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What Good Does Doing Good do? The Effect of Bond Rating Analysts' Corporate Bias on Investor Reactions to Changes in Social Responsibility

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Abstract In this study, we explore how investors reconcile information on firms' social responsibility with analysts' assessments of future firm risk in the pricing of long-term bonds. We ask whether investors pay attention to small strides toward and/or small slips away from socially responsible behavior, arguing that analysts' corporate bias toward gains and against losses influences investor reactions to corporate social responsibility. We hypothesize that analysts notice and reward improvements in social responsibility, yet excuse lapses. We find support for this hypothesis, using a unique dataset of long-term bonds that combines lagged measures of firm-level financial and social performance with bond-specific data pertaining to risk of default and pricing. The empirically robust asymmetry in investor responses to small but often cumulative increases versus decreases in corporate social responsibility reveals an under-examined root cause of longer-term, larger-scale distortions in financial market returns regarding corporate social performance. Our findings elaborate earlier behavioral research on how corporate bias influences analysts' short-term assessments of economic risk, by theorizing why this corporate bias may influence long-term assessments of social risk. Our work also motivates more critical scrutiny of the role analysts play in revising the future risk of today's social action versus inaction.

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Introduction

A decision to invest in a bond requires careful consideration of a wide range of information about firm risk. Increasingly, this information includes data about the firm's performance in the areas of corporate social responsibility (Berry and Yeung 2013). Crises of ethical, environmental, or social responsibility, such as the melamine-tainted milk controversy in China, can trigger investor attention (Wang et al. 2011) and may have a sudden impact on a firm's cost of capital (Groening and Kanuri 2013). However, investors are also exposed to a myriad of small, incremental events which accumulate over time. Each occurrence can attract the attention and specialized sense-making capabilities of market intermediaries such as rating analysts. The accumulation of small incremental events can also—and perhaps should—warrant significant revisions in evaluations of long-term risk (Cox et al. 2004).

The question of whether and how a firm's social responsibility influences its long-term risk is central to the

corporate social responsibility–corporate financial performance (CSP–CFP) debate, because the costs and the benefits associated with corporate social responsibility often accrue over longer-time horizons. As a result, corporate social responsibility is more likely to impact risks and returns over long-term investment horizons (Hillman and Keim 2001). However, this is a relatively understudied context, because most research examining investor assessments of social responsibility consider equity (Sandbu 2012), which has shorter time horizons and more transparent risk–reward implications (Sharfman and Fernando 2008). We focus on long-term debt, which requires investors to think further ahead and more explicitly consider the effect of a firm's social actions or omissions.

The impact of corporate social responsibility on long-term risk is relevant to firms and their investors (Margolis and Walsh 2001). Over time, inadequate corporate social responsibility may cause firms to fall out of synch with what society deems acceptable, desirable, or even morally legitimate corporate behavior, eventually damaging the reputations of firms once held up as models of good behavior. Although these future risks are of utmost interest to investors, they are hard to predict and often not related to the types of short-term risks that firms, analysts, and investors take into account via historical measures of risk. Such historical measures are not necessarily predictive of the future, especially a long-term future featuring Knightian uncertainty (Knight 1921) which deems the short- and long-term profiles incompatible and underscores that the future is likely to shaped by very different risk factors from the past or the present.[1]

In this paper, we focus on how investors assess the impact of changes in corporate social responsibility on a firm's future risk profile. When assessing longer-term risks, including those from corporate social responsibility, investors consult expert intermediaries such as investment firms or credit agencies such as Moody's or Fitch. These intermediaries make forward-looking assessments that attempt to analyze future risks, and then summarize those risks into default risk ratings that can be readily understood and used by investors. Default risk assessments are prospective and incorporate a broad understanding of risks in a firm's environment. Investors use these default risk ratings to price capital over the long-term. Analyst

assessments revise the nature and update the consequences of the risks borne by long-term investors.

Ratings analysts' assessments of prospective risks typically have strong and immediate effects on investors (Baker and Mansi 2002). But the advice of analysts is not universally followed. Nagy and Obenberger (1994) found that investors often ignored recommendations from brokerage houses and individual stock brokers. Further, rating analysts and investors often differ in terms of how they perceive risk and make risk/return trade-offs (Diacon 2004). Schipper (1991) suggests that investors are likely to examine a few analyst reports before forming their own judgments. In this study, we are interested in understanding how a firm's social responsibility performance and analysts' responses to it influence an investor's assessment of long-term risks, such as those associated with long-term bonds.

Our research explores how and when investors and rating analysts factor corporate social responsibility and its potential risk impact into their decisions regarding risk ratings, and how that ultimately impacts the yields that investors demand. We specifically investigate whether investors accept the assessments of expert intermediaries, in this case, bond analysts, regarding the impact of corporate social responsibility on forward-looking risk. To do so, we build theory about how analyst bias may influence the risk assessments of the long-term debt of firms which improve or reduce their social responsibility. 'Analyst corporate bias' refers to the tendency of analysts to over-reward gains and under-punish losses due to the conflict of interest stemming from being paid by the very firms whose risk they are assessing. We test this theory using a unique dataset that combines information on long-term bonds, analysts' risk assessments, and social responsibility data.

Our study contributes to the debate on the relationship between corporate social responsibility and corporate financial performance by revealing the dynamics of the long-term bond market—a market we expect would be most sensitive to the long-term effects of changes in corporate social responsibility. We find empirically robust evidence that when firms increase the amount of good that they do (i.e., their social performance improves), analysts reward them with improved risk ratings and investors demonstrate a willingness to accept lower yields on their bonds. For a firm, these lowered yield requirements amount to a lower cost of debt capital. Yet, we also note an asymmetrical effect: analysts don't punish, and investors don't respond to, decreases in social responsibility. In short, analysts seem to be subject to a strongly positive corporate bias when interpreting corporate social responsibility performance, just as they are when interpreting financial performance (Easterwood and Nutt 1999). This bias prompts analysts to improve risk ratings when social

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[1] In the short-term, firms face risks such as manufacturing challenges, supply shortages, labor disruptions, and price increases, each of which are made predictable from repetition. These short-term risks manifest in the present and the near future when environments greatly resemble the past. Short-term risks can usually be predicted using conventional measures that take into account a firm's historical risk, such as *beta*, a measure of a firm's historical systematic risk (Balabanis et al. 1998; McGuire et al. 1988) and *sigma*, a measure of its historical total risk (Aupperle et al. 1985; Herremans et al. 1993).

responsibility improves, but resist worsening risk ratings when social responsibility declines. To the extent that investors rely on analysts to interpret changes in firms' social responsibility performance and factor it into assessments of forward-looking risk, analysts' corporate bias feeds into investors' yield expectations.

We argue that analyst intermediation in the bond market has both productive and counter-productive effects. First, and productively, as analysts reward increases in social responsibility, investors in the market respond in kind, motivating firms to align their behavior with societal expectations. Second, and counterproductively, two negative implications flow from the finding that analysts don't punish decreases in social responsibility. First, firms may come to understand that they merely have to start social responsibility projects to gain cost of capital benefits—they needn't follow through with them. Second, investors may find that relatively minor decreases in social responsibility accumulate over time to constitute quite substantial risks—but they will not be forewarned about these risks because analysts ignore them, and as a result they will have failed to raise their yield expectations commensurate with these escalating risks.

Corporate social responsibility and investment decisions

There is a growing body of research examining the impact of corporate social responsibility on investment decision making. This interest began as early as 1994 with Epstein et al. (1994) discussion of shareholder preferences concerning ethical behavior. Much of the subsequent discussion has focused on identifying relationships between different characteristics of investors and investing behavior. For instance, prior research has studied the impact of emotion on investment decisions, arguing that affect leads investors to react more strongly to corporate social responsibility issues (Elliott et al. 2014) and that investors who adopt more expressive investing frames are more likely to forgo higher returns for a socially responsible firm (Glac 2009). Other research has delineated socially responsible or ethical investors from their conventional or financially oriented counterparts (Barreda-Tarrazona et al. 2011; Hummels and Timmer 2004; McLachlan and Gardner 2004). Such differences are theorized to influence directly the trade-offs that investors make with respect to investing (Berry and Yeung 2013). Wood and Jones (1995) rightly argue, however, that one should expect corporate social responsibility to have a direct impact only when there is a theoretical rationale.

A complementary set of questions surrounds how, why, and under what conditions corporate social responsibility may indirectly influence investment decisions. Findings about how investors respond, in their own time and terms, to corporate social responsibility leaves room for critical efforts to specify omitted and contextual variables and especially mediating mechanisms that provide additional explanations of how changes in a firm's corporate social responsibility may indirectly inform and influence investors (Margolis and Walsh 2001).

Three prominent explanations occupy the literature (Wang and Bansal 2012). The first is the good governance model which argues that firms with stronger corporate social responsibility may benefit financially to the extent that their investors come to view stronger corporate social responsibility as one indicator of presumably stronger management capabilities (Waddock and Graves 1997). The second argues that corporate social responsibility activities work via strategic resources, such as strong stakeholder relationships (Jones 1995), positive reputation (Fombrun and Shanley 1990), and the ability to attract and retain employees (Greening and Turban 2000) and investors (Mackey et al. 2007), which in turn improve a firm's financial performance. The final explanation argues that strong corporate social responsibility provides insurance against potential risks or helps affected firms recover better and faster from hardships (Godfrey et al. 2009). The overarching premise of this third stream of work is that firms with stronger corporate social responsibility may enjoy lower costs of capital because investors regard them as less risky.

This last explanation is particularly pertinent to our study because it suggests a mediated path whereby corporate social responsibility actions far removed from financial market transactions may nonetheless indirectly influence investors' decisions by adjusting their perceptions of risk. Prior research supports this relationship by showing lower financing costs in the equity market for more socially responsible firms (Cheng et al. 2014; Girerd-Potin et al. 2014; Sharfman and Fernando 2008). We extend this line of reasoning by exploring how third party assessments of risk may inform and influence investors' decisions. Specifically we examine how, and with what consequences, such third parties factor changes in firms' corporate social responsibility into their risk assessments. In this study, we build theory regarding how and under what conditions analysts use social performance data in appraising the risk of long-term bonds. In particular, we theorize how their risk assessments affect investors' expectations of returns for more socially responsible firms.

We focus on creditors because the majority of research has looked at shareholding investors (Sandbu 2012). Creditors differ in terms of their relationship with the firm. For instance, creditors have a well-defined, time-delimited claim on the firm in the form of interest payments and

principal repayment. This relationship may prejudice creditors to pay attention to the downside risks, rather than the upside gains, enjoyed by equity investors. Our focus on long-term creditors, and thus long-term debt, is driven by prior findings that corporate social responsibility yields delayed payoffs (King and Lenox 2002) and thus social responsibility often has a stronger impact in the long-term (Bansal 2005; Brammer and Millington 2008; Cox et al. 2004; Hillman and Keim 2001); and that investors adopting a long-term time orientation are more likely to appreciate a firm's corporate social responsibility behavior (Wang and Bansal 2012). In fact, short-term investments in corporate social responsibility may undermine financial performance because expenditure in current periods detracts from immediate performance, while returns arrive much later. A similar situation arises with other long-term investments, such as R&D. Many long-term investments are made in anticipation of social or environmental trends which take time to manifest. For example, investments in green product design may lead to significant increases in market share decades later, once consumer preferences shift toward more environmentally conscious products. Given their accumulation and amplification over time, there are reasons to expect stronger financial returns to social performance for long-term securities such as long-term bonds relative to short-term securities.[2] There are also reasons to look for additional mediating mechanisms that help explain how the effects of small steps firms are currently taking carry forward to create such temporally delayed rewards.

Investors' Reliance on Analysts

Investors leverage many sources of information when assessing potential investments (Nagy and Obenberger 1994; Schipper 1991). In the equity market, investors study reports of firms' earning expectations written by analysts at brokerage firms. In the bond market, investors refer to assessments of the risk of default for a particular firm and its debt offering written by expert intermediaries called rating agencies. Three credit-rating agencies dominate the bond market: Fitch, Moody's, and Standard and Poor's. These agencies specialize in grading debt and have built considerable expertise since their founding at the turn of the 20th century. Their ratings provide third-party assurance regarding the quality of investments and are actually written into banking and financial regulations, thus constituting a critical foundation of the bond market (White

2010). Default risk ratings are a key determinant of bond value, as confirmed by numerous empirical studies (Brealey et al. 2003). Investors demand higher yields for riskier bonds and accept lower yields for bonds that carry less risk.

A Corporate Bias

Although the rating agencies are central to the functioning of the bond market, they are not without their detractors, and their assessments may not always be objective. Indeed, subjective factors have been shown to influence rating agency assessments. Most agencies earn revenue through an issuer-pays business model, such that debt and equity issuers pay credit-rating agencies to rate their securities (Bolton et al. 2012; Fons 2008; White 2010). This introduces a conflict of interest, whereby analysts at rating agencies have an incentive to provide favorable ratings to paying clients. This conflict has been found in both the equity (Chen and Jiang 2006; Diacon and Ennew 2001; Fleischer 2009; Hayward and Boeker 1998; Ramnath et al. 2008) and debt markets (Jiang et al. 2012; Xia 2014). In their historical study, Jiang et al. (2012) found that when standard and poor's (S&P) changed from an investor-pays to an issuer-pays model, their ratings rose to match those of Moody's, which was already operating an issuer-pays model. Further, S&P more frequently increased the ratings of low-creditworthy bonds and larger, more frequent bond-issuers; both these classes of bonds have greater potential for conflicts of interest. In another study, Xia (2014) studied S&P ratings (issuer-pays model) in the period after the Egan-Jones Rating Company (EJR) entered the market. EJR used an investor pays model. Xia (2014) found evidence that S&P strategically responded to lower EJR ratings by lowering their own ratings.

In sum, because issuer-paid rating agencies tend to err in favor of their corporate clients this conflict of interest manifests itself in a small, but systematic positive bias (Easterwood and Nutt 1999; Klein 1990; Schipper 1991). Prior research suggests that issuer-paid analysts are more likely to consider good news, and to do so more quickly, than bad news. If this corporate bias holds for the more specific case of corporate responsibility (which some have argued influences performance through risk mitigation mechanisms, Wang and Bansal 2012), we expect to see that credit analysts will asymmetrically interpret positive and negative changes in firms' social performance, such that improvements will be rewarded and declines ignored.[3]

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[2] In practice, analysts often assign the same default risk to short-term and long-term bonds—if they expect the same risk factors to impact both equally. However, the assessment process calls for a separate evaluation of the risk facts associated with each bond, and we expect that at least some social actions or inactions may weigh more heavily in the future than in the present.

[3] Because we are measuring incremental changes with a limited range of performance, in what is seen to be a relatively stable context (corporate bonds), we expect that the relationship will approach linearity. However, since other authors have found a nonlinear relationship between CSR changes and financial performance measures in settings with more variation (see, for example, Brammer and

There are of course other reasons why analysts may perceive differently firms' positive presentations of improvements in corporate social responsibility (i.e., because firms proclaim accomplishments, Hockerts and Moir 2004) and/or fail to notice slips and setbacks (i.e., in many cases firms themselves may overlook wrongdoing, Palmer 2012). However, these sources are available and may be directly influential to other stakeholders, including investors themselves. The risk mediation mechanism we focus on examines whether analysts themselves introduce a positive bias above and beyond firms' own presentations, which may be self-serving to various degrees, and in addition to investors' own expectations.

If the corporate bias holds for the more specific case of corporate social responsibility this means that credit analysts are more likely to consider small improvements and ignore small slips in corporate social responsibility above and beyond the information put out by the firm. Under these conditions, analysts' ratings introduce a bias in the corporate social responsibility–performance relationship by shifting the risk assessments that long-term bond purchasers then use to determine their expected returns on investment.[4,5]

Footnote 3 continued
Millington 2008; Barnett and Salomon 2012), we subject our linearity assumption to a post hoc test in the results section.

[4] As a reviewer noted, investors may attend to multiple sources of data about bond risk. Specific to our argument investors have access to multiple third party ratings with different models and therefore different biases. We examine this boundary condition empirically using the case of S&P (an issuer-pays model of credit rating) and EJR (an investor-pays model of credit rating). Our results show that when specific parallels are being drawn between two different ratings of the same bond using the same risk measurement framework, the corporate bias is no longer present. This argument has also received support in the broader corporate bias literature where the robust effects of a credit agency disappeared once an agency with a competing model began evaluating the same bonds (Xia 2014), arguably because investors compared and contrasted the two ratings when making their decisions.

[5] The hypothesized mediation mechanism only applies to firms whose credit risk is explicitly rated by third parties. A comparison of rated and nonrated firms, while helpful in principle to discern the effect size of the mediation effect, is problematic in our case because rated firms and their rated bonds differ significantly on many underlying characteristics from the firms and bonds analysts do not rate. We do however examine differences among rated firms by testing the effects of two competing models (issuer-pays and investor-pays), and are able to show that the mediation effect holds only for the specific case of issuer-pays models as we hypothesize. We also show that this mediation effect is turned off when investors have access to direct comparisons between competing models. This pattern of results is consistent with our core argument of when and why corporate bias may influence the corporate social responsibility–performance relationship.

Hypothesis

There are several reasons why investors rely on rating analysts to interpret and validate increases in a firm's social responsibility. First, analysts focus narrowly on a cross section of firms and apply specialized industry knowledge in their assessments. As such, their opinions on default risk ratings constitute a well-grounded analysis. Second, analysts take societal trends into account; for example, recognizing that society expects firms to demonstrate better social responsibility performance when cleaner, greener industry practices become available to them (Bansal 2005; Hoffman 1999). Third, analyst assessments offer investors higher fidelity signals. Changes to default risk are discrete and clearly distinguishable market signals, indicating either that the debt is less risky and therefore requires a lower risk premium (lower yield), or that it is more risky and requires a higher yield to compensate for the added risk.

We argue that increases in a firm's social responsibility will be viewed favorably by bond analysts, in accordance with the corporate bias discussed above. Analysts will favorably revise their risk assessment, deeming firms that take socially responsible actions to be less risky, and thereby reducing the yields investors seek in compensation for their long-term investment.

In the absence of a corporate bias, decreases in a firm's social responsibility would be viewed unfavorably by bond analysts, who will deem such firms that step back from their social commitments more risky, downgrading their risk assessment, and thereby increasing the yields investors seek in compensation for their long-term investment. To complete our corporate bias argument, we need empirical support for the notion that analysts take a lenient view of decreases in a firm's social responsibility, interpreting away lapses in performance and holding risk assessments steady. There are several reasons why credit analysts may decline to downgrade credit ratings—even if firms themselves have self-reported environmental or social lapses and KLD ratings have made these failings transparent to interested stakeholders. First, because firms self-report reductions in corporate social responsibility, credit analysts may assume that these decisions have been made in consultation with relevant stakeholders and thus the stakeholders are already aware of the reductions. Second, such signals may be ambivalent in that they merely suggest the firm is redeploying resources to alternative social causes. The signals become even more ambiguous when put into the broader context of a firm's many activities. Third, to downgrade risks, credit analysts have to be confident that a firm's withdrawal from a specific social action will negatively impact firm performance. Such fine-grained causality may be more difficult to establish for negative signals than for positive ones, in part because the firm itself may ignore

these negative signals and in part because the evidence may be discounted as merely adversarial attention, or as the media's general propensity to seek out and report bad news. Credit analysts are paid by the firms whose bonds they assess; thus, they are likely to have a higher burden of proof for signals that may adversely impact their clients and may proceed with greater caution, even if these clients themselves concede they are doing less of a good thing.

H_1 Credit analysts' risk ratings asymmetrically mediate the relationship between changes in corporate social responsibility and bond yields: risk rating improvements mediate the effect of increases in social responsibility but risk rating downgrades do not mediate the effect of decreases in social responsibility.

Methodology

Population

We test our hypothesis on the population of firms which appeared in the 2006 Russell 1000 index. We chose this index because it covers over 90 % of the US market and most of the US firms that float long-term bonds. We collected further data for the firms on this list; namely, financial information from compustat and datastream and 5 years (2002–2006) worth of firm-level social responsibility ratings from the KLD database. We identified long-term debt from information available from the Financial Industry Regulatory Authority (FINRA). We chose bonds because, as an investment asset class, they bring risk to the forefront. Bonds have less upside gain potential, meaning that investors are more concerned with the security of interest and capital. As a result, we argue that bond investors pay more attention to those risks that may threaten a company's future capacity to repay debt. We chose long-term bonds with at least 10 years remaining until maturity because prior research points to the heightened importance of corporate social responsibility under longer time frames (Wang and Bansal 2012).

To improve comparisons, we based our analysis on 'plain vanilla' bonds—non-callable and non-puttable debentures or notes, classified either as senior or unsecured, with semi-annual payments. We excluded long-term bonds with special features because these can introduce noise by artificially capping or inflating the level of perceived risk, irrespective of the firms' level of social responsibility or irresponsibility. When firms had multiple long-term bonds, we used the effective interest rate for the bond with the largest offer still outstanding. We argue that focusing on each firm's largest outstanding long-term issue offers the most conservative test of our hypothesis because

larger issues are likely to initially receive closer scrutiny and thus be more robust to subsequent revisions. Of the 2006 Russell 1000 firms, 183 had one or more plain vanilla, long-term bonds outstanding. These firms comprised 53.5 % of Russell 1000 Assets and 48.9 % of Russell 1000 Sales in 2006. Our study captures a broad cross section of large long-term bond-issuers, enabling us to assess the behavior of long-term bond investors.

Dependent Variables

We needed two dependent variables to test our mediating hypothesis: bond yield and risk rating updates. We operationalized **bond yield** using the effective interest rate investors receive on the bonds they buy. The yield is determined by the price bonds sell for on the market. Because predetermined coupon payments represent the returns on a bond, when a bond's price increases, the effective yield the investor earns falls. Conversely, when a bond's price decreases, the effective yield increases. We gathered all bond yield data in our study on a single day (July 31st, 2008) in order to minimize market cycle variability.

We operationalized **risk rating updates** using Moody's bond credit ratings. Moody's is one of three dominant US credit-rating agencies which assess the creditworthiness of bonds (Richardson and White 2009). These ratings have shown strong reliability. Although all three rating agencies recorded some changes in creditworthiness over the period of our study (2006–2008), their (re)assessments were highly convergent at the beginning and end of the study period (i.e., in January 2006, average inter-item correlation .95; standardized alpha, .98; in June–July 2008, average inter-item correlation .94; standardized alpha .98).[6]

Moody's ranks the quality of each bond from AAA to C. Bonds with ratings from AAA down to BAA3 are considered investment grade; bonds from BA1 down to C are considered speculative and are often referred to as 'junk bonds.' Specifically, our measure of default risk involved a 21-point scale, with 1 (lowest risk) for AAA-rated bonds and 21 (highest risk) for C-rated bonds, with equal steps between successive grades.

Moody's default risk ratings were collected in January 2006, posterior to our predictors (changes in social responsibility from 2005 to 2006) and anterior to our criterion (the bond yield, collected on July 31, 2008). Our

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[6] Some suggested that Moody's ratings may have been more susceptible to the financial crisis. However, we found the same high convergent validity with other credit-rating agencies one year after our analyses (i.e., in June 2009, the average inter-item correlation .92; standardized alpha .97). This reassured us that our results were not driven by our choice of Moody's data as our primary source of credit analyst risk ratings.

change predictions models rely on subsequent Moody's default risk ratings (June–July, 2008), consistent with the expectation that once the default risk rating is changed, markets promptly adjust the discount rate, thus changing the yield of the long-term bond. We also used the two-year window, 2006–2008, to observe changes in default risk rating.

Ratings updates were measured with two distinct dummy variables, after controlling for differences in the initial level of default risk rating (i.e., Moody's ratings on January 2006). **Default Risk Decrease** was assigned a score of 1 if Moody's considered the bond less risky, and zero otherwise; **Default Risk Increase** was assigned a score of 1 if Moody's considered the bond more risky, and zero otherwise.[7]

We conducted several post hoc tests to check the boundary conditions of our mediation argument. One plausible argument is that, in general, corporate bias holds for issuer-pays models such as Moody's, Fitch or S&P, but not for investor-pays models such as EJR. For a subset of the bonds in our study, we obtained EJR ratings. Specifically, we obtained historical information on a total of 129 of the 183 bonds, which enabled us to extract a temporally matched set of ratings for the exact period, we analyzed using the Moody's ratings. Of these, 37 experienced a risk decrease (EJR analysts upgraded their risk assessments of the bond), 56 registered a risk increase (EJR analysts downgraded their risk assessments of the bond), and 36 remained unchanged over the window of our natural experiment. All our variables were constructed identically, with the important distinction that EJR uses a slightly different risk measurement framework.[8] In all cases, our mediators reflect directional changes relative to the underlying scale, which provides the most conservative test of our hypothesis. Using the EJR measures our results confirm that only issuer-pays models introduce corporate bias to the corporate social responsibility–performance relationship. We describe these findings further in the results section.

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[7] Our design relies on a real-time natural experiment. During the same window of our study, all firms reported changes in their social responsibility - some did more, others less. Credit analysts rewarded some of these firms by reducing their default risk, and penalized others by increasing their default risk. Because the social expectations are the same, and we control for alternative explanations ranging from traditional economic performance to good governance arguments, our design includes the counter-factual, affording greater confidence in comparing the two hypothesized effects.

[8] EJR (and S&P) uses 10 major gradations (AAA, AA, A, BBB, BB, B, CCC, CC, C, D), which when qualified as positive or negative extend to a total of 22 minor gradations. Moody's uses 9 major gradations (Aaa, Aa, A, Baa, Ba, B, Caa, Ca, C; qualifiers of (1), (2), and (3) on Aa–Caa extends the Moody's scale to 21 minor gradations.

A second plausible argument is that, in general, corporate bias is mitigated by the accessibility of competing models, especially when investors can make explicit and direct comparisons. To explore this alternative explanation, we also collected S&P ratings for 124 of the 129 bonds rated by EJR. For all 124 bonds, EJR explicitly reports and makes direct comparisons with the S&P ratings (but not any of the other issuer-pays models, including Moody's). Of these, 32 experienced a risk decrease (S&P analysts upgraded their risk assessments of the bond), 34 registered a risk increase (S&P analysts downgraded their risk assessments of the bond) and 58 remained unchanged over the window of our natural experiment. S&P uses the same risk measurement framework as EJR, and EJR analysts explicitly contrasted S&P and EJR ratings for each one of the 124 bonds, making the comparison easily accessible to investors. S&P was the most recent credit-rating agency to switch from an investor-pays model to an issuer-pays model. Our post hoc results confirmed that in the presence of a competing investor-pays model (EJR), the issuer-pays model (S&P) no longer affected investors' expectations of returns. This suggests that when alternative third party credit reports can be accessed simultaneously and compared the corporate bias is fully mitigated.

Predictor Variables

We conceptualize social responsibility as a firm-level aggregate (Ruf et al. 1998), or multidimensional (Law et al. 1998) construct, treating all dimensions equally. We used the KLD database to operationalize social responsibility—a popular choice due to KLD's breadth of coverage, longitudinal dataset, and ease of comparability (Graves and Waddock 1994). KLD-based measures have been used in many studies (e.g., Berman et al. 1999; Hillman and Keim 2001; McWilliams and Siegel 2000; Waddock and Graves 1997) and settings (Bouquet and Deutsch 2008). These studies have established a well-defined, empirically robust nomological network for KLD-based measures of social responsibility (Sharfman 1996). Recent efforts to triangulate KLD-based measures against objective measures of firm-level performance (e.g., Toxic Release Inventory, Sharfman and Fernando 2008) and regulatory compliance (Chatterji et al. 2009) suggest that KLD's broadly defined subcomponents can capture fine-grained corporate behavior with adequate fidelity. These measures also resonate with executives (Gao 2008).

Change in Social Responsibility

Change in social responsibility was measured as the net increase or decrease in the number of strengths KLD listed for each bond-issuer in 2006 compared to 2005. Positive
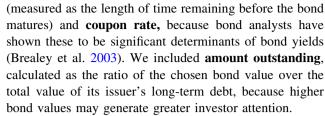
change scores indicate improvements in social responsibility; negative change scores indicate declines. Change scores have been employed in socially responsible investment studies (Bird et al. 2007; Ruf et al. 2001), but their use has been limited. We also controlled for the **Level of Social Responsibility** as an industry-standardized unweighted sum of the 37 strengths (recorded as a 0 or 1) KLD tracked in 2006 (Bird et al. 2007; Strike et al. 2006, Van der Laan et al. 2007).

Among Russell 1000 firms, the highest number of strengths was 20. Table 1 reports the 25th, 50th (median), and 75th percentiles for the data (see Table 1). Industry-standardized levels of social responsibility were significantly higher for Russell 1000 long-term bond-issuers (Median = 3; 25th percentile 1; 75th percentile 6) than non-bond-issuers (Median = 1; 25th percentile 0; 75th percentile 3). We verified the validity of this construct by triangulating our KLD-based Level of Social Responsibility with an aggregated measure of social and environmental performance provided by an independent data source, Oekom research. Oekom has been operating commercially since 1993 and advises funds totaling over 90 billion Euros. Of the Russell 1000 firms, Oekom rated 202 in 2006, 195 in 2007, and 188 in 2008. Correlations between the KLD- and the Oekom-based operationalization of the level of social responsibility ranged from .542 to .655. Given that the concept of CSR differs somewhat between the US and Europe (Matten and Moon 2008), and that KLD is informed by more of an American perspective while Oekom is based in Europe, we consider the correlations to be high, and they lend confidence to the indicators of social responsibility used in our study.

Control Variables

We included several controls to isolate our effects and account for alternative explanations. First, our model controls for **industry** using 1-digit NAICS codes. We also included four firm-level controls. **Size** has been previously linked to increased investor scrutiny (Graves and Waddock 1994; Lange and Washburn 2012), and we used sales to operationalize size. We used return on assets (ROA) and debt/equity ratio to control for **profitability** and **leverage,** because these characteristics may influence whether firms adopt socially responsible behavior (Graafland 2003). Size, profitability, and leverage data were gathered from Compustat. We controlled for **prior risk** using beta, given prior attention to historically derived risk in the prior literature (Fombrun and Shanley 1990; Graves and Waddock 2000; Herremans et al. 1993; Riahi-Belkaoui 1991; Spicer 1978). Beta was collected from Datastream.

We added three bond-specific controls gathered from the FINRA website. We controlled for **days to maturity** (measured as the length of time remaining before the bond matures) and **coupon rate,** because bond analysts have shown these to be significant determinants of bond yields (Brealey et al. 2003). We included **amount outstanding**, calculated as the ratio of the chosen bond value over the total value of its issuer's long-term debt, because higher bond values may generate greater investor attention.

We also included three corporate governance measures because prior work has identified corporate governance as a key determinant of firm credit ratings (Ashbaugh-Skaife et al. 2006; Bhojraj and Sengupta 2003) and to account for an alternative hypothesis of good governance (Picou and Rubach 2006; Waddock and Graves 1997). Data on corporate governance addressed ownership concentration through the **number of block holders** owning over 5 % of the firm and the **percentage of the firm held by those block holders**. We also assessed board independence using the **percentage of independent directors on the board**. All corporate governance data were collected from each firm's definitive proxy statement posted on Securities Exchange Commission's EDGAR search engine.

We chose to control for the plausible alternative that risk revisions may have been triggered by socially irresponsible actions or inactions (Davidson and Worrell 1988), rather than by the socially responsible actions described in our hypothesis. Thus, we included matching variables for each firm's level and change in social irresponsibility, derived from the concerns listed by KLD for each bond-issuer.[9] First, **change in social irresponsibility** reflected the increase or decrease in the number of concerns KLD listed for each bond-issuer in 2006 compared to 2005. Positive change scores indicate an increase in social irresponsibility; negative change scores indicate a decrease. Second, we controlled for each bond-issuer's **level of social irresponsibility**, operationalized as an industry-standardized unweighted sum of the 30 concerns tracked by KLD in 2006 (Godfrey et al. 2009; Van der Laan et al. 2007). Each firm received a score of 0 or 1 for each of a possible 30 concerns. Among Russell 1000 firms, the firm with the highest number of concerns was 17 (see Table 1 for additional information). Industry-standardized levels of social irresponsibility were significantly higher for Russell 1000 long-term bond-issuers (Median = 5; 25th percentile 2; 75th percentile 7) than for non-bond-issuers (Median = 2; 25th percentile 1; 75th percentile 3). The levels of social irresponsibility and responsibility are moderately and positively correlated (.46), consistent with prior
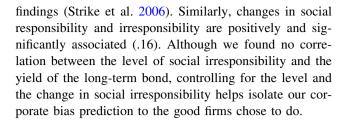
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[9] In practice, analysts often assign the same default risk to short-term and long-term bonds if they expect the same risk factors to impact both equally. However, the assessment process calls for a separate evaluation of the risk facts associated with each bond, and we expect that at least some social actions or inactions may weigh more heavily in the future than in the present.

Table 1 Social responsibility and irresponsibility of Russell 1000 and bondholder firms

Social responsibility (KLD strengths)	Russell 1000	Bond holders	Social irresponsibility (KLD concerns)	Russell 1000	Bond holders
Environment			Environment		
Beneficial product or service	Min 0	Min 0	Hazardous waste	Min 0	Min 0
Pollution prevention	Max 4	Max 4	Regulatory problems	Max 5	Max 5
Recycling	25th 0	25th 0	Ozone depleting chemicals	25th 0	25th 0
Clean energy	Median 0	Median 0	Substantial emissions	Median 0	Median 0
Communications	75th 0	75th 1	Agricultural chemicals	75th 0	75th 2
Property, plant, & equipment			Climate change		
Management systems					
Community			Community		
Charitable giving	Min 0	Min 0	Investment controversies	Min 0	Min 0
Innovative giving	Max 5	Max 4	Negative economic impact	Max 3	Max 3
Non-US charitable giving	25th 0	25th 0	Indigenous peoples relations	25th 0	25th 0
Support for housing	Median 0	Median 0	Tax disputes	Median 0	Median 0
Support for education	75th 0	75th 1		75th 0	75th 1
Indigenous peoples relations					
Volunteer programs					
Corporate governance			Corporate governance		
Limited compensation	Min 0	Min 0	High compensation	Min 0	Min 0
Ownership strength	Max 2	Max 2	Ownership concern	Max 4	Max 4
Transparency strength	25th 0	25th 0	Accounting concern	25th 0	25th 0
Political accountability strength	Median 0	Median 0	Transparency concern	Median 1	Median 1
	75th 0	75th 1	Political accountability concern	75th 1	75th 1
Diversity			Diversity		
CEO	Min 0	Min 0	Controversies	Min 0	Min 0
Promotion	Max 7	Max 7	Nonrepresentation	Max 2	Max 2
Board of directors	25th 0	25th 0		25th 0	25th 0
Work/life balance	Median 1	Median 1		Median 0	Median 0
Women & minority contracting	75th 2	75th 3		75th 1	75th 1
Employment of the disabled					
Gay and lesbian policies					
Employee relations			Employee relations		
Union relations	Min 0	Min 0	Union relations	Min 0	Min 0
No-layoff policies	Max 4	Max 4	Health and safety concern	Max 4	Max 4
Cash profit sharing	25th 0	25th 0	Workforce reduction	25th 0	25th 0
Employee involvement	Median 0	Median 0	Retirement benefits concern	Median 0	Median 1
Retirement benefits strength	75th 1	75th 1		75th 1	75th 2

Table 1 continued

Social responsibility (KLD strengths)	Russell 1000	Bond holders	Social irresponsibility (KLD concerns)	Russell 1000	Bond holders
Health and safety strength					
Human rights					
Positive record in South Africa	Min 0 / Max 1 / 25th 0 / Median 0 / 75th 0	Min 0 / Max 1 / 25th 0 / Median 0 / 75th 0	South Africa	Min 0 / Max 3 / 25th 0 / Median 0 / 75th 0	Min 0 / Max 3 / 25th 0 / Median 0 / 75th 0
Indigenous peoples relations strength			Northern Ireland		
Labor rights strength			Burma concern		
			Labor rights concern		
			Indigenous peoples relations concern		
Products					
Quality	Min 0 / Max 3 / 25th 0 / Median 0 / 75th 0	Min 0 / Max 3 / 25th 0 / Median 0 / 75th 0	Product safety	Min 0 / Max 4 / 25th 0 / Median 0 / 75th 1	Min 0 / Max 4 / 25th 0 / Median 1 / 75th 2
R&D/innovation			Marketing/contracting concern		
Benefits to economically disadvantaged			Antitrust		

findings (Strike et al. 2006). Similarly, changes in social responsibility and irresponsibility are positively and significantly associated (.16). Although we found no correlation between the level of social irresponsibility and the yield of the long-term bond, controlling for the level and the change in social irresponsibility helps isolate our corporate bias prediction to the good firms chose to do.

Model Specification

We tested our asymmetric mediation hypothesis following MacKinnon et al. (2007) and MacKinnon et al. (2002). We tested our mediation model using regression results from the following equations:

$$Y = c1X + \text{Controls} + i_1 + e_1$$
$$Y = c2X + bM + \text{Controls} + i_2 + e_2$$
$$M = aX + \text{Controls} + i_3 + e_3$$

where Y is our dependent variable bond yield, X is our independent variable change in social responsibility, and M is the mediator (either risk increase or risk decrease), i_{1-3} are the intercepts, and e_{1-3} are residuals. To test the significance of our mediator in the model, we followed the product of coefficients approach. This involves taking the product of coefficients a and b in the equations above and testing that product for significance by dividing by the standard error of the product (σ_{ab}) and comparing this to a standard normal distribution. We calculated the standard error following Sobel, whereby the $\sigma_{ab} = \text{sqrt} (\sigma_a^2 b^2 + \sigma_b^2 a^2)$ (MacKinnon et al. 2007).

Results

Table 2 presents the zero-order correlations for the population of 183 long-term bond-issuing firms. As premised, we found a strong positive and significant correlation between the default risk rating level and the long-term bond yield (.67). An increase in default risk rating has the premised positive (and significant) association with bond yield (.36); a decrease has the expected negative association but is nonsignificant. Changes in social responsibility had a positive (albeit nonsignificant) zero-order correlation with increases in default risk rating—and were not correlated with decreases in default risk rating.

Table 3 reports the results of the regression analysis required for these tests. To test our two-part hypothesis, we first took coefficient b, associated with risk decrease of -1.055 (SE .321; $p < 0.01$), from Model 2, meaning that risk decreases are associated with a reduction in yield. From Model 4, the fact that the coefficient a was associated with an increase in CSR of 0.343 (SE 0.18; $p < 0.10$)

Table 2 Zero-order correlations

Russell 1000 long-term bond holders	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 Size (sales)	9.33	1.33																	
2 Beta	1.03	.38	.38																
3 ROA	.05	.05	−.05	.11															
4 Debt/equity	1.94	7.65	−.04	−.02	−.01														
5 Days to maturity	7007.44	3752.77	.04	−.05	.07	.05													
6 Coupon rate	7.49	1.08	.09	.04	−.02	−.14	−.23*												
7 Amount outstanding	.74	.28	−.17	−.02	−.04	.15*	−.04	−.08											
8 # of block holders	2.02	1.35	−.11	.20*	−.15	−.22*	−.16	.15	.07										
9 % held by block holders	18.65	15.10	−.09	.08	−.22*	−.17	−.16	.14	.05	.75*									
10 % of independent directors	83.31	10.73	.16	.18*	.20*	.05	−.02	.09	−.11	.04	−.19*								
11 Level social irresponsibility	5.02	1.33	.73*	−.05	−.06	−.09	.07	.13	−.16*	−.08	−.01	.06							
12 Level social responsibility	4.09	1.29	.60*	−.06	.06	−.03	.13	−.06	−.15*	−.14	−.18*	.10	.46*						
13 Change in social irresponsibility	.52	1.23	.22*	−.05	−.10	−.17*	.01	.02	−.06	.03	.08	−.21	.40*	.09					
14 Change in social responsibility	.24	1.05	.06	−.13	.02	−.07	.06	−.11	−.08	−.01	−.05	−.05	.03	.18*	.16*				
15 Level of initial default risk	8.22	3.09	−.32*	.20*	−.35*	−.40*	.02	.19*	.05	.44*	.41*	−.13	−.12	−.32*	−.02	−.04			
16 Default risk decrease	.21	.41	−.06	.03	.10	−.03	.00	.03	−.06	.03	−.02	.05	−.01	−.10	−.10	.06	.18*		
17 Default risk increase	.30	.46	.01	−.06	−.22*	−.01	−.04	.06	−.14	.01	.04	−.13	.04	.01	.11	.11	.09	−.34*	
18 Yield	7.87	2.42	−.11	.15	−.40*	−.31*	.22*	.09	−.11	.34*	.33*	−.18*	.00	−.04	−.02	−.04	.67*	−.06	.36*

Russell 1000 bond holders, N = 134–183, * p < .05

a Levels of Social Responsibility and Irresponsibility were standardized prior to calculating correlations

Table 3 Corporate bias—moody

Main model	Model 1 DV = bond yield	Model 2	Model 3	Model 4 DV = risk decrease	Model 5 DV = risk increase
Firm controls					
Size (sales)	.28	.29†	.36*	−.05	−.22
Beta	.39	.28	.30	−.55	.19
ROA	−9.32**	−7.23*	−5.00	8.34†	−11.28*
Debt/equity	−.05*	−.04*	−.05**	.10*	.02
Bond controls					
Days to maturity	.00	.00	.00	.00	−.00
Coupon rate	−.02	−.05	−.01	−.15	−.09
Amount outstanding	−.96*	−1.23**	−.81†	−1.86**	−.83
Governance controls					
# of block holders	.13	.15	.10	.22	.06
% held by block holders	.00	.00	.01	−.02	−.01
% of independent directors	−.02	−.02†	−.01	−.02	−.02
Predictors					
Level social irresponsibility	−.19	−.17	−.24†	.31	.14
Level social responsibility	.25*	.21†	.20†	−.25	.08
Change in social irresponsibility	−.03	−.06	−.05	−.18	.03
Change in social responsibility	−.17	−.11	−.18	.34†	.09
Level of initial default risk	.35**	.41**	.38**	.29**	−.04
Default risk decrease		−1.05**			
Default risk increase			1.41**		
n	133	133	133	90	100
Adjusted R^2	0.54	0.58	0.63	.26	.15

[a] Unstandardized coefficients. Industry dummies were included but are omitted from the table (results available from the authors); the reported analyses use the maximum value bond for each bond-issuer. Both junk and investment grade bonds are included in the analyses

† $p < .10$

* $p < .05$

** $p < .01$

means that as CSR increases, risk decreases. As expected, both coefficients were significant. Applying the mediation test above, we calculated a Sobel test statistic of −1.64 (p < 0.10) which is marginally significant, supporting the corporate bias argument that increases in social responsibility trigger favorable changes in default risk ratings. We then took coefficient *b*, associated with risk increase of 1.401 (SE 0.28; p < 0.01), from Model 3, meaning that risk increases are associated with increases in yield. From Model 5, the coefficient *a* was associated with a decrease in CSR of .089 (SE .151; ns). We calculated a Sobel test statistic of −0.59 which is not significant, supporting the corporate bias argument whereby decreases in social responsibility do not trigger unfavorable changes in default risk ratings.

Taken together, evidence of mediation for increases in social responsibility, but not for decreases in social responsibility, complete our corporate bias argument, by showing that investors respond to credit analysts' risk updates asymmetrically. We found that analysts reward increases in social responsibility by reducing risk, triggering commensurate cost-of-capital reductions. Over the same time and under the same social context conditions, abandoning social responsibility did not trigger decreases in the cost of capital because credit analysts did not downgrade bond-issuers' risk.

We conducted several post hoc tests to explore the boundary conditions of the hypothesized asymmetric mediation effect. Specifically we examined whether the positive bias is isolated to the issuer-pays model, as has been the case for corporate bias more generally. We also examined whether the positive bias of the issuer-pays model is attenuated when analysts and investors make direct comparisons with ratings from an investor-pays

Table 4 Corporate bias—EJR

Main model	Model 1 DV = bond yield	Model 2	Model 3	Model 4 DV = risk decrease	Model 5 DV = risk increase
Firm controls					
Size (sales)	.22	−.06	.11	−.03	−.07
Beta	.82*	.32	.73	.27	.48
ROA	−9.82**	−4.70	−2.43	28.49**	−.88
Debt/Equity	−.05**	−.05*	−.03**	.22*	.02
Bond controls					
Days to maturity	.00	.00	.00	−.00	−.00
Coupon rate	−.01	.34**	−.09	.02	.02
Amount outstanding	−.83	−0.51	−1.32*	.51	.13
Governance controls					
# of block holders	.15	.11	.16	.04	.07
% held by block holders	.00	.01	−.01	.01	−.02
% of independent directors	−.02	−.02	−.02	.05†	−.00
Predictors					
Level social irresponsibility	−.20	−.08	−.08	−.02	−.41
Level social responsibility	.18	.09	.25†	.39	.29*
Change in social irresponsibility	−.02	−.10	−.02	.10	.05
Change in social responsibility	−.12	−.02	−.21	−.25	−.10
Level of initial default risk—EJR	.30**	.13**	.55**	.75**	.17
Default risk decrease		−.05			
Default risk increase			0.58†		
n	129	74	92	73	92
Adjusted R^2	0.52	0.64	0.62	.48	.13

[a] Unstandardized coefficients. Industry dummies were included but are omitted from the table (results available from the authors); the reported analyses use the maximum value bond for each bond-issuer. Both junk and investment grade bonds are included in the analyses

† $p < .10$

* $p < .05$

** $p < .01$

model. Table 4 reports our post hoc tests for EJR, an investor-pays model which should not be susceptible to corporate bias. The positive bias we found for Moody's is absent for EJR. For the subset of bonds rated by EJR, we found a nonsignificant effect for changes in corporate social responsibility on analyst's risk upgrades in Model 4 and on investors' expected bond yields in Model 2; we also found no support for the mediation mechanism.

Table 5 reports our results for S&P, an issuer-pays model user, which we expect might be less susceptible to the corporate bias than Moody's due to the explicit and direct contrasts drawn between S&P and the directly competing, investor-pays model user, EJR. Further S&P was the most recent firm to adopt an investor-pays model. Likely because S&P risk ratings are directly and explicitly contrasted with EJR risk ratings, the positive bias we found for Moody's in our study is completely mitigated. We found a nonsignificant effect of changes in corporate social responsibility on analyst's risk upgrades in Model 4 and on investors' expected bond yields, in Model 2; we also found no support for the mediation mechanism.

Taken together, these post hoc tests establish that the same boundary conditions known and shown to affect corporate bias more generally also apply to our specific case of corporate social responsibility influence on long-term debt markets. Analysts' risk ratings clearly matter: their risk upgrades and downgrades can and sometimes do bias investors in favor of incremental improvements. However, specifying these boundary conditions also suggests that this positive bias is isolated to issuer-pays models and is sensitive to the accessibility of ratings by multiple third-parties, especially when at least some are incentivized to put investors' interests first.

Table 5 Corporate bias—S&P

Main model	Model 1 DV = Bond yield	Model 2	Model 3	Model 4 DV = risk decrease	Model 5 DV = risk increase
Firm controls					
Size (Sales)	.24	.11	.39	.43	−.10
Beta	.63	.35	.22	−.76	−.02
ROA	−13.11**	−4.71†	−3.80	14.01*	−10.53†
Debt/equity	−.08**	−.08*	−.07**	.08†	−.01
Bond controls					
Days to maturity	.00	.00	.00	−.00	−.00
Coupon rate	.01	.17†	−.09	−.62*	−.16
Amount outstanding	−.83	−0.39	−1.13†	−1.69*	−.99
Governance controls					
# of block holders	.21	.11	.03	.45	.94**
% held by block holders	.00	.01	.01	−.03	−.08*
% of independent directors	−.03	−.00	−.02	.03	−.04
Predictors					
Level social irresponsibility	−.13	−.15	−.26	−.22	−.09
Level social responsibility	.19	.08	.26†	.07	.15
Change in social irresponsibility	−.06	.05	−.12	−.01	−.17
Change in social responsibility	−.14	−.08	−.11	.32	−.18
Level of initial default risk—S&P	.18*	.16**	.43**	.58**	.01
Default risk decrease		−.21			
Default risk increase			1.45**		
n	124	90	92	90	92
Adjusted R^2	0.46	0.61	0.56	.40	.13

[a] Unstandardized coefficients. Industry dummies were included but are omitted from the table (results available from the authors); the reported analyses use the maximum value bond for each bond-issuer. Both junk and investment grade bonds are included in the analyses

† $p < .10$

* $p < .05$

** $p < .01$

Causality

Our models warrant causal interpretations, for several reasons. First, we use a natural experiment design, which allows us to compare the effects of positive versus negative changes in social responsibility. Second, we observe the real-time adjustments of credit analysts. Third, our variables are temporally separated and compiled from distinct datasets, pre-empting concerns of common method bias by design. Our results are also robust to shortening or lengthening the gap between changes in social responsibility and analyst risk assessments. All construct operationalizations were chosen to minimize measurement error, and thus reduce the likelihood of omitted variable biases, which likely were the cause of spurious effects in prior studies (Orlitzky et al. 2003). Fourth, we control for plausible explanations that allow us to respect the

theoretical focus of our predictions and rule out alternative mechanisms. Last, we address simultaneous causality; that is, when causality runs in both directions between the predictor and criterion (Bascle 2008). Prior studies suggest that reverse causality is both theoretically relevant (Margolis and Walsh 2001) and empirically important. For instance, Orlitzky et al.'s meta-analysis shows bidirectional correlations of .15–.22, depending on the measures and underlying explanation (2003). We address simultaneous causality by controlling for past social responsibility (and social irresponsibility). We take the additional step of checking for selection effects; that is, we explore whether past responsibility (or social irresponsibility) changed the odds of firms' issuing long-term bonds in the first place. Prior studies suggest that firms with higher social responsibility or social irresponsibility may be more likely to issue long-term debt (Goss and Roberts 2007; Sharfman

and Fernando 2008), even if socially responsible bonds may at times be riskier and pricier than regular issues (D'Antonio and Johnsen 1997; Entine 2003). We assessed the potential impact of self-selection on our model by calculating an inverse Mills ratio and including it as a control in our model. The inverse Mills ratio was not significant, suggesting that self-selection did not affect our models or findings (Bascle 2008; Hamilton and Nickerson 2003; Shaver 1998).

Robustness Checks

We verified the robustness of the results using a continuous variable reflecting the extra yield that investors demand for the risk of each grade of corporate bond relative to a US Treasury security of matching maturity. The correlation between the ordinal measure we used and the continuous variable derived using US Treasury security comparisons is .92. We prefer the ordinal index with the control for investment versus speculative grade, because it more closely mimics the risk comparison investors make among bonds within each grade: given their risk preference, purchasers will often compare bonds within the same rating when choosing an investment. Using the ordinal scale also makes sense because, with few exceptions, the bonds issued by each firm have identical or similar ratings, and change concurrently. Furthermore, changes in risk assessments are often reflected in a one point upgrade or downgrade on the ordinal scale (e.g., from BA1 to BA2). We also tested for the quadratic effects of CSR changes on both bond yields and Moody's risk rating changes and found no significant effect. Finally, we collected trade-by-trade Bloomberg data for all the bonds in the population of interest, and computed change-in-yield measures over the window of our study. All our results were robust to using the change in yield measures instead of the end of period yield operationalization.

Discussion

On the heels of a large and growing body of work that recognizes that socially responsible actions are motivated by financial returns, we were intrigued by the relative lack of systematic attention to whether–and especially why–investors adjust their return expectations based on the social actions firms start or stop doing. A prevailing assumption is that, in all but the most extreme cases, investors may not react directly to what firms do, but rather rely on a range of intermediaries to interpret (quantify and qualify) these actions. This assumption is shared by the behavioral finance literature—with a significant caveat. The behavioral finance literature points out that although

investors commonly rely on intermediary interpretations, they are prone to persistent biases. Key among these biases is the allegiance of analysts to their client, which makes them treat gains and losses asymmetrically. We argue that this corporate bias may also make analysts look more favorably on the bonds of firms that do more good, and more leniently on those of firms that stop doing good. The main contribution of our study is in extending this corporate bias argument (borrowed from the behavioral finance literature) to the ongoing corporate social responsibility–corporate financial performance debate. Our findings provide empirically robust evidence that support our theoretical extension.

We argue that the relationship between bond rating agencies and the firms whose bonds they assess influences how credit analysts assess the riskiness of a firm's debt offering and ultimately, the yields that investors demand on a firm's bonds. We hypothesize and show that positive changes in social responsibility induce credit analysts to improve their risk assessment of bonds issued by firms which took more socially responsible actions. We also show that analysts do not change the risk ratings of bonds issued by firms which reduced their social responsibility performance.

Evidence that credit analysts intermediate between the good firms do and investor reactions suggests that not all changes in social responsibility matter equally, and the asymmetry revealed by this study has significant implications for both firms and society. The news is mostly good for firms: small positive steps are favorably reviewed by analysts and, as a result, reduce the cost of floating long-term bonds. Small negative steps are leniently accepted, and as a result, firms are not penalized with higher cost long-term debt. However, the impact on society as a whole is mixed. On the one hand, cheaper long-term capital may encourage firms to do more and more good, and the accumulation of small positive actions can be socially beneficial. On the other hand, firms can also stop doing good without penalty, and the accumulation of small reductions of positive actions can be socially detrimental.

Our findings complement prior discussion about deleterious acts of social irresponsibility (Davidson and Worrell 1988), which tend to attract harsh punishments, not only for perpetrators, but also for others in the industry (Barnett and King 2008). There has been much less attention to small changes, with the exception perhaps of the insight that doing nothing is different from doing something (Mazutis 2012). Our study shows that small changes matter and begins to reveal why small changes may alter the risk–reward equations for firms and their investors.
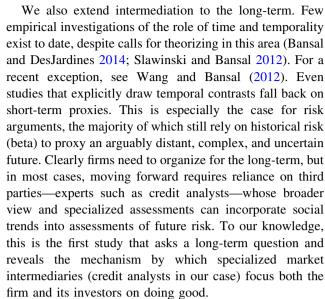
Such incremental changes offer a counterpoint to event studies that often focus on large, yet infrequent,

catastrophic events including environmental disasters, labor disruptions, and major industrial disasters (Frooman 1997; McWilliams and Siegel 2000). In fact, seemingly large, discontinuous events can sometimes be better understood as the cumulative result of small changes that drew actors' attention to certain issues, and away from others (i.e., Plowman et al. 2007). Small changes can also be of consequence beyond the actors directly involved and may reshape our understanding and approach to broader social issues (Cooperrider and Dutton 1999). Yet the intuitive notion that small changes have large consequences can be misleading. Here we reveal one critical contingency by explaining why positive changes may lend themselves more readily to rewarding and perhaps self-amplifying dynamics, while small negative changes are more likely to be overlooked, perhaps stalling or even breaking the momentum for change.

The notion of intermediation lies at the core of our argument. Unlike previous studies that have proclaimed the many upsides of intermediation, we dwell on its counterintuitive or even counterproductive effects. Prior research has presumed a greater good priority, whereby intermediaries work to align corporate actors with the interests of stakeholders and society more broadly. Our research points to the darker side, on which intermediaries are self-serving. This may seem beneficial to their clients—who arguably benefit more from doing good and suffer less when they do not. However, our results reveal the corporate bias previously identified in financial markets and show that the same self-serving effects also extend to the incorporation of social responsibility information. We too find that markets may reflect (or exaggerate) the upside, because analysts are looking after their client interests—even when it comes to socially relevant issues—and clients are attending to analysts' ratings. True, this has its benefits, as it propels some firms toward doing greater good, even when their initial steps may be small or tentative (Branzei and Vertinsky 2006). But it also has drawbacks, when analysts and thus investors, ignore small lapses in social responsibility and firms are not compelled to see their social responsibility commitments through to completion. If these lapses accumulate, the firm may fall out of synch with social expectations, and the overlooked risk may eventually prompt a devaluation of the bonds these firms issue without forewarning by credit analysts.

We apply the notion of intermediation to an under-researched subset of the financial market that many expect will justly reward corporate social responsibility. Most research has focused on equity investors and stock analysts (Sandbu 2012), but the bond market is an ideal setting to explore the effect of social responsibility on risk assessments, because bond investors are more interested in mitigating long-term losses than in maximizing short-term earnings.

We also extend intermediation to the long-term. Few empirical investigations of the role of time and temporality exist to date, despite calls for theorizing in this area (Bansal and DesJardines 2014; Slawinski and Bansal 2012). For a recent exception, see Wang and Bansal (2012). Even studies that explicitly draw temporal contrasts fall back on short-term proxies. This is especially the case for risk arguments, the majority of which still rely on historical risk (beta) to proxy an arguably distant, complex, and uncertain future. Clearly firms need to organize for the long-term, but in most cases, moving forward requires reliance on third parties—experts such as credit analysts—whose broader view and specialized assessments can incorporate social trends into assessments of future risk. To our knowledge, this is the first study that asks a long-term question and reveals the mechanism by which specialized market intermediaries (credit analysts in our case) focus both the firm and its investors on doing good.

Fleshing out this temporal dimension of risk adds significant insight to how investors reward social responsibility. We might expect that investors duly adjust returns to the risk they perceive, over and above the historically derived risk assessed by credit analysts. Our findings suggest that this is not an accurate view of the means by which investors respond to a firm's social and environmental performance. Instead, investors rely on analysts, and analysts working within an issuer-pays model are subject to corporate biases: they tend to assess increases in corporate social responsibility as reductions in risk, but do not assess reductions in social performance as increments in risk. Supplementing historically derived risk with prospective, forward-looking conceptualizations, and operationalizations of risks elucidates the more nuanced way in which credit markets anticipate and adjust to changes in firms' socially responsibility.

Of course, the notion that social performance is an important mechanism of risk mitigation is not new (Peloza 2006). Both economists and resource-based theorists now take the so-called insurance role of social responsibility for granted. What is new in our study is showing that this insurance function breaks down, predictably, because credit analysts overlook small lapses in social responsibility and reward small gains. The key contribution of our study is elucidating this asymmetry theoretically and assessing its empirical robustness.

Theoretical Implications

Why would corporate bias color how bond rating analysts assess a firm's corporate social responsibility? Corporate bias is borrowed from the risk perception and behavioral finance literatures and is demonstrated by both investors (Byrne 2005; Diacon 2004; Hirst et al. 1995) and analysts

(Diacon 2004). It exists because analysts need to curry the favor of the firms they rate in order to maintain beneficial relationships (Hirst et al. 1995). Our results show that the same self-serving interest motivates analysts to focus on improvements in firms' social responsibility and ignore lapses. Analysts may expect that doing some good now will do some good over the long haul (i.e., the insurance hypothesis), and this positive expectation may be sufficient to drive greater corporate social responsibility through traditional market logic (Mackey et al. 2007). Alternatively, analysts may simply account for positive signals that they expect other stakeholders will eventually value. But even if analysts might also expect that doing less good now may undermine long-term performance and/or eventually send negative signals to stakeholders, they are reluctant to penalize their clients for such lapses.

This asymmetry is intriguing. On the surface it may seem that analysts are a good mechanism for aligning firms with social expectations. But the natural experiment on which our study is based suggests a cynical view more closely aligned with the self-interested premise of corporate bias in behavioral finance. Over the same window of time, those firms that did better were rewarded while those that did worse were not penalized. It seems, then, that risk can only go down on account of social responsibility. However, this may be a faulty conclusion, especially because weak, mixed, or ambiguous signals make it easy for analysts to justify overlooking a backward step—for instance, where a firm discontinues some socially responsible program. A series of such backward steps, though, could gradually accumulate 'under the radar' of the credit analysts. And because investors rely on credit analysts, risk, and thus vulnerability may accumulate.

Our study uses multiple sources of data and temporally sequenced models to show that small gains in social responsibility are treated as if they were small reductions in risk. We cannot speak directly to the accumulation, path-dependence, or persistence of the effects of corporate biases over time. However, as we continue to gather information on the good firms do such questions can be further explored. We believe these questions matter, not merely because they flag imperfections in the market for social responsibility, but because answers to these questions may explain why a wide range of interventions that point out firms' shortcomings in social responsibility go both unnoticed and unpunished. Missing links, such as the asymmetry we uncover in this study, open up productive areas of future research by encouraging us to acknowledge the limits of markets and perhaps to theorize more candidly about the effects of firms' social performance—instead of assuming that markets can or will resolve the moral problems of our time. The biases of rating agencies which influence investors' decisions are a good start because they reveal predictable ways in which markets are inherently limited.

A distinct contribution of our study, by focus, design, and method, relates to the time horizon over which firm's social responsibility actions matter. We chose a longer horizon than prior studies in part to get closer to the horizons over which risk matters to investors and in part to see whether seemingly small actions have lasting effects. Because historically derived measures of risks only go so far, we relied on an alternative operationalization of forward-looking risk, from the perspective of credit analysts. This, we argue and show, is a necessary addition and even a reliable proxy—but it is not an unbiased one. Future studies may uncover different biases as they explore other measures of forward-looking risk from the perspective of different intermediaries. As we stretch our assessment of risk farther into the future, we gain a much more nuanced understanding of forward-looking risk—and its very sensitivity to the interests of the intermediaries who assess it. We are excited about the new insights that can shine through these imperfections—especially because each bias can reveal previously hidden mechanisms by which doing good matters in tomorrow's marketplaces.

Managerial and Investor Implications

Our findings offer several implications for managers and investors. First, our findings reinforce prior research which suggests that firms taking more responsible actions may enjoy a reduced cost of capital (Sharfman and Fernando 2008). We reveal one mechanism which explains why this might happen. Our results specifically show that adding even a single socially responsible action can lower a firm's debt financing costs. The results also suggest that investors may be paying too much for some long-term debt—because analysts' lenience prevents investors from demanding higher yields from those bond-issuers who stop doing good. In some cases, such leniency may be warranted; however, if small backward steps accumulate, investors may find themselves suddenly exposed—and analysts criticized for failing to sound the warning bell. Overall our findings confirm that doing good has its rewards; they also suggest that doing less good does not attract market penalty, consistent with arguments that markets are only one part of the complex dynamics of corporate social responsibility (Mackey et al. 2007).

Not all analyst ratings are corporately biased. Our post hoc analyses confirm our expectation that investor-pays models are not susceptible to over-rewarding small improvements. We further show that the corporate bias does not influence the corporate social responsibility–performance relationship when investor-pays models draw explicit comparisons between their own ratings and those

of issuer-pays competitors (as EJR does for S&P, for example).

Future Research

The field would benefit from elaborating other financial market biases to nonfinancial inputs and contingencies, especially socially and environmentally minded activities. Should these financial biases translate from efficient markets to investments in the public good, investors may significantly influence whether, when, and which firms choose to contribute to the greater good, perhaps in nonobvious ways. There may also be counterbalances to some of these biases. For example, investors may process information from a variety of expert intermediaries and take analysts' risk assessments with the proverbial grain of salt. At the other extreme, known biases may interact and the effects of market efficiency may compound, despite some actors' good intentions and even good governance.

Future research could also consider whether other intermediaries, such as consumer advocacy organizations, unions, and certification bodies, influence investor assessments of a firm. Of special interest could be whether similar (self-serving) asymmetries occur in nonfinancial fields. We focused here on a single type of intermediary, credit risk analysts. Credit agencies have since had their day in the court of public opinion, and they have significantly reorganized their own practices to more fully account for downside risk. Yet how they do it remains opaque, and some critics still worry about the self-serving motives built into the issuer-pay model.

Limitations

Our study is not without limitations. Our findings generalize directly to investors who purchase long-term bonds and the typically large firms that issue them. While this is a small portion of firms, they are big and visible, and we argue they act as bellwethers for American industry. Caution should be taken in extending insights gained from these investors in the context of long-term bonds to other markets such as equity or short-term debt.

Second, our operationalizations of social responsibility suffer from some of the shortcomings of KLD-based operationalizations previously identified in the literature (e.g., conceptual relevance, meaningfulness, convergent, and discriminant validity, stability. and change over time). We have tried to mitigate some of these concerns by empirically validating the KLD measure with Oekom—another social responsibility database.

Third, our conceptualization and operationalization of prospective risk is novel and specific to the domain of bond debt. Analysis of the Moody's measure showed it to be stable and reliable, and thus no better and no worse than Fitch and Standard & Poor's. However, we cannot directly address the deeper issue of the reliability of these ratings. Our premise is that these agencies are highly specialized expert intermediaries; their skills complement investors' own information sources and help investors better assess investment-related risks. Empirical results show that investors are very attentive to them. We still know little about the process by which default risk ratings, such as those from Moody's change or how they are constructed in the first place. We merely assess the consequences of the changes when they happen and show that the changes we observe are reliable (across different credit agencies). Qualitative studies are needed to reveal the intricate proprietary processes that rating agencies use to qualify and quantify the specific risks associated with socially responsibility or social irresponsibility actions.

Conclusion

This study extends the notion of corporate bias from behavioral finance to research on corporate social responsibility, showing that long-term debt markets unilaterally reward small increases in social responsibility while overlooking lapses in social responsibility. The time horizon of these effects underscores the lasting effect of doing good. We also introduce a prospective, forward-looking understanding of risk and explain why intermediaries such as credit analysts are influential (and predictably biased) in determining whether, and especially how, markets reward or punish firms' actions in the social and environmental domains.

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