(1): OLS regression with full sample, (2): Probit Regression with full sample, (3): OLS regression with full sample, (4): OLS regression with balanced sample. *** p<0.01, ** p<0.05, * p<0.10, based on two-tailed tests, robust standard errors, clustered at the firm level in parentheses.

Table 4: Capital Constraints and CSR Performance: Stakeholder Engagement and Disclosure

Independent Variables	<i>Engagement</i> (1)	<i>Disclosure</i> (2)	<i>Engagement and Disclosure</i> (3)	<i>Engagement and Disclosure</i> (4)
Stakeholder Engagement	-1.539*** (0.167)		-1.081*** (0.190)	-0.962*** (0.194)
CSR Disclosure		-2.224*** (0.283)	-1.314*** (0.323)	-1.227*** (0.326)
Inverse Financial Accounting Quality				3.276* (1.831)
Size	0.230*** (0.027)	0.209*** (0.027)	0.247*** (0.028)	0.238*** (0.029)
Constant	-0.843*** (0.245)	-0.562 (0.243)	-0.918*** (0.247)	-0.639*** (0.211)
Country fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	9,905	9,905	9,905	9,239
R-squared	0.205	0.203	0.208	0.217

(1), (2), (3) and (4): OLS regressions with full sample, where the dependent variable is the KZ index. *** p<0.01, ** p<0.05, * p<0.10, based on two-tailed tests, robust standard errors, clustered at the firm level in parentheses.

Table 5: Capital Constraints and CSR Performance: Sub-Groups
 Dependent Variable: **KZ index**

	<i>Least Financially Constraint</i> (1)	<i>Moderate Financially Constraint</i> (2)	<i>Most Financially Constraint</i> (3)
CSR Index	-0.261 (0.176)	-0.286*** (0.077)	-0.451*** (0.089)
Size (log of total assets)	0.266*** (0.038)	0.052*** (0.014)	-0.007 (0.019)
Constant	-4.409*** (0.470)	-0.797*** (0.162)	0.096 (0.178)
Country fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Observations	3,506	2,719	3,506
R-squared	0.345	0.494	0.317

Note: Companies are divided into three groups based on their financial constraint (KZ index) compared to other companies in the same country, sector and year. 347 companies that have no comparable peers in the same country, sector and year are excluded from the regression.

*** p<0.01, ** p<0.05, * p<0.10, based on two-tailed tests, robust standard errors, clustered at the firm level in parentheses

Table 6: Capital Constraints and CSR Performance: IV Regression

$$KZ_{it} = a_0 + a_1 CSR_{it} \text{ with } CSR_{it} \text{ instrumented by } CSR_CY_{it} \text{ and } CSR_CS_{it}$$

	<i>First Stage</i> (1)	<i>KZ Index</i> (2)
CSR Index		-2.348*** (0.814)
Country Year Mean of CSR (1st Instrument for CSR)	0.127** (0.052)	
Country Sector Mean of CSR (2nd Instrument for CSR)	0.512*** (0.050)	
Size	0.092*** (0.003)	0.346*** (0.080)
Country fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Observations	10,078	10,078
Centered R-squared	0.313	0.001
Kleibergen-Raap rk LM statistic (Underidentification test)		63.957 (p=0.000)
Kleibergen-Raap rk Wald F Statistic (Weak identification test)		54.947
Hansen J statistic (Overidentification test)		0.058 (p=0.789)

(1) and (2): Regression using two-step feasible efficient GMM estimation, employing two variables (country-year mean of CSR and country-sector mean of CSR) as the instruments for the endogenous regressor CSR Index. The dependent variable is KZ Index. *** p<0.01, ** p<0.05, * p<0.10, based on two-tailed tests, robust standard errors, clustered at the firm level in parentheses.

Table 7: Capital Constraints and CSR Performance: Simultaneous Regression

Panel A: Equation (3): $KZ_{it} = c_0 + c_1 CSR_{it} + c_2 KZ_CY_{it} + c_3 KZ_CS_{it}$

	<i>KZ Index</i> (1)
CSR Index	-1.545*** (0.435)
Country Year Mean of KZ (1st Instrument for KZ)	-0.113*** (0.043)
Country Sector Mean of KZ (2nd Instrument for KZ)	0.538*** (0.035)
Size	0.259*** (0.043)
Constant	-1.170 (1.840)
Country fixed effects	Yes
Industry fixed effects	Yes
Year fixed effects	Yes
Observations	10,078
R-squared	0.232

Panel B: Equation (4): $CSR_{it} = d_0 + d_1 KZ_{it} + d_2 CSR_CY_{it} + d_3 CSR_CS_{it}$

	<i>CSR Index</i> (2)
KZ index	-0.048*** (0.007)
Country Year Mean of CSR (1st Instrument for CSR)	0.122*** (0.039)
Country Sector Mean of CSR (2nd Instrument for CSR)	0.455*** (0.031)
Size	0.098*** (0.002)
Constant	-0.807*** (0.225)
Country fixed effects	Yes
Industry fixed effects	Yes
Year fixed effects	Yes
Observations	10,078
R-squared	0.477

(1) and (2): simultaneous regression using three-stage least-squares estimation, employing two variables (the country-year mean and the country-sector mean) for each endogenous regressor (CSR Index and KZ Index). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$, based on two-tailed tests, standard errors, clustered at the firm level in parentheses.

Table 8: Capital Constraints and CSR Performance: By Factors
 Dependent Variable: **KZ index**

	(1)	(2)	(3)	(4)
Environmental	-0.770*** (0.087)			-0.495*** (0.100)
Social		-0.727*** (0.084)		-0.444*** (0.097)
Corporate Governance			-0.397*** (0.118)	0.060 (0.121)
Size	0.211*** (0.026)	0.208*** (0.027)	0.146*** (0.026)	0.228*** (0.027)
Constant	0.323 (0.789)	0.576 (0.798)	0.749 (0.772)	0.371 (0.799)
Country fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	10,078	10,078	10,078	10,078
Adjusted R-squared	0.212	0.212	0.200	0.215

(1), (2), (3) and (4): OLS regressions with full sample, where the dependent variable is the KZ index. *** p<0.01, ** p<0.05, * p<0.10, based on two-tailed tests, robust standard errors, clustered at the firm level in parentheses.

Appendix

Description of Thomson Reuters ASSET4 pillars and categories

Overview of ASSET4 Data 2002 - 2009	
<i>Pillars</i>	<i>Categories</i>
Environmental Performance	Resource Reduction Emission Reduction Product Innovation
Social Performance	Employment Quality Health and Safety Training and Development Diversity Human Rights Community Customer / Product Responsibility
Corporate Governance	Board Structure Compensation Policy Board Functions Shareholders Rights Vision and Strategy

Description of ASSET4 Categories (from ASSET4 documents)

Environmental Performance Pillar	<p><i>Resource Reduction</i></p> <p>The resource reduction category measures a company’s management commitment and effectiveness towards achieving an efficient use of natural resources in the production process. It reflects a company’s capacity to reduce the use of materials, energy or water, and to find more eco-efficient solutions by improving supply chain management.</p>
	<p><i>Emission Reduction</i></p> <p>The emission reduction category measures a company’s management commitment and effectiveness towards reducing environmental emission in the production and operational processes. It reflects a company’s capacity to reduce air emissions (greenhouse gases, F-gases, ozone-depleting substances, NOx and SOx, etc.), waste, hazardous waste, water discharges, spills or its impacts on biodiversity and to partner with environmental organizations to reduce the environmental impact of the company in the local or broader community.</p>
	<p><i>Product Innovation</i></p> <p>The product innovation category measures a company’s management commitment and effectiveness towards supporting the research and development of eco-efficient products or services. It reflects a company’s capacity to reduce the environmental costs and burdens for its customers, and thereby creating new market opportunities through new environmental technologies and processes or eco-designed, dematerialized products with extended durability.</p>
Social Performance Pillar	<p><i>Employment Quality</i></p> <p>The workforce / employment quality category measures a company’s management commitment and effectiveness towards providing high-quality employment benefits and job conditions. It reflects a company’s capacity to increase its workforce loyalty and productivity by distributing rewarding and fair employment benefits, and by focusing on long-term employment growth and stability by promoting from within, avoiding lay-offs and maintaining relations with trade unions.</p>
	<p><i>Health and Safety</i></p> <p>The workforce / health and safety category measures a company’s management commitment and effectiveness towards providing a healthy and safe workplace. It reflects a company’s capacity to increase its workforce loyalty and productivity by integrating into its day-to-day operations a concern for the physical and mental health, well being and stress level of all employees.</p>
	<p><i>Training and Development</i></p> <p>The workforce / training and development category measures a company’s management commitment and effectiveness towards providing training and development (education) for its workforce. It reflects a company’s capacity to increase its intellectual capital, workforce</p>

	<p>loyalty and productivity by developing the workforce’s skills, competences, employability and careers in an entrepreneurial environment.</p>
	<p><i>Diversity and Opportunity</i> The workforce / diversity and opportunity category measures a company’s management commitment and effectiveness towards maintaining diversity and equal opportunities in its workforce. It reflects a company’s capacity to increase its workforce loyalty and productivity by promoting an effective life-work balance, a family friendly environment and equal opportunities regardless of gender, age, ethnicity, religion or sexual orientation.</p>
	<p><i>Human Rights</i> The society / human rights category measures a company’s management commitment and effectiveness towards respecting the fundamental human rights conventions. It reflects a company’s capacity to maintain its license to operate by guaranteeing the freedom of association and excluding child, forced or compulsory labor.</p>
	<p><i>Community</i> The society / community category measures a company’s management commitment and effectiveness towards maintaining the company’s reputation within the general community (local, national and global). It reflects a company’s capacity to maintain its license to operate by being a good citizen (donations of cash, goods or staff time, etc.), protecting public health (avoidance of industrial accidents, etc.) and respecting business ethics (avoiding bribery and corruption, etc.).</p>
	<p><i>Customer / Product Responsibility</i> The customer / product responsibility category measures a company’s management commitment and effectiveness towards creating value-added products and services upholding the customer’s security. It reflects a company’s capacity to maintain its license to operate by producing quality goods and services integrating the customer’s health and safety, and preserving its integrity and privacy also through accurate product information and labeling.</p>
Corp. Governance Pillar	<p><i>Board Structure</i> The board of directors / board structure category measures a company’s management commitment and effectiveness towards following best practice corporate governance principles related to a well-balanced membership of the board. It reflects a company’s capacity to ensure a critical exchange of ideas and an independent decision-making process through an experienced, diverse and independent board.</p>
	<p><i>Compensation Policy</i> The board of directors / compensation policy category measures a company’s management commitment and effectiveness towards following best practice corporate governance principles related to competitive and proportionate management compensation. It reflects a company’s capacity to attract and retain executives and board members with the necessary skills by linking their compensation to individual or company-wide financial or extra-financial targets.</p>

	<p><i>Board Functions</i></p> <p>The board of directors / board functions category measures a company's management commitment and effectiveness towards following best practice corporate governance principles related to board activities and functions. It reflects a company's capacity to have an effective board by setting up the essential board committees with allocated tasks and responsibilities.</p>
	<p><i>Shareholder Rights</i></p> <p>The shareholders / shareholder rights category measures a company's management commitment and effectiveness towards following best practice corporate governance principles related to a shareholder policy and equal treatment of shareholders. It reflects a company's capacity to be attractive to minority shareholders by ensuring them equal rights and privileges and by limiting the use of anti-takeover devices.</p>
	<p><i>Vision and Strategy</i></p> <p>The integration / vision and strategy category measures a company's management commitment and effectiveness towards the creation of an overarching vision and strategy integrating financial and extra-financial aspects. It reflects a company's capacity to convincingly show and communicate that it integrates the economic (financial), social and environmental dimensions into its day-to-day decision-making processes.</p>