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Abstract

We investigate how firms react to their product-market peers' commitment to and adoption of corporate social responsibility (CSR) using a regression discontinuity design approach. Relying on the passage or failure of CSR proposals by a narrow margin of votes during shareholder meetings, we find the passage of a close-call CSR proposal and its implementation are followed by the adoption of similar CSR practices by peer firms. In addition, peers that have greater difficulty in catching up with the voting firm in CSR experience significantly lower stock returns around the passage, consistent with the notion that the spillover effect of the adoption of CSR is a strategic response to competitive threat. Using alternative definitions of peers and examining underlying mechanisms, we further rule out alternative explanations such as that based on propagation by financial intermediaries.

Keywords: Corporate social responsibility; peer effects; shareholder proposal; regression discontinuity.

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Abstract

We investigate how firms react to their product-market peers' commitment to and adoption of corporate social responsibility (CSR) using a regression discontinuity design approach. Relying on the passage or failure of CSR proposals by a narrow margin of votes during shareholder meetings, we find the passage of a close-call CSR proposal and its implementation are followed by the adoption of similar CSR practices by peer firms. In addition, peers that have greater difficulty in catching up with the voting firm in CSR experience significantly lower stock returns around the passage, consistent with the notion that the spillover effect of the adoption of CSR is a strategic response to competitive threat. Using alternative definitions of peers and examining underlying mechanisms, we further rule out alternative explanations such as that based on propagation by financial intermediaries.

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JEL Classification: M14; L10; G14; G30

1. Introduction

The existence of peer effects on individual and household financial decision making and behavior has been well documented (e.g., Kaustia and Knüpfer (2012), Georgarakos, Haliassos, and Pasini (2014), Bursztyn, Ederer, Ferman, and Yuchtman (2014), Bailey, Cao, Kuchler, and Stroebel (2016), Agarwal, Mikhed, and Schonick (2016), Agarwal, Qian, and Zou (2017)). Recent studies have found substantial externalities and peer effects in corporate policies as well. For example, according to Leary and Roberts (2014), peer effects are more important for determining capital structure than most previously identified determinants. Such peer effects are also present in corporate precautionary cash holdings (e.g., Hoberg, Phillips, and Prabhala (2014)), corporate investment decisions (e.g., Foucault and Fresard (2014), Dessaint, Foucault, Fresard, and Matray (2016)), dividend policies (e.g., Grennan (2018)), financial misconduct (e.g., Parsons, Sulaeman, and Titman (2018), Kaustia and Rantala (2015)), as well as related stock market reactions during crucial corporate events such as acquisitions and IPOs (e.g., Servaes and Tamayo (2014), Hsu, Reed, and Rocholl (2010)).

Despite the vast literature on peer effects in various corporate activities, an important yet largely unexplored aspect of such effects is its social component. The term "social component" refers to a firm's engagement in activities that improve other stakeholders' welfare, from investing in environmental protection to increasing workforce diversity and employee welfare. Corporate social responsibility (CSR) policies have been widely adopted by companies around the world, and more than 80% of S&P 500 companies regularly publish CSR reports. This movement has fundamentally changed the competitive landscape and industry structures of economies around the world. Despite the prevalence of CSR policies, relatively little is known about whether the surge in such policies is at least partially attributable to the spillover effect it

has on other companies and their underlying mechanisms if such CSR peer effects indeed exist. These are the questions we aim to address in this paper, with a focus on competing peers on the product market.

Underlying our empirical investigation is the argument that a firm's adoption of CSR policies can affect peer firms' "utilities" in competition, leading the peers to respond strategically by adopting more CSR practices. For example, one such strategy that firms can adopt is environment-friendly production technology, which can create a good image and builds social capital toward environmentally conscious consumers (Hong and Liskovich (2016), Lins, Servaes, and Tamayo (2017)). Because it is expensive to develop such technology, firms may not invest heavily in it. However, when one firm deviates from the norm by adopting environment-friendly production technology, it can gain a competitive advantage over others in the product market (Flammer (2015a)). Consequently, its product-market peers may get "hurt" in terms of profitability, leading them to invest in similar environment-friendly technology in order to catch up. This "utility" mechanism suggests that peer firms' adoption of CSR policies occurs as a strategic response to competitive threats, such that peer firms mimic the deviating firm's CSR strategy. Some peer firms may also adopt a different type of CSR, that is, a differentiation strategy, depending on their competitive positions in the product market. Such a differentiation strategy may be particularly attractive for a market follower when evaluating uncertain investment opportunities (Smit and Trigeorgis (2006), Stoughton, Wong, and Yi (2017)), as this allows a firm to create its own comparative advantage and avoid direct competition with the market leader (Porter (1985)).

Alternately, a firm's CSR policy can spill over to its competing peers through managers' herd behavior or propagation by financial intermediaries. Specifically, managers of peer firms

may have an incentive to herd out of concerns about their reputations in the labor market, regardless of whether doing so maximizes value for their own shareholders.[1] They may also adopt more CSR policies if pressured by external parties such as analysts and institutional investors, who usually "propagate" certain practices across the firms that they cover or hold. Moreover, if CSR plays little role in firms' interactions in the product market and managers make informed decisions for their shareholders, there may be no spillover whatsoever of the adoption of CSR.

Despite the growing importance of CSR and different theoretical predictions for peer effects, the empirical evidence for CSR peer effects is limited. The main reason is that both CSR and a firm's interactions with its peers in the product market are arguably endogenous choices made by the firm, which posits an empirical challenge for testing the peer effects of CSR. Specifically, it is unknown whether firms and investors react to their peers' CSR policies by changing their own CSR practices, or whether the preexisting differences in other unobservable firm characteristics lead different peer firms to adopt CSR policies to different extents. It is also difficult to apply a typical quasi-natural experimental approach by exploring exogenous legislative changes, because such changes usually affect all firms' CSR in the same industry or market.

We circumvent these empirical concerns and investigate the peer effects of CSR by using a regression discontinuity design (RDD) approach. We compare the effects of a firm's *shareholder*-sponsored CSR proposals that pass or fail by a small margin of votes (around a 50%

[1] As argued by Scharfstein and Stein (1990), an unprofitable decision is not as bad for a manager's reputation when others make the same mistake (the "sharing-the-blame" effect). Therefore, even if a manager's private information suggests that investing in CSR will produce negative expected value, he may still pursue it if others have adopted similar strategies. Bustamante and Fresard (2017) further argue that when firms' managers have imperfect information about fundamentals, they may use peers' investment as a source of information and make similar investments.

majority threshold) in annual meetings on its product-market peer firms' subsequent CSR practices.[2] The passage of such close-call proposals is similar to a random assignment of CSR to companies and hence is not correlated with peer-firm characteristics. Conceptually, there is no reason to expect that the peer firms of a company that passes a CSR proposal with 51% of the votes are systematically different from the peer firms of a company in which a similar proposal fails with 49% of the votes. Therefore, close-call CSR proposals provide a source of random variation of a firm's commitment to CSR that can be used to estimate the causal effect on its peer firms' CSR practices.[3] Although a similar approach has been used by Flammer (2015a) and by Cuñat, Gine, and Guadalupe (2012) to study the effects of the passage of CSR proposals and corporate governance proposals on stock returns, both of those studies examined the focal firm's shareholder value rather than peer effects induced by product-market connections. Our empirical setting focuses on peer firms, which enables us to go beyond the focal firm's perspective and study the dynamic interaction among firms. In addition, we investigate the proposals' implementation utilizing different data sources, including corporate news about the actual adoption of CSR, to better understand the potential mechanisms.

By empirically testing a sample of more than 3,000 U.S. public nonvoting peer firms over the period of 1997–2011 using the RDD approach, we find strong effects of the passage of close-call CSR proposals on the stock market reaction and the adoption of CSR policies by the voting

[2] The need for shareholder proposals on CSR arises from the fact that, with limited firm resources, self-interested managers are not always willing to voluntarily invest in CSR, even though doing so may benefit a broader group of stakeholders, possibly including shareholders (Flammer (2015a)).

[3] Appendix A shows two examples of voting on CSR proposals that help illustrate our empirical method. The example in Panel A is a case of a marginally rejected CSR proposal during the Massey Company shareholder meeting on 19 May 2010. The proposal on carbon dioxide emissions was rejected, with 45.6% supporting votes. The example in Panel B is a case of a marginally approved CSR proposal during the IDACORP, Inc., shareholder meeting on 21 May 2010. The proposal on reducing total greenhouse gas emissions was passed with 51.2% supporting votes. Our objective is to examine the difference in nonvoting peer-firm reactions. In our sample Massey Energy has 49 peer firms, with an average adjusted KLD score of -0.62 in the year after the vote, i.e., 2010. IDACORP, Inc. has 55 peers, with an average adjusted KLD score of -0.20.

firm, as well as subsequent adoption of CSR policies by its peer firms. Specifically, if the voting firm marginally passes a close-call CSR proposal, it experiences higher three-day cumulative abnormal returns (CARs) and, subsequently, a higher CSR score. The average CSR score for its competing peer firms in the following year is significantly higher (30% of the standard deviation) than that of the competing peer firms in which the vote fails by a small margin. The effect is even stronger if the close-call CSR proposal was actually implemented in the subsequent year, suggesting that these effects go beyond pure signaling—they can materially influence peer firms. Using global polynomial estimations, different measures of CSR and their subscores, and different competing peer samples, we found these results to be robust. Such effects are absent from non-peer groups and for non-CSR proposals. In addition, the effects are generally concentrated in the same domain in which a competing voting firm passes a specific type of CSR proposal, though industry followers also adopt other types of CSR to some extent.

In exploring the channels through which CSR peer effects are transmitted, we find little evidence that they are driven by financial intermediaries' propagation, as such effects are absent from peer firms, defined by common analyst coverage or common institutional investors. Similarly, we do not find significant differences between two subsamples of product-market peers with and without common analysts or common institutional owners with the voting firm. Instead, the peer effects of CSR policies are concentrated in a subsample where the competitive pressure between voting firm and peer firms is relatively strong, suggesting a channel through which competitive pressure is exerted.

In order to better understand the underlying mechanism, we further investigate peer firms' stock market reaction to the passage of a CSR proposal. The passage of a CSR proposal should be bad news to competing peers if the voting firm's CSR policy forms a competitive threat to

these peers. We find significantly lower three-day CARs for product-market peers around the passage of a close-call CSR proposal. Such negative CARs are more significant in firms with greater financial constraints and more competitive pressures when the voting firm's CSR proposal is more likely to be implemented (based on *ex ante* recommendations by the board), and when the gap in CSR between voting and peer firms widens after the vote. Our empirical results confirm that the unfavorable market reaction comes mainly from those who have greater difficulty catching up in CSR; furthermore, they lend additional support to the competition-based explanation, that CSR can enhance a firm's value by creating a competitive advantage.

Two guideposts can be used to put our findings into context in the literature. First, our work contributes to understanding peer effects in economic activity. The extant literature has documented substantial peer effects on corporate behavior, such as firms reacting to their peers' financial policies by adjusting their capital structure (Leary and Roberts (2014)) and reducing cash holdings and capital expenditure while increasing dividend payout and adopting more anti-takeover devices following hostile takeover threats in their industries (Servaes and Tamayo (2014)). What is theoretically less clear is whether and how a firm's social engagement can also spill over to other firms. Because it is an increasingly important aspect of corporate behavior, CSR provides us with an ideal foundation from which to test a different facet of peer effects—one that is related to social engagement—as well as its implications for financial performance. Our results show that the peer effects of CSR policies are a strategic response that relieves the competitive threats resulting from the voting firm's CSR policy.

Secondly, our work contributes to the understanding of why firms participate in CSR, which has increasingly become a mainstream business activity despite standard economic theories that predict the practice should be rather uncommon (Bénabou and Tirole (2010),

Kitzmueller and Shimshack (2012)). The neoclassical economic paradigm usually considers these CSR activities to be unnecessary and inconsistent with profit maximization (e.g., Friedman (1970)). The extant literature usually explains the determinants of CSR from a company's own perspective by investigating how a firm's decision to participate in CSR is motived by financial conditions (e.g., Hong, Kubik, and Scheinkman (2012)), strategic and reputational concerns (Hong and Liskovich (2016)), shareholder engagement (Dimson, Karakas, and Li (2015)), and agency problems (Di Giuli and Kostovetsky (2014), Cheng, Hong, and Shue (2016), Masulis and Reza (2015)). Others have investigated the inverse, namely, the effects of CSR on corporate policies and performance (Dowell, Hart, and Yeung (2000), Edmans (2011), Deng, Kang, and Low (2013), Flammer (2015a)) and the cost of capital (El Ghoul, Guedhami, Kwok, and Mishra (2011), Dhaliwal, Li, Tsang, and Yang (2011), Albuquerque, Koskinen, and Zhang (2017)). Some recent studies have shown that CSR is not merely driven by a firm's own characteristics but to a greater extent is determined by external factors such as the legal and economic environment (e.g., Liang and Renneboog (2017a, 2017b)). Our work extends the scope of this literature by documenting that a firm's CSR policy and financial performance can also be substantially changed by its peers' practices in the pursuit of competitive advantage, suggesting that the adoption of CSR policies is value-enhancing.

2. Data and Empirical Strategy

2.1. Data, Measurement, and Sample Construction

As previously mentioned, we rely on a regression discontinuity design approach as the key identification strategy and investigate the effect of the close-call passage of a firm's CSR proposal on its nonvoting peers' subsequent CSR performance. We obtain the data on

shareholder-proposal voting results from RiskMetrics and Factset's SharkRepellent. The RiskMetrics data covers shareholder proposals from 1997 to 2011 for all 1,500 S&P companies and an additional 400–500 widely held companies. The resolution type "SRI" in RiskMetrics identifies the proposals related to CSR. For each proposal, the data set provides the date of the annual meeting, the proposal's sponsor, the voting requirements, and the vote outcome. We supplement the voting data from RiskMetrics with data from SharkRepellent, which covers about 4,000 companies in the Russell 3,000 index from 2005 to 2011. The SharkRepellent proposals related to CSR are categorized as "Social/Environmental Issues." We then cross-validate these proposals with the ISS Voting Outcomes data.

To identify peer effects, we construct a sample of competing peers using the Hoberg-Phillips industry classification based on firm pairwise similarity scores from textual analyses of firm 10-K product descriptions.[4] This approach essentially identifies peer firms according to the similarity of their products, which better captures the competitive relationship between peer firms and also matches the product-centric nature of CSR and the fact that CSR usually spans multiple industries, a point that may not be properly captured by industry-based peer definitions. This peer (product-market rivals) database covers the fiscal years 1996–2011. In each fiscal year, two firms are recorded as a pair of rivals if they exhibit a degree of product similarity according to the product descriptions in their 10-K files. Our identification of product-market peers is based on *ex ante* information—that is, the fiscal year in which the product-market competitors from the Hoberg-Philips database are retrieved is the year before the actual event. After linking the shareholder proposal data with the Hoberg-Phillips peer-firm database, we require no missing outcome variables (discussed in the next paragraph) or relevant firm fundamental variables (size,

[4] The text-based product-market peer data can be obtained from http://cwis.usc.edu/projects/industrydata/. Refer to Hoberg and Phillips (2010) for detailed descriptions.

market-to-book, and leverage). When we later investigate the stock market reaction, we also remove peer firms that have experienced stock and bond issuance, mergers and acquisitions (M&As) announcements, and dividend payments around their affiliated voting firm's voting date (Day -5 to Day 5) to rule out potential confounding effects.[5] This filtering procedure leads to a final competing peer-firm sample of 38,630 (nonvoting peer-) firm vote observations, corresponding to 3,452 unique nonvoting U.S. public firms associated with 1,407 unique firm votes from 1997 to 2011.[6] In our robustness tests, we also use the standard three-digit SIC definitions of industry peers. Appendix C provides the distribution of our sample, with Panel A showing a summary of the numbers of voting firm vote observations and nonvoting competing peer-vote observations in each year, as well as the cumulative percentage, and Panel B showing the distribution of CSR proposals by type, which are classified according to the general categories (dimensions) as used in KLD.

To test nonvoting peers' reaction to the passage of a CSR proposal in the voting firm, we retrieve the data from the MSCI ESG STATS database (formerly known as the Kinder, Lydenberg, and Domini (KLD) database), which are the most comprehensive CSR scores used in the literature (e.g., Chatterji, Levine, and Toffel (2009), Hong and Liskovich (2016), Flammer (2015a, 2015b), Cronqvist and Yu (2017), Lins et al. (2017)). Developed by a for-profit company, KLD scores are similar to credit ratings. The scores measure firm-level CSR along the lines of community relations, product characteristics, environmental impact, employee relations, workforce diversity, and corporate governance. KLD scans public databases such as those that

[5] Our stock and bond issuance data comes from the SDC database. The M&A announcement data are obtained from the Zephyr and SDC databases. Dividend payment data are obtained from the CRSP.

[6] Our sample has fewer votes than Flammer (2015a) because the data coverage of the Hoberg-Phillips database is smaller than that of the Compustat universe. Nevertheless, as we show later, our results are robust to different peer definitions, such as the SIC industry classification, which includes broader coverage in Compustat.

have experienced employee strikes and Environmental Protection Agency (EPA) violations and uses a team of analysts to measure these and other social-responsibility dimensions of firm production. We mainly rely on the CSR score of the nonvoting firms in the year *t+1* (the year after their peers' vote) as the outcome variable. The MSCI ESG STATS (KLD) database provides detailed information on firms' CSR activities according to 13 categories: community, diversity, employment, environment, human rights, product, alcohol, gaming, firearms, military, nuclear, tobacco, and corporate governance. Within each category, the database shows whether the firm has performed a benefit ("Strength") or effected a harm ("Concern") and awards one point for each relevant activity. The CSR score is calculated as Strengths minus Concerns. To measure the overall CSR performance of a firm, we consider four main CSR categories (or dimensions) as classified by KLD: community, diversity, employee relations, and environment.[7]

Following Deng et al. (2013) and Servaes and Tamayo (2013), we count the number of strengths and concerns within each of the four categories and subtract the number of concerns from the number of strengths to construct the raw score for each category in each year. The overall raw CSR score is the sum of the raw scores of the four categories. A higher raw CSR score indicates a better CSR performance. However, as Manescu (2011) points out, the raw CSR score may not be helpful in evaluating a firm's actual CSR activities over the years, because the number of strengths and concerns within each category can differ. To overcome this concern and obtain consistent comparisons in both the cross-section and time-series analyses, we scale the strengths and concerns for each firm-year to a range of 0 to 1. To do so, we divide the number of strengths (or concerns) for each firm-year within each CSR category by the maximum possible

[7] We exclude corporate governance from our CSR performance construction because it is perceived as a mechanism for mitigating conflict between principles and managers (Shleifer and Vishny (1997)) rather than a concern about other stakeholders, such as the community and employees. We also exclude the dimension of product safety and quality, because it is more likely to be subject to legal restrictions and regulations and because it is hardwired into product-market competition, which may obscure the interpretation of our results based on product-market peers.

number of strengths (or concerns) in each CSR category each year to get the adjusted strength (or concern) index. We then subtract the adjusted concern index from the adjusted strength index. For each category, the adjusted CSR score ranges from year -1 to year +1. For the overall adjusted CSR score, we sum the four adjusted scores. Therefore, in principle, the adjusted CSR score can range from -4 to +4. We use the raw CSR score and the change in the adjusted CSR performance score as alternative outcome variables for a robustness check. In robustness tests, we also collected information on the actual implementation of the passed CSR proposals and test it using the ASSET4 US ESG ratings, an alternative data source on firm-level CSR practices.

The definitions and sources of our variables are provided in Appendix B. The summary statistics of our key outcome variables and control variables are provided in Table 1.

[Insert Table 1 about here]

2.2. Methodology

We use a regression discontinuity framework to estimate the causal effect of shareholder proposals on peer firms' future CSR engagement and other outcome variables.[8] Like Flammer (2015a), we use a voting firm's random passage of CSR proposals for identification, but we focus on the CSR practices of the nonvoting peer firms instead of that of the voting firm. Ideally, to obtain a consistent estimate, we would want the passage of a CSR proposal to be a randomly assigned variable with regard to peer firms' characteristics, especially the firms' CSR performance. The RDD framework that exploits the vote shares helps us to approximate this ideal setup, because the passage of a CSR proposal is a random outcome in an arbitrarily small interval around the majority vote threshold (50%); for example, whether a proposal passes by 51%

[8] Several papers have used the regression discontinuity design, including Cuñat et al. (2012), Flammer (2015a), and Bradley, Kim, and Tian (2017).

or by 49% is arguably random. These close-call CSR proposals therefore provide a source of random variation in commitment to CSR that can be used to estimate the causal effect of passing a CSR proposal on peer firms' performance. Our estimate of the effect using RDD is not affected by omitted variables, even if the variables are correlated with the vote, as long as the effects are continuous around the threshold.

We perform the RDD by using a nonparametric, "local" linear estimation. Small "neighborhoods" on the left- and right-hand sides of the threshold are used to estimate discontinuities in peer firms' reactions. We follow Imbens and Kalyanaraman (2012) to derive the asymptotically optimal bandwidth under a squared-error loss. The choices of the neighborhoods (bandwidth) are data driven (determined by the data structure) and different across samples and variables. By choosing the optimal bandwidth to the left and right of the cutoff point (threshold), we are able to use the nonparametric linear estimation approach to capture the difference in future CSR performance between peers with respect to the passage and failure of a CSR proposal by their associated voting firm. In addition, the RDD requires no other observable covariates (control variables) for identification. The local linear regression model can therefore be specified as:

$$Y_{it} = \alpha + \beta \cdot X_{it} + \rho \cdot Pass_{it} + \varepsilon_{it} \,, \tag{1}$$

where Y_{it} is the CSR score in year *t+1* of the peer firm *i*; $Pass_{it}$ is a dummy equal to 1 if the peer firm's associated voting firm passes a CSR-related proposal—that is, if more than 50% of the votes are in favor of adopting the CSR proposal—and 0 otherwise; and X_{it} is the percentage of vote shares favoring the CSR proposal, centered at the 50% threshold. The estimate of ρ captures the discontinuity at the majority threshold—the difference in outcome between the peer firms of voting firms that marginally pass a CSR proposal and the peer firms of

voting firms that marginally reject a CSR proposal—and hence provides a consistent estimate of the causal effect of passing a CSR proposal on peer firms' Y_{it}. We also use alternative bandwidths that are either narrower or wider than the optimal bandwidth to check the sensitivity of our results.

2.3. Tests for a Quasi-Randomized Assignment

Our identification strategy requires that passing or rejecting a close-call CSR proposal be nearly random with respect to peer-firm characteristics. In this subsection, we perform two diagnostic tests for the RDD validity of the identifying assumption (randomness assumption) that shareholders of the voting company cannot precisely manipulate the forcing variable (i.e., vote shares) near the known cutoff (Lee and Lemieux (2010)). If this assumption is satisfied, the variation in the passage of CSR proposals should be as good as that from a randomized experiment.

2.3.1. Continuity in the Distribution of Shareholder Votes

We first test whether the distribution of shareholder votes is continuous around the majority threshold, that is, 50% of vote shares. We follow McCrary (2008) and provide a formal test of the discontinuity in the density, which checks for the smoothness of the density function around the threshold. A random assignment of pass-versus-fail at a narrow margin implies that the distribution of vote shares should be smooth and continuous around the majority threshold. Appendix D.1 visually confirms this. A more formal test is provided in Appendix D.2, which plots the density of shareholder votes. The dots depict the density and the solid line, the percentage of votes for CSR. The density appears generally smooth, with no evidence of a

discontinuous jump around the threshold. The *p*-value is 0.1556, which fails to reject the null hypothesis of continuity of the density function at the threshold. We are able to confirm, in accordance with McCrary's (2008) test result, that no precise manipulation exists and that the assumption of smoothness is validated.

2.3.2. Preexisting Differences

The randomness assumption of our RDD setting also requires that the peer firms of companies whose voting shares are marginally below or above the majority threshold should be very similar on the basis of *ex ante* characteristics. In other words, if the passage of close-call CSR proposals is close to a random assignment, it should be unrelated to peer-firm characteristics prior to the vote. There is little reason to believe that such a voting outcome is directly affected by peer-firm characteristics. To justify this, we show in Table 2 the differences of a few key firm-characteristic variables for these two peer groups (hereafter called "passing peers" and "failing peers," which refer to peer firms of the voting firm that passes a close-call CSR proposal and those of the voting firm that fails a close-call CSR proposal, respectively). As shown in columns (1) and (2), before voting on CSR proposals, the firm's characteristics—size, market-to-book ratio, book leverage, return on assets (ROA), and CSR scores—of passing peers and failing peers are not very different. In column (3), the differences between passing peers and failing peers in general are statistically significant for firm size and market-to-book ratio, but such significance completely disappears in column (4), in which we compare the differences at the narrow margin around the threshold.[9] Overall, this evidence suggests that no systematic or significant difference

[9] We conduct the tests using optimal bandwidth following Imbens and Kalyanaraman (2012). The number of observations varies across different variables because the optimal bandwidths are different. Our results do not change when we test the preexisting difference within some other specified small margins such as [48%, 52%] or [49%, 51%].

exists between passing peers and failing peers around the majority threshold, which lends support to our identification strategy. More pre-existing differences tests can be found in Online Appendix E.

[Insert Table 2 about here]

3. Results

3.1. First-Stage Results of the Voting Firm

Having validated the randomness assumption of our RDD setting, we first show the results for the first-stage of the CSR peer effects, namely the reaction of the voting firm itself upon the passage of its close-call CSR proposal. We replicate Flammer's (2015a) tests and report the results in Panel A of Table 3. We find that the voting firms whose close-call CSR proposals are marginally passed experience positive CARs. The economic magnitude for a voting firm's CAR is 1.02%, slightly smaller than Flammer's (2015a) result of 1.77%. This may be due to the fact that our sample firms on average are larger than Flammer's (2015a).

Panel B of Table 3 reports the probability of all passed proposals' being implemented in the following year, based on several criteria.[10] On average, the implementation rate for all CSR proposals is around 60%. This is comparable with Flammer (2015a), who finds that 52% of the passing firms implemented the CSR proposal. Overall, the results in Table 3 confirm that the passage of a CSR proposal indeed has a sizable effect on the voting firm's own stock market performance and subsequent CSR adoption, which will likely create a competitive threat to its product-market peers.

[10] We define implementation according to three criteria. First of all, we define the implementation of an increase in adjusted CSR score from MSCI ESG STATS (formerly KLD database). For each dimension, implementation is defined as an increase in related CSR dimensions. Secondly, implementation is defined as the increase in Asset4 score. Finally, we manually checked the news for passed CSR proposals and define implementation as (1) there is news report about the proposal implementation; or (2) there is a news report on the corporate website; or (3) the management team voted 'FOR' before the votes.

[Insert Table 3 about here]

3.2. The Effects of CSR Commitment on Peer Firms' Following-Year CSR Levels

We then formally test the effect of the voting firm's passage or rejection of a close-call CSR proposal on peer firms' subsequent-year CSR levels (using KLD scores). As previously mentioned, we start with competing peers based on the Hoberg-Phillips classification and report the results of our baseline specifications (Eq. (1)).

[Insert Table 4 about here]

Panel A of Table 4 estimates the difference in CSR commitment between passing peers and failing peers, as previously defined, with different bandwidths and with rectangular as well as triangular kernels.[11] It clearly shows that the estimates are positive and statistically significant above the 5% level across different specifications of bandwidth and kernel. The point estimate is approximately 0.16 under the data-driven optimal bandwidth (as in column (1)), indicating that the difference in CSR levels between passing peers and failing peers is as large as 0.16 point. Given that the adjusted KLD score has a mean of -0.13 and a standard deviation of 0.42, a difference of 0.16 should be economically sizable. The results remain significant when we use 50% and 150% of the optional bandwidth, as shown in columns (2) and (3). When we replace the adjusted KLD score with the change in adjusted KLD score from year *t-1* to year *t+1* and estimate using optimal bandwidth, we obtain quantitatively similar results (column (4)). Although all of these results are estimated using the rectangular kernel, a very similar result is

[11] For these baseline specifications, we test the discontinuity at the majority threshold—i.e., 50%. For placebo tests, we conduct the same analysis at other cutoffs (e.g., 45%, 35%, 55%, 65%, etc.); we find no evidence of discontinuity for the subsequent CSR activities, which supports our argument that the effects on peer firms' CARs are generated by the exogenous increase of the CSR level of the voting firm caused by *marginally* passing the CSR proposal.

obtained when the difference in KLD scores is estimated using the triangular kernel, as in column (5).[12] These results imply that when a voting firm marginally passes a CSR proposal, its peer firms' CSR practices in the following year improve significantly. In other words, peer firms follow their competitors' potential adoption of CSR proposals by engaging more in their own CSR, possibly because of competitive pressure created by the voting firms.

In Panel B we conduct a similar RDD test using a different methodology to capture the discontinuity. Instead of relying only on the observations within the optimal bandwidths, we extend the regression discontinuity analysis with an estimation of a global polynomial series model by including polynomials of order three on both sides of the threshold.[13] Specifically, we estimate the following model:

$$Y_{it} = \alpha + \beta Pass_{it} + P_l(v_{it}, \gamma_l) + P_r(v_{it}, \gamma_r) + \varphi \mathbf{Z}_{it} + \varepsilon_{it}, \quad (2)$$

where Y_{it} is the outcome variable of the (nonvoting) peer firm—that is, an adjusted KLD score in year *t+1*; $Pass_{it}$ is a dummy that equals 1 if the voting firm passes the CSR proposal—that is, if the vote percentage is higher than 50% and 0 otherwise; $P_l(v_{it}, \gamma_l)$ is a flexible polynomial function for observations on the left-hand side of the majority threshold γ (50% in our case) with different orders; $P_r(v_{it}, \gamma_r)$ is a flexible polynomial function for observations on the right-hand side of the threshold γ with different orders; and v is the percentage of shares favoring the CSR proposal. We choose a polynomial order of 3 for our analysis. $\mathbf{Z}_{it}$ is a set of control variables.

The estimate of β is the variable of interest, and the magnitude shows the difference in these two smoothed functions at the cutoff, thereby capturing the effects of passing a CSR

[12] According to Imbens and Lemieux (2008), the choice of kernel has little impact on the estimation in practice, though using a rectangular kernel is more common.

[13] The global polynomial approach, however, fails to take into consideration RDD's strong locality and weak externality, which are important features of the approach (Bakke and Whited (2012)).

proposal on nonvoting peers' subsequent CSR performance. As shown in Panel B, the estimates of β are significantly positive both without column (1) and with column (2) controls, with economic magnitudes similar to those in Panel A, thus further confirming our baseline results.

3.3. Passage versus Implementation

The above results demonstrate that peer firms in a competitive relationship follow the voting firms' potential CSR adoption and go on to improve their own CSR practices. However, it is possible that some of the proposals that passed were not implemented (because the voting results are nonbinding), and some CSR practices were carried out without a proposal's being passed. Therefore, the above results can also be interpreted as showing that the passage of a CSR proposal may at least credibly signal a firm's commitment to CSR. We conduct a fuzzy RDD analysis to overcome the imperfect compliance issue and disentangle the effect of signaling and actual adoption.

Given the lack of pertinent data, we make use of several resources to determine whether the proposals were implemented. First, following Flammer (2015a), we define implementation based on the change of KLD score (adjusted for the overall number) after the vote. Specifically, if the adjusted KLD score increased in the year after the vote, we interpret it as suggestive that the proposal was implemented.[14] Second, we define implementation based on another CSR data source, ASSET4, as an external validity check. Like KLD data, ASSET4 provides a firm's engagement in several environmental and social issues, and we focus on its aggregate environmental and social scores. However, unlike KLD data, the ASSET4 scores for each dimension range from 0 to 100, with a median of 50. We define an increase of 10 of a firm's ASSET4 score (the standard deviation of the distribution within an industry) one year after the

[14] The rule also applies to firms that rejected a CSR proposal.

passage of a close-call CSR proposal as an indication that the proposal was likely to be implemented. Third, we manually collect data on the actual implementation of those passed CSR proposals. To do so, we extensively searched various sources including the corporate website, 10-K filing, third-party websites that follow corporate social responsibility issues or proxy votes, and also the news through Google search. We specifically focus on the subsample of those passed proposals and consider that a proposal was passed and implemented if (a) there was a clear indication of a change in corporate behavior, such as a new report responding to the proposal of the shareholders in the year after the vote; (b) there was a corporate action, according to the news after the vote; or (c) the board of directors recommended a "FOR" before the vote.

We then apply a fuzzy RDD approach to estimate CSR peer effects and use the three methods described above to define the implementation of CSR. The first step of fuzzy RDD is to estimate the probability of implementation at the cutoff, which is 50%. The results are given in Table 5. The first stage of the fuzzy RDD shows that the 50% cutoff has a significant impact on the probability of implementation. This probability increased by 10% (Panel A) if the voting percentage surpassed 50%. The probability of proposal implementation increases even more in other cases. If there is a significant jump in the probability of implementation, we run the second stage to obtain the estimate, adjusting for imperfect compliance. As reported in Table 5, the second-stage results are all significant and positive, with even larger economic magnitudes than the coefficients in Table 4. The results suggest that the effects we have documented are robust after adjusting for the probability of implementation.

[Insert Table 5 about here]

The question naturally arises of whether an implemented proposal has a greater impact on the peer firms than one that is not implemented. Unpacking this question will give us some hints

as to whether the effect documented above is a pure signaling effect or has material meaning and impact. To answer it, we focus on all the passed proposals and then compare the responses of peers, conditional on whether the focal firm implemented the proposal or not. The results are tabulated in Table 6, in which we find that the change in such peer firms' CSR performance is much stronger in the subsample of implemented proposals than in the subsample in which proposals went unimplemented. For example, the first two columns show a 0.17 increase of adjusted KLD score in peer firms whose related voting firms complied with the passed proposal. Yet the change in adjusted KLD score is much lower in peer firms whose related voting firms did not comply with the passed proposal. The difference of 0.07 is significant at a level of 10%. The results hold and are even stronger for the other compliance measures. This again suggests that the passage of a CSR proposal is not purely a matter of signaling, and its implementation can generate significant CSR peer effects.

As a caveat, we only searched for implementation news regarding the passed proposals. As long as the probability of implementation in the just-failing sample is not zero, then the first-stage estimate would be biased upward and the second-stage estimate would be biased downward. However, given the robustness of our results across the board, we don't think such biases will significantly change our conclusion.

[Insert Table 6 about here]

3.4. Which CSR Matters?

So far we have documented an overall increase in CSR performance of nonvoting peer firms after observing the passage of a CSR proposal. A natural question at this point is: how do peer firms *specifically* respond to the adoption of CSR policies? Do they more proactively engage in CSR by launching more initiatives, or do they simply comply with regulations by reducing their

production of negative societal externalities? To answer this question, we break down the overall KLD score into "strengths" and "concerns" for each KLD dimension. Items defined as strengths capture a firm's voluntary engagement in CSR issues, whereas concerns capture (potential) negative externalities produced by the firm. For example, in the "environment" category, strengths include environmentally beneficial products and services (that promote the efficient use of energy), pollution prevention, recycling, clean energy, communication on environmental issues (e.g., a signatory to the CERES Principles, a notably substantive environmental report, an effective internal communications system for environmental best practices, etc.), as well as property, plans, and equipment that have an above-average environment performance. Concerns in this category include hazardous waste, regulatory problems, ozone-depleting chemicals, substantial emissions, agricultural chemicals, and climate change (substantial revenues from the sale of coal or oil and its derivative fuel products).[15]

We conduct the same tests on peers' following-year CSR as before, except that we replace the adjusted KLD score with KLD strengths and concerns. As shown in Panel A of Table 7, the RDD estimate of strengths is statistically significant at a level of 5%, while the estimate of concerns is insignificant. This may imply that the effects on the change of passing peers' CSR seem to come from their focus on strengths (launching new initiatives aimed at strengthening firms' social engagement) rather than on concerns (reducing negative externalities).

[Insert Table 7 about here]

Another, related question is whether the adoption of peer firms' follow-up CSR is a mimicking strategy or a differentiation strategy. In other words, do peer firms adopt CSR

[15] For a detailed description of strengths and concerns in each category, please refer to https://wrdsweb.wharton.upenn.edu/wrds/support/Data/_001Manuals%20and%20Overviews/_070KLD/_001General/_002Rating%20Criteria%20Definitions.pdf.cfm.

practices similar to the voting firm's marginally passed proposal (mimicking), or do they adopt a different type of CSR so as to avoid direct competition (i.e., differentiation)? As mentioned in our theoretical framework, peer firms may adopt different strategies depending on their position in the product market (i.e., whether they are market leaders or followers). To test these, we further break down the voting firms' CSR proposals into different types by classifying the proposals as environment-related proposals, workforce diversity–related proposals, or proposals related to employee relationships, since these are the most important aspects of CSR and cover most firms. We then break down the overall adjusted KLD score into a few subdimensions, such as environment, employee relations, and workforce diversity, to match the proposal type and analyze these subsamples with respect to different types of CSR proposals.[16]

For reasons of brevity, we report only the results of the passage of an *environment-related* proposal on peer firms' CSR, as we delineate in the theoretical framework. As shown in Panel B of Table 7, we indeed find evidence that peer firms match the voting firm's specific CSR strategies. The difference in the environmental score between passing and failing peers is significant and has the greatest magnitude of all subdimensional CSR scores, supporting the mimicking hypothesis.[17] We also observe some evidence of differentiation: for example, the passage of an environment-related proposal also relates to an increase in peer firms' diversity score, although the magnitude of the increase is much smaller. This can be interpreted as peer

[16] In addition to the environment dimension, as explained in the text, the employee-relations dimension considers company engagement in treating a unionized workforce fairly, maintaining a consistent no-layoff policy, implementing a cash profit-sharing program, employee stock-option plans, retirement benefits, health and safety programs, and so forth. The workforce-diversity dimension considers whether a company engages in promoting a female or minority CEO and board of directors; provides childcare, elder care, or flexible time; contracts with women and minorities; develops innovative hiring programs for the disabled; puts into place progressive policies regarding gay and lesbian employees; and so forth.

[17] In unreported results on peer firms associated with proposals related to workforce diversity, the reaction to the diversity dimension is the strongest. Similarly, in a subsample that includes only proposals related to employee relations, only the estimate of the employee relationship score is significant—that is, peer firms significantly improve their engagement only in issues related to employee relations.

firms adopting a mimicking strategy, which appears to be economically more important than a differentiating strategy.

Moreover, based on our argument, peer firms that are industry followers will be more likely to adopt a differentiating strategy, besides mimicking the voting firm's specific CSR practice. We define industry followers and leaders based on their product-market shares (using sales revenue), profitability (ROA), and the CSR score (using the environmental score as an example) prior to the vote, all relative to the voting firm. For example, if a peer firm's environmental score is lower than that of its voting firm, it is considered a follower; otherwise, it is considered a leader. We then test the "differentiating strategy" conjecture by performing the RDD tests on non-voting peers' following-year workforce diversity score following the passage of a close-call environment-related proposal conditional on whether the peer firm is an industry follower or a leader. As shown in Panel C of Table 7, the differentiation effects show up only in the subsamples of industry followers based on all three criteria. This is consistent with our theoretical arguments and the conjectures by the industrial organization literature.

3.5. Disentangling the Mechanisms of CSR Peer Effects

Our theoretical arguments are based on the idea that a firm's CSR practices create competitive pressure on its peer firms, which triggers the CSR peer effects we have documented. However, as mentioned earlier, an alternative explanation of the results detailed above may be that the spillover of CSR among product-market peers is propagated by financial intermediaries. If the peer effects of CSR are driven by financial intermediaries' propagation, we should expect similar reactions from peers without any economic links—for example, peer firms covered by a common

financial analyst or held by the common institutions. The external forces may "propagate" CSR, though the voting firm's CSR strategy has little impact on the utility of the peer firms.

We investigate the propagation explanation in Panel A of Table 8 by conducting an analysis similar to that we did in Table 4, comparing CSR scores of passing and failing peers, but we use alternative definitions of peer firms based on whether they are covered by common analysts or held by common institutional investors. That is, a firm is considered a peer of the voting firm if these two firms have at least one analyst who is the same or the same institutional investor. This alternative definition also helps shed light on the mechanisms of peer effects. However, the RDD results for peers based on common analysts and common institutional investors, as shown in columns (1) and (2), are all insignificant, indicating that even in firms with a higher influence of financial intermediaries' propagation, the peer effects of CSR are absent. Propagation, therefore, is unlikely to be the driving force for CSR peer effects.

To cross-validate the results in Panel A, we also divide our sample of product-market peers (using the Hoberg-Phillips classification) into two subsamples based on whether the peer firm and the voting firm are covered by a common analyst or held by the same institutional investor. As shown in Panel B, we again fail to find statistically and economically significant differences between the subsamples. Combining all these results in Panels A and B with our earlier results based on product-market peers, we see that CSR peer effects are mostly driven by competitive pressure and are absent in those without competitive relationships, although these are more likely to induce propagation by financial intermediaries (common analysts and common institutional investors).

If competitive pressure is driving CSR peer effects, peer firms' responses should be stronger when they are in a more competitive relationship with the voting firm. To test this

hypothesis, we define competitive pressure, which captures the similarity of two competing firms' products by measuring changes in the competing firms' products relative to the focal firm's products (Hoberg et al. (2014)). This competitive-pressure variable is constructed according to the way in which competitors change the wording used to describe the product, which overlaps with the focal firm's vocabulary of the product description section in the 10-Ks.

When a firm's products are more similar to those of its peers, the *competitive pressures* among its peers is greater; thus, peer firms may have a stronger desire to mimic their competitors' commitment to CSR.[18] Specifically, we divide the peer firms into two groups according to their associated voting firms' competitive pressure level in the year before the vote. A high-competitive-pressure group includes peers of the voting firms whose competitive-pressure scores are higher than those of the sample median among all voting firms. We expect that peer firms in the high-competitive-pressure group are subject to more pressures than those in the low-competitive-pressure group. The results of this competitive-pressure measure are reported in Panel C of Table 8. Consistent with the above conjecture, we find that the CSR peer effect is present mainly in the high-competitive-pressure group—namely, peer firms whose products are similar to their competing voting firms' products and thus face greater pressure to engage in CSR.

[Insert Table 8 about here]

3.6. Robustness

In addition to using a global polynomial approach and adjusting for imperfect compliance issues, we conduct a few robustness tests with alternative peer samples and placebo tests. First, we

[18] We do not use a traditional HHI measure or market share because peers are identified by the product rather than by a specified industry. Instead, we use a measure called Fluidity, which is obtained from 10-K files and compiled by Hoberg et al. (2014), that shows the competitive dynamics between a firm and its peers identified through a text-based analysis, to measure competitive pressure. More detailed description of this variable can be found in Appendix B "Variable Definitions."

replace CSR proposals with (probable) actual CSR practices. To do so, we manually collected data from Factiva and an online news search on a peer firm's actual environmental initiatives, such as developing an environmental R&D project.[19] We then verified these news data with data from the ASSET4 US dataset. The overlapped part (when the company actually adopted a certain CSR practice as reported by the news and when this information is adjusted in ASSET4's raw data) forms our sample for testing the actual CSR practices of peer firms. With these data we conduct the same RDD tests, and our results remain.

Secondly, we redefine our peer firms according to (1) the standard three-digit SIC industry classification, and (2) a randomly selected sample with 50 arbitrarily chosen peers from a voting firm's peer pool.[20] Consistent with evidence according to the Hoberg-Phillips definition, we find similar results in these alternative peer groups.

Thirdly, we conduct two placebo tests to ensure that the documented evidence reflects the peers' response to CSR proposals and to rule out potential confounding effects. We first replace the competing peers with similar non-peer firms,[21] and from this we find that the differences between passing non-peers' and failing non-peers' adjusted KLD scores are not statistically

[19] In particular, we focus on (1) whether the company reported on its impact on biodiversity, on activities to reduce its impact on native ecosystems and species, and on the biodiversity of protected and sensitive areas (Report on biodiversity impact: Yes or No); (2) whether the company took any initiative to restore or protect native ecosystems or the biodiversity of protected and sensitive areas (Restoring ecosystems: Yes or No); (3) whether the company report made proactive environmental investments or expenditures (Environmental investment initiative: Yes or No); (4) whether it had been reported in the news that the company invested in R&D on new environmentally friendly products or services intended to limit the amounts of emissions and resources needed during product use (Yes or No); (5) whether the company invested in R&D on new environmentally friendly products (Environmental R&Ds: Yes or No); (6) whether the company trained its employees on environmental issues (Environmental training on employees: Yes or No). We further supplement the news information with two ratings from ASSET4's Environmental R&D Score and Renewable/Clean Energy Products Score, both of which range from 0 to 100.

[20] This is because we notice that the number of competing peers (based on the Hoberg-Phillips definition) in our sample differs significantly across different voting firms—from 1 to 272. To address the concern that our results might be biased owing to an imbalance in the distribution of peer firms, we conduct similar tests on samples with a predetermined number of peer firms. In unreported tables, we also randomly select 20, 30, or 40 peers. The results are consistent and are available upon request.

[21] To do so, we replace each nonvoting peer with one matched firm by requiring the two firms to be the same in size, market-to-book ratio, and leverage ratio decile. If more than one non-peer firm is found, we keep the one closest in size to the peer firm.

significant and that the point estimates are much smaller. This indicates that a voting firm's potential adoption of CSR does not affect non-peer firms, and the observed differences in peer firms' CSR are induced by the voting firm's CSR strategy rather than by other confounding factors. In addition, we purify the CSR votes by excluding the events if there is a vote on a corporate governance proposal on the same day in the annual meeting. We find that the estimated difference in CSR remains statistically significant, indicating that our previous findings were not entirely driven by confounding proposals regarding corporate governance. These results are reported in Online Appendix F.

4. The Value Implications of CSR Peer Effects

The findings above suggest the existence of strong CSR peer effects. As a final step, we study the value implications of such peer effects by examining the peer firms' stock market reactions to the voting firms' passage of close-call CSR proposals. If the passage of a CSR proposal by voting firms forms a competitive threat to its peers, we would expect the investors of the competing peer firms to react negatively to such news. However, the strategic response from peers should relieve the pressure and weaken the negative reaction of the investors.

We gauge peer firms' stock market reaction to the voting firm's increased CSR engagement by calculating their CARs over the three-day event window [-1, +1] around the voting date using a market model.[22] We conduct similar RDD analysis between passing peers and failing peers, and the results are as reported in Table 9. Panel A shows that in general, product-market peers experienced significantly lower CARs. That is, the difference in CARs between passing peers and failing peers is negative. To confirm the result of stock market

[22] We also validate the results based on the market model by estimations using the Fama-French (1993) three-factor and Carhart (1997) four-factor models. The results are available upon request.

reactions, we also examine peer firms' changes in the product market share one year after the vote. Since voting firms will implement the CSR proposal in year *t+1*, we expect the competitive threats on market shares to be materialized in year *t+2* (Flammer (2015a)). Therefore, we focus on changes in peer firms' market share from year *t+1* to year *t+2*. Consistent with the evidence from the stock market (column (1)), we find that the passing peers on average experience a decrease in market share relative to the failing competing peers in column (2). These results suggest that shareholders of competitors interpret the voting outcome as bad news, which is consistent with the notion that a firm's adoption of CSR can attract a greater market share, thus hurting it competitors.

[Insert Table 9 about here]

Because the stock market is forward-looking, the negative effect on passing peers' CARs should be stronger if these peer firms' investors perceive their companies as being less likely to catch up in terms of CSR in the future. We further use four proxies to test this "lost in competition" prediction. First, we directly test the change in CSR difference between the voting firm and its peer firm after the vote. A significant increase in the CSR of the voting firm relative to that of its peers suggests that the vote can be regarded as "effective" in a competition relationship. If the voting firm was already a leader in CSR competition before the vote, the passage of the proposal will enlarge its competitive advantage over its peers. If the voting firm lags behind its peers in CSR, the passage of the proposal will reduce the gap with its peers. We thus partition our sample into two groups: those with a significant increase in the CSR gap (the voting firm's CSR minus the peer firm's CSR) and those without such an increase. As shown in

Panel B of Table 9, the negative and significant effect is present only in the subsample of peers that experience an increase in the gap between their CSR and their voting firms' CSR.

Secondly, we test the conjecture that if peer firms are more financially constrained, they are less likely to have the capacity to catch up by investing in CSR. We capture a peer firm's financial constraint using the measure developed by Hadlock and Pierce (2010) (hereafter "HP"),[23] in which a higher index value indicates greater financial constraint (in terms of the peer firm's ability to catch up with respect to CSR investment). As shown in Panel C of Table 9, the negative effect shows up only in the subsample of high-HP peers, that is, peers with greater financial constraints. This is consistent with our conjecture.

The immediate response from the market also depends on the competitive pressure on the peer firm and the *ex ante* likelihood of a CSR proposal's being implemented as perceived by peer firms' investors. The loss will translate into immediate market reaction only when the investors believe the pressure from competition is high and the signal of the voting firm implementing the passed CSR proposal is credible. Therefore, we conduct a further test by splitting the sample into two subgroups based on the competitive pressure of the peer firm as measured in Table 8. The results in Panel D of Table 9 show that only peers with high competitive pressures experience negative market reactions.

Finally, we split our sample based on whether the board recommended "YES" (or "FOR") to the proposal before the vote, as this is *ex ante* observable at the time of the vote and increases the likelihood of the focal firm actually implementing the proposal. We expect the peer firms'

[23] Several measures of financial constraints exist, but according to Hadlock and Pierce (2010) (hereafter "HP"), most of these suffer from too much noise from firm attributes other than size and age. Therefore, we use the financial-constraints index developed by HP and divide our competing peer sample into two groups, one with high financial constraints and the other with low financial constraints. To check the robustness of this result, we conduct the same analysis on the subsamples partitioned by alternative measures of financial constraints, including the Whited and Wu (2006) index and an indicator of whether the nonvoting peer firm distributed dividends in year *t-1* (Denis and Sibilkov (2010)). The results are similar to those using the HP index.

reactions to be stronger if their investors believe that the focal firms would implement the CSR improvement. Data on board recommendation prior to the vote are obtained from ISS US Voting Outcomes and are manually matched with our original CSR votes. As shown in Panel E of Table 9, the negative market reaction shows up only in the subsample whose boards recommended YES to the proposal prior to the vote; this is again consistent with our conjecture. These results are also consistent with the empirical literature on the value-enhancing effect of CSR (e.g., Flammer (2015a); Ferrell, Liang, and Renneboog (2016); Lins et al. (2017)) in that they show that one company's gain in value by adopting CSR is its competitors' loss in value.

5. Conclusion

Identifying the causal effect of peer effects among corporations is notoriously difficult. Equally difficult is identifying whether this peer effect has a social component. Existing evidence shows that CSR is determined largely by environmental factors (Liang and Renneboog (2017a); Ioannou and Serafeim (2012)). Despite the growing literature on the determinants and value consequences of CSR, little is known about the influence of other firms on a firm's CSR. In this paper we present evidence on the peer effects of CSR using a regression discontinuity design approach. We rely on CSR proposals that pass or fail by a small margin of votes during shareholder meetings as a source of locally exogenous variation in CSR commitment. By focusing on the reactions of peer firms competing in the same product markets (Hoberg and Phillips (2016)) to this potential adoption of CSR, our paper provides new insight into the motivations for corporate engagement in social issues and sheds light on the recent phenomenon of the surge in CSR.

We find strong evidence of the adoption of CSR practices among peer firms following the passage of a voting firm's CSR proposal. On average, the difference in CSR scores between passing peers and failing peers is 0.16 point. Stronger results are found for passed proposals that were actually implemented, which we call CSR peer effects. These results are robust for alternative samples of peers with economic links. These peer firms actively follow (more strengths rather than fewer concerns) and specifically (in the same domain) follow the voting firm's signaled commitment to CSR. However, peers that are market followers may also adopt CSR in different domains in addition to mimicking the voting firm's CSR. Such effects are not likely to be attributed to financial intermediaries' propagation, as we don't find similar results in samples of common analysts and common institutional investors, but rather are more consistent with a utility-based explanation. We further find that on the days around a shareholder meeting, a close-call CSR proposal is related to lower CARs in competing peers, especially those that have more difficulty catching up. All these results are consistent with a competition-based explanation. As a whole, our analysis identifies an important, yet so far unexplored, determinant of CSR practice and highlights the importance of strategic interaction in understanding peer effects in economic activity.

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Table 1. Summary Statistics

Variable	No. of Obs.	Mean	Std. Dev.	P25	Median	P75
Total Assets (millions US$)	38,630	7,589	11,994	715	2,273	7,941
Market-to-Book	38,630	1.69	0.87	1.08	1.30	1.98
Book Leverage	38,630	0.21	0.17	0.06	0.19	0.33
ROA	37,634	0.08	0.10	0.02	0.09	0.15
Adj. KLD Score	38,630	-0.13	0.42	-0.33	-0.14	0.13
Adj. KLD Strengths	38,630	0.22	0.37	0.00	0.13	0.29
Adj. KLD Concerns	38,630	0.41	0.43	0.00	0.33	0.58
Adj. KLD Environment Score	38,630	-0.01	0.12	0.00	0.00	0.00
Adj. KLD Employee Relations Score	38,630	-0.04	0.16	-0.20	0.00	0.00
Adj. KLD Diversity Score	38,630	-0.07	0.26	-0.33	0.00	0.13
Adj. KLD Community Score	38,630	0.00	0.14	0.00	0.00	0.00
CAR [-1, +1]	38,630	-0.0013	0.0289	-0.0191	-0.0012	0.0170

Notes. This table reports the descriptive statistics of the key variables. Based on the 1,407 unique CSR proposals that were being voted on, our sample consists of 38,630 unique (nonvoting) peer-vote observations from 3,452 unique U.S. public firms over the period 1997-2011. All continuous variables are winsorized at the 5^{th} and 95^{th} percentiles. Variable definitions are provided in Appendix B.

Table 2. Validity for CSR Vote as Regression Discontinuity Design (Preexisting Difference)

	(1)		(2)		(3)		(4)	
	Fail		Pass		Difference (Fail vs. Pass)		Difference within *Narrow Margin* (Optimal Bandwidth)	
	Obs.	Mean	Obs.	Mean	Estimate	p-value	Estimate	p-value
Size	37,685	7.760	945	8.160	-0.399	0.000	-0.138	0.156
Market-to-Book	37,685	1.700	945	1.420	0.276	0.000	0.046	0.261
Book Leverage	37,685	0.210	945	0.200	0.013	0.018	0.011	0.284
ROA	36,706	0.080	928	0.080	0.006	0.073	0.007	0.156
Adj. KLD Score	37,685	-0.127	945	-0.134	-0.007	0.610	-0.030	0.201

Notes. This table shows differences in several observable characteristics—adjusted KLD score, firm size, market-to-book ratio, leverage ratio, and ROA—between (nonvoting) peer firms that are associated with the passage ("Pass") of a CSR proposal in voting firms and those that are associated with the rejection ("Fail") of a CSR proposal in voting firms by a small margin. We define the margin as the optimal bandwidth following Imbens and Kalyanaraman (2012).

Table 3. The Effect of the Passage of a Close-Call CSR Proposal on the Voting Firm

Panel A. Stock Market Reaction, Subsequent CSR Engagement, and Profitability of the Voting Firm

	Voting firms		
	Adj CSR Score	CAR	ROA
	Pass vs. Fail	Pass vs. Fail	Pass vs. Fail
Estimate	0.18***	1.02**	0.003*
t-stat	2.83	2.21	1.87

Panel B. Implementation Rate of All Passed CSR Proposals

Panel B.1. Based on increase in CSR score

	All CSR Proposals	Environment	Employee Relationship	Diversity
Implementation rate	60%	60%	50%	20%

Panel B.2. Based on increase in Asset4 Score

	All CSR proposal	Environment	Employee Relationship	Diversity
Implementation rate	62.50%	100%	100%	25%

Panel B.3. Based on news about implementation

	All CSR proposal	Environment	Employee Relationship	Diversity
Implementation rate	57.14%	80%	66.70%	60%

Notes. Panel A reports the impact of CSR proposal passage on voting firms using RDD approach. We examine voting firms' future CSR performance (year t+1), immediate market reaction, and future profitability (year t+2). Panel B presents the implementation rate of CSR proposals based on different criteria. In Panel B.1. we define implementation of an increase in adjusted CSR score from MSCI ESG STATS (formerly KLD database). For each dimension, implementation is defined as an increase in related CSR dimensions. In Panel B.2, implementation is the increase in Asset4 score. In Panel B.3, we manually examine the news for passed CSR proposals and define implementation as 1) there is news report about the proposal implementation; or 2) there is news report on the corporate website; or 3) management team vote 'For' before the votes.

Table 4. Responses of Nonvoting Peers to the Passage of a CSR Proposal: Baseline Results

Panel A.
Following-Year Response of Nonvoting Peer Firms to the Passage of a Voting Firm's CSR Proposal

Adj. KLD Score *t+1*	Pass vs. Fail				
	(1)	(2)	(3)	(4)	(5)
	Optimal Bandwidth	50% of Optimal Bandwidth	150% of Optimal Bandwidth	Optimal Bandwidth (ΔCSR from *t-1*)	Optimal Bandwidth
Estimate	0.16***	0.10**	0.12***	0.10***	0.14***
t-stat	6.18	2.28	4.26	3.58	4.37
Kernel	Rectangular				Triangular

Panel B.
Evidence from Global Polynomial Regression

	(1)	(2)
	Adj. KLD Score *t+1*	Adj. KLD Score *t+1*
Pass	0.24***	0.086*
	(0.05)	(0.047)
Constant	-0.16***	-1.24***
	(0.03)	(0.070)
Polynomial Order	3	3
Controls	No	Yes
Obs.	38,630	37,634

Notes. This table presents peer firms' future CSR performance as a response to the CSR votes. Panel A presents RDD estimations from a local linear regression as specified in Equation (1) using the optimal bandwidth following Imbens and Kalyanaraman (2012). We report results across alternative bandwidths, including 50% of optimal bandwidth (narrower bandwidth), 50% of optimal bandwidth (narrower bandwidth), and 150% of optimal bandwidth (wider bandwidth). Results using both the rectangular and the triangular kernels are reported. Panel B shows the RDD estimations from a global polynomial regression. Column (1) does not include control variables, and Column (2) includes the control variables Size, Market-to-Book, Leverage, and ROA. Variable definitions are provided in Appendix B. Standard errors are clustered at the firm level and reported in parentheses. The symbols *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 5. Responses of Nonvoting Peers to the Passage of a CSR Proposal: A Fuzzy RDD Approach

Panel A. KLD Score

	2nd Stage	1st Stage
Estimate	0.95***	0.10***
t-stat	3.60	4.49

Panel B. ASSET4 Social Pillar Score

	2nd Stage	1st Stage
Estimate	0.50***	0.43***
t-stat	2.66	6.11

Panel C. ASSET4 Environmental Pillar Score

	2nd Stage	1st Stage
Estimate	0.90***	0.24***
t-stat	2.61	3.43

Panel D. News about Implementation

	2nd Stage	1st Stage
Estimate	0.18***	0.67***
t-stat	3.93	25.70

Notes. This table presents peer firms' future CSR implementation as a response to the CSR votes estimated using a fuzzy RDD approach. Specifically, the true "treatment" is a dummy variable if (1) there is an increase in adjusted KLD score in the year after the vote (Panel A); (2) there is an increase of more than 10 in the ASSET4 score (the environmental pillar and the social pillar) in the year after the vote (Panel B and Panel C); or (3) there is news or information showing that the proposal was implemented (Panel D). The optimal bandwidth is determined following Imbens and Kalyanaraman (2012). The symbols *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 6: Response of Nonvoting Peers to Implementation and Non-Implementation

	KLD Score Increase		ASSET4 Social Pillar Score Increase		ASSET4 Environmental Pillar Score Increase		Corporate News	
	Implemented	Unimplemented	Implemented	Unimplemented	Implemented	Unimplemented	Implemented	Unimplemented
Δ Peer CSR	0.17	0.10	0.40	-0.02	0.51	-0.03	0.27	-0.05
Diff	0.07*		0.42***		0.53***		0.32***	
t-stat	1.85		6.21		7.73		8.59	

Note. This table presents peer firms' future CSR performance conditional on the compliance or implementation of the CSR proposals in the voting firms. We compare the change of CSR scores of the peer firms in response to the compliance of the passed CSR proposals. Four measures of compliance are used: (1) there is an increase in adjusted KLD score in the year after the vote; (2) there is an increase of more than 10 in the ASSET4 Social Pillar Score in the year after the vote; (3) there is an increase of more than 10 in the ASSET4 Environmental Pillar Score in the year after the vote; (4) there is news or information showing that the proposal was implemented. The optimal bandwidth is determined according to Imbens and Kalyanaraman (2012). The symbols *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 7. Breakdown of KLD Score

Panel A. Following-Year KLD Strengths Score and Concerns Score of Nonvoting Peers

	Pass vs. Fail	
	(1)	(2)
	Strengths Score	Concerns Score
RDD Estimate	0.07**	-0.02
t-stat	2.16	-0.79

Panel B. Environment-Related Proposals and Nonvoting Peers' Following-Year KLD Subscores

	Pass vs. Fail		
	(1)	(2)	(3)
	Adj. Environment Score	Adj. Employee-Relations Score	Adj. Workforce-Diversity Score
RDD Estimate	0.20***	0.02	0.12*
t-stat	2.92	0.65	1.84

Panel C. Environment-Related Proposals and Nonvoting Peers' Following-Year KLD Diversity Score

	Pass vs. Fail					
	Defined by product market share		*Defined by profitability (ROA)*		*Defined by CSR (using Environmental score)*	
	Follower	Leader	Follower	Leader	Follower	Leader
RDD Estimate	0.27*	0.03	0.25*	0.17	0.49***	0.02
t-stat	1.92	0.35	1.82	1.07	3.89	0.14

Notes. This table presents the effects of the passage of a CSR proposal on (nonvoting) peers' following-year CSR performance by breaking down the KLD score into different dimensions. Panel A shows the RDD estimates for the adjusted KLD strengths score (column (1)) and the adjusted KLD concerns score (column (2)). Panel B shows the RDD estimates for three major sub-dimensional KLD scores: environment (column (1)), employee relations (column (2)), and workforce diversity (column (3)). Panel C shows the RDD estimates on (nonvoting) peers' following-year **workforce diversity** scores following the passage of an **environment-related** CSR proposal *conditional on whether the (nonvoting) peer is an industry follower or a leader* (defined in different ways). In column (1), follower and leader are defined based on their market shares (sales revenue): a peer firm is defined as follower if its market share is lower than the voting firm's market share prior to the voting, and is otherwise defined as leader. Similarly, follower and leader are defined by their profitability (ROA) relative to the voting firm prior to the voting in column (2), and defined based on their adjusted environmental score relative to the voting firm prior to the voting in column (3). We follow Imbens and Kalyanaraman (2012) and estimate the effects of the passage of a close-call CSR proposal using local linear regression with the optimal bandwidth. Variable definitions are provided in Appendix B. The symbols *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 8. Mechanisms of Peer Effects: Disentangling Propagation and Competition

Panel A. Redefining Peer Firms

	(1)	(2)
	Common Analyst	Common Institutional Investors
Estimate	0.05	0.01
t-stat	1.62	0.47

Panel B. Peer Effects of CSR: Conditional on External Propagation

	Common Analyst		Common Institutional Investors	
	Yes Adj. CSR Score	No Adj. CSR Score	Yes Adj. CSR Score	No Adj. CSR Score
	Pass vs. Fail	Pass vs. Fail	Pass vs. Fail	Pass vs. Fail
Estimate	0.10**	0.08*	0.13**	0.11**
t-stat	2.38	1.79	2.45	2.35

Panel C. Peer Effects of CSR: Conditional on Competitive Pressure

	Pass vs. Fail	
	High Competitive Pressure	Low Competitive Pressure
Estimate	0.17**	0.05
t-stat	2.02	0.84

Notes. This table reports RDD results disentangling propagation and competition explanations. In Panel A, we perform the RDD tests on samples of alternative definitions of peers using common analysts and common institutional investors. In Panel B, we perform the RDD tests on subsamples of product-market peers divided by common analysts and by common institutional investors. Common analysts (or common institutional investors) are a binary variable that equals 1 if two firms are covered by the same financial analyst (or held by the same institutional investor). In Panel C, we perform RDD tests on subsamples of product-market peers divided by the voting firm's competitive pressure (high vs. low), which measures similarities between a change in a firm's product space and an aggregate change in the competitors' product description. This competitive pressure measure is taken from the fluidity measure as described in Hoberg, Phillips, and Prabhala (2014), which argues that when fluidity is greater, the firm's products are more similar to its peers', and thus the competitive threat is greater. We follow Imbens and Kalyanaraman (2012) and estimate the effects of the passage of a close-call CSR proposal using local linear regression with the optimal bandwidth. Variable definitions are provided in Appendix B. The symbols *, **, and *** denote significance at 10%, 5%, and 1% levels, respectively.

Table 9. Value Implications of CSR Peer Effects

Panel A. Value Implications of Product Peers

	Pass vs. Fail CAR [-1, +1]	Pass vs. Fail ΔMarket Share [*t+1*, *t+2*]
RDD Estimate	-0.58%***	-0.09%***
t-stat	-4.11	-2.94

Panel B. CSR Gap (voting firm – peer firm)

	Pass vs. Fail	
	Increase	No Increase
RDD Estimate CAR [-1, +1]	-0.51%***	0.01%
t-stat	-3.06	0.07

Panel C. Financial Constraints

	Pass vs. Fail	
	High	Low
RDD Estimate CAR [-1, +1]	-0.54%**	-0.17%
t-stat	-2.38	-1.24

Panel D. Competitive Pressure

	Pass vs. Fail	
	High	Low
RDD Estimate CAR [-1, +1]	-1.33%***	-0.29%
t-stat	-5.48	-0.6

Panel E. Board Recommendations

	Pass vs. Fail	
	For (not against)	Against
RDD Estimate CAR [-1, +1]	-0.93%***	-0.13%
t-stat	-4.72	-1.07

Notes. This table reports the RDD estimates of peer firms' cumulative abnormal returns (CARs) on the sample of product-market peers. Panel A reports the results for three-day CARs around the CSR vote and the one-year-later change in product-market shares for the overall sample. We measure the threat of competition by classifying sample firms based on (1) whether the CSR gap between the voting firm and its peer firms is further enlarged after the passage of a CSR proposal (Panel B); (2) whether the level of financial constraints of competing peers is high or low (using Hadlock and Pierce (2010), Panel C); (3) competitive pressure between the voting firm and peer firms (Panel D); and (4) whether voting firms' board vote 'For' for the CSR proposal (ex-ante probability of implementing the proposal, Panel E). We follow Imbens and Kalyanaraman (2012) and estimate the effects of the passage of a close-call CSR proposal using local linear regression with the optimal bandwidth. Variable definitions are provided in Appendix B. The symbols *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Online Appendices for Article:

Peer Effects of Corporate Social Responsibility

Jie Cao, Hao Liang, and Xintong Zhan

Contents:

Appendix A: Examples of Close-Call CSR Proposals and Peer Firms' Reactions

	Panel A. Example of a Marginally Rejected CSR Proposal	Panel B. Example of a Marginally Approved CSR Proposal
Company Name	Massey Energy Company	IDACORP, Inc
Company Description	The company produces, processes, and sells bituminous coal of various steam and metallurgical grades, primarily of a low sulfur content, through its 25 processing and shipping centers (Resource Groups), many of which receive coal from multiple mines.	The company's principal operating subsidiary is Idaho Power Company, an electric utility engaged in the generation, transmission, distribution, sale, and purchase of electric energy. Its other subsidiaries include IDACORP Financial Services and Ida-West Energy Company, among others
Stock Ticker	NYSE: MEE	NYSE: IDA
Date of Vote	19 May 2009	21 May 2009
Proposal Type	Environmental Issue	Environmental Issue
Proposal Contents	Shareholders request a special report, to be reviewed by a board committee of independent directors, on how the company is responding to rising regulatory and public pressure to significantly reduce the social and environmental harm associated with carbon dioxide emissions from the company's operations and from the use of its primary products. The report should be provided by 1 November 2009 at a reasonable cost and omit proprietary information.	Shareholders request that the board of directors adopt quantitative goals—based on current technologies—of reducing total greenhouse-gas emissions from the company's products and operations; and that the company report to shareholders by 30 September 2009 on its plans to achieve these goals. Such a report will omit proprietary information and be prepared at reasonable cost.
Voting Results	Rejected (45.6% of the votes)	Passed (51.2% of the votes)

	Competing Peer Firms' Reaction		Competing Peer Firms' Reaction	
All Peers	No. of peers	Average Adj. CSR Score in Year *t+1*	No. of peers	Average Adj. CSR Score in Year *t+1*
	49	-0.62	55	-0.20
One Randomly Selected Peer	Peer Name	Adj. CSR Score in Year *t+1*	Peer Name	Adj. CSR Score in Year *t+1*
	Marathon Oil	-0.75	Northwest Natural Gas	0.25

Appendix B: Variable Definitions

Variable	Description
Firm Size	Logarithm of total assets (item 6) of a firm. Source: Compustat.
Market-to-Book	Market value of assets over book value of assets: (item 6 (total assets) - item 60 (common equity) + item 25 (common share outstanding) × item 199 (fiscal year–end stock price)) / item 6 (total assets). Source: Compustat.
Book Leverage	Book leverage: All debt (item 9 (long-term debt) + item 34 (short-term debt)) / total assets (item 6). Source: Compustat.
Market Leverage	Market leverage: All debt (item 9 + item 34) / market value of total assets (item 6 - item 60 + item 25 × item 199). Source: Compustat
ROA	ROA is calculated as (item 13 (operating income before depreciation) / item 6 (total assets)). Source: Compustat.
Cash Flow/Total Assets	Operating cash flow before extraordinary items (item 123) scaled by total assets (item 6). Source: Compustat
Adj. KLD Score	The sum of yearly adjusted community activities, diversity, employee relations, and environmental record KLD CSR Scores. Adjusted CSR is estimated by scaling the raw strength and concern scores of each category by the number of items of strength and concerns of that category in the year and then taking the net difference between adjusted strengths and concerns scores for that category. Source: KLD (MSCI ESG STAT) Database.
Adj. KLD Strengths	The sum of yearly adjusted community activities, diversity, employee relations, and environmental record KLD STATS CSR Strengths Scores. Source: KLD (MSCI ESG STAT) Database.
Adj. KLD Concerns	The sum of yearly adjusted community activities, diversity, employee relations, and environmental record KLD STATS CSR Concerns Scores. Source: KLD (MSCI ESG STAT) Database.
Adj. KLD Environmental Score	Adjusted environmental record KLD STATS CSR Score, calculated by scaling the raw environmental strengths and concerns scores by the number of items of environmental strengths and concerns in the year and then taking the net difference between adjusted strengths and concerns. Source: KLD (MSCI ESG STAT) Database.
Adj. KLD Employee Relations Score	Adjusted employee relationship record KLD STATS CSR Score, calculated by scaling the raw employee strengths and concerns scores by the number of items of employee strengths and concerns in the year and then taking the net difference between adjusted strengths and concerns. Source: KLD (MSCI ESG STAT) Database.
Adj. KLD Diversity Score	Adjusted diversity record KLD STATS CSR Score, calculated by scaling the raw diversity strengths and concerns scores by the number of items of diversity strengths and concerns in the year and then taking the net difference between adjusted strengths and concerns. Source: KLD (MSCI ESG STAT) Database.
Adj. KLD Community Score	Adjusted community record KLD STATS CSR Score, calculated by scaling the raw community strengths and concerns scores by the number of items of community strengths and concerns in the year and then taking the net difference between adjusted strengths and concerns. Source: KLD

	(MSCI ESG STAT) Database.
ASSET4 Social Pillar Score	The ASSET4 Social Pillar score measures a company's capacity to generate trust and loyalty in its workforce, customers, and society, through (SOCSCORE) and its use of best management practices. It is a reflection of the company's reputation and the health of its license to operate, which are key factors in determining its ability to generate long-term shareholder value. The social pillar is an equally weighted score of the sub-dimensional scores: Customer/Product Responsibility, Society/Human Rights, Workforce/Diversity and Opportunity, Workforce/Employment Quality, Workforce/Health & Safety, Workforce/Training & Development. The score ranges from 0 to 100, with higher score indicating better performance in this dimension. Source: Thomson Reuters ASSET4 database.
ASSET4 Environmental Pillar Score	The ASSET4 Environmental Pillar score measures a company's impact on living and nonliving natural systems, including air, land, and water, as well as complete ecosystems. It reflects how well a company uses best management practices to avoid environmental risks and capitalize on environmental opportunities in order to generate long-term shareholder value. The environmental pillar is an equally weighted score of the sub-dimensional scores Emission Reduction, Product Innovation, and Resource Reduction. The score ranges from 0 to 100, with higher score indicating better performance in this dimension. Source: Thomson Reuters ASSET4 database.
Environmental R&D Score	The ASSET4 Environmental R&D Score measures whether the company invest in R&D on new environmentally friendly products or services that will limit the amounts of emissions and resources needed during product use. The score ranges from 0 to 100, with higher score indicating better performance in this dimension. Source: Thomson Reuters ASSET4 database.
Renewable/Clean Energy Products Score	The ASSET4 Renewable/Clean Energy Products Score measures whether the company develops products or technologies for use in producing clean, renewable energy (such as wind, solar, hydro, geo-thermal, and biomass power). The score ranges from 0 to 100, with higher score indicating better performance in this dimension. Source: Thomson Reuters ASSET4 database.
Report on biodiversity impact	A dummy variable indicating whether the company reported on its impact on biodiversity, on activities to reduce its impact on native ecosystems and species, and on the biodiversity of protected and sensitive areas. Source: Thomson Reuters ASSET4 database.
Restoring ecosystems	A dummy variable indicating whether the company took any initiative to restore or protect native ecosystems or the biodiversity of protected and sensitive areas. Source: Thomson Reuters ASSET4 database.
Environmental investment initiative	A dummy variable indicating whether the company report made proactive environmental investments or expenditures. Source: Thomson Reuters ASSET4 database.
Environmental R&Ds	A dummy indicating whether the company invested in R&D on new environmentally friendly products. Source: Thomson Reuters ASSET4 database.
Environmental training on employees	A dummy variable indicating whether the company trained its employees on environmental issues. Source: Thomson Reuters ASSET4 database.

Competitive Pressure	The Competitive Pressure is proxied by the fluidity measure as defined in Hoberg, Phllips, and Prabhala (2014), which is a "cosine" similarity between a firm's products and changes in the peers' products and is scaled between 0 and 1. Higher fluidity indicates greater product-market threats. Details are in Hoberg, Phillips, and Prabhala (2014).
Relative CSR Performance	The gap in adjusted KLD scores between nonvoting and voting firms in the year before the vote. Source: KLD (MSCI ESG STAT) Database.
Financial Constraints (Hadlock-Pierce Index)	Hadlock and Pierce (2010) financial constraint index, with higher value indicating more financial constraint: $HP_{i,t} = -0.737 \times Size_{i,t} - 0.043 \times Size_{i,t}^2 - 0.040 \times Age_{i,t}$. Source: Compustat.
Market Shares	Proportion of a firm's sales revenue in its text-based peer industry. Source: Compustat.
Common Analysts	A dummy equals 1 if the voting firm and its peer firm are covered by the same financial analyst. Source: I/B/E/S.
Common Institutional Investors	A dummy equals 1 if the voting firm and its peer firms are held by the same institutional investors. Source: CDA/Spectrum Institutional 13(f) filings.
Board Recommendation	Board Recommendation" (MgmtRec) refers to the Board of Directors vote recommendations (For or Against) on a proposal disclosed in proxy card. Source: ISS US Voting Outcomes.

Appendix C. Sample Distribution of CSR Proposals

Panel A. Distribution of Events across Years

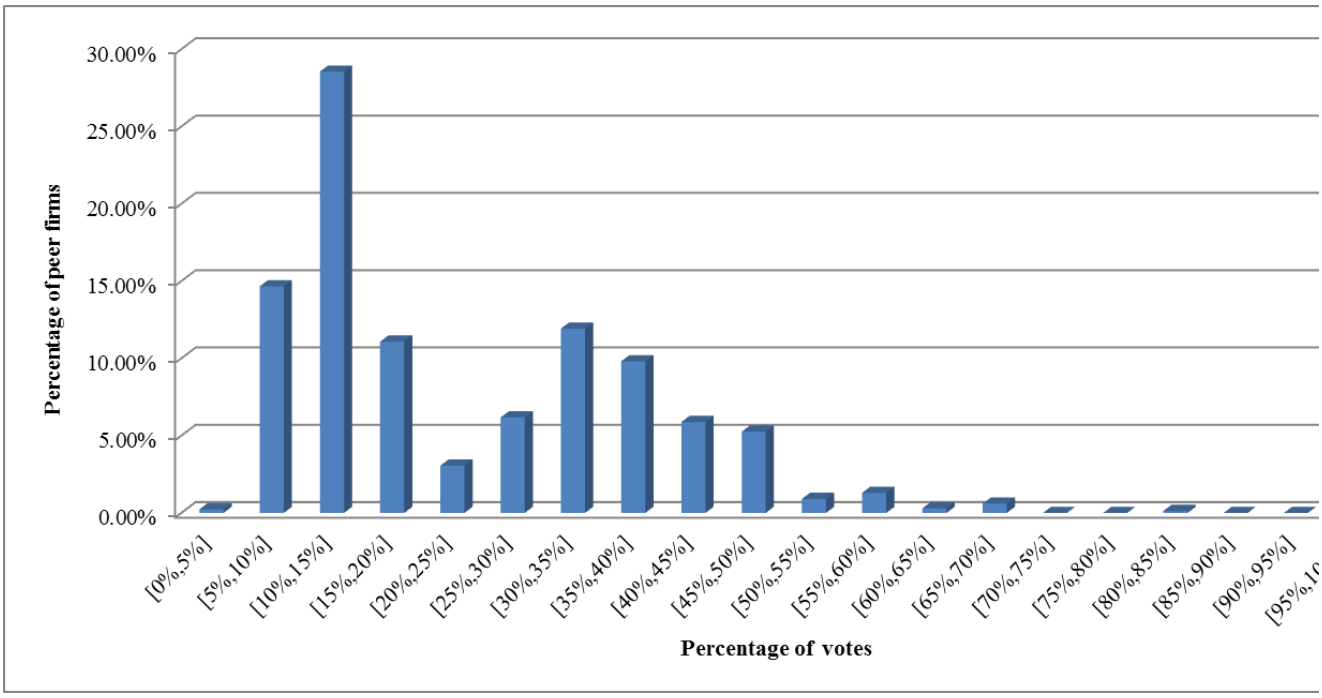
Year	No. of Votes	No. of Nonvoting Peers	Cumulative Percentage
1997	60	690	1.79%
1998	61	686	3.56%
1999	50	584	5.07%
2000	82	1,031	7.74%
2001	82	1,015	10.37%
2002	89	1,330	13.81%
2003	86	2,980	21.53%
2004	106	3,640	30.95%
2005	108	3,712	40.56%
2006	115	3,886	50.62%
2007	112	3,760	60.35%
2008	112	3,778	70.13%
2009	122	3,860	80.12%
2010	120	3,894	90.20%
2011	102	3,784	100.00%
Total	1,407	38,630	

Panel B. Distribution of Events across Proposal Types

Type	No. of Votes	No. of Nonvoting Peers	Percentage
Community	84	2,592	6.71%
Corporate Governance	59	3,367	8.72%
Diversity	185	3,586	9.28%
Employee Relations	204	3,765	9.75%
Environment	431	10,809	27.98%
Human Rights	95	2,941	7.61%
Others (Alcohol, Military, Nuclear, Tobacco)	73	939	2.43%
General Social Responsibility Issues	276	10,631	27.52%
Total	1,407	38,630	100%

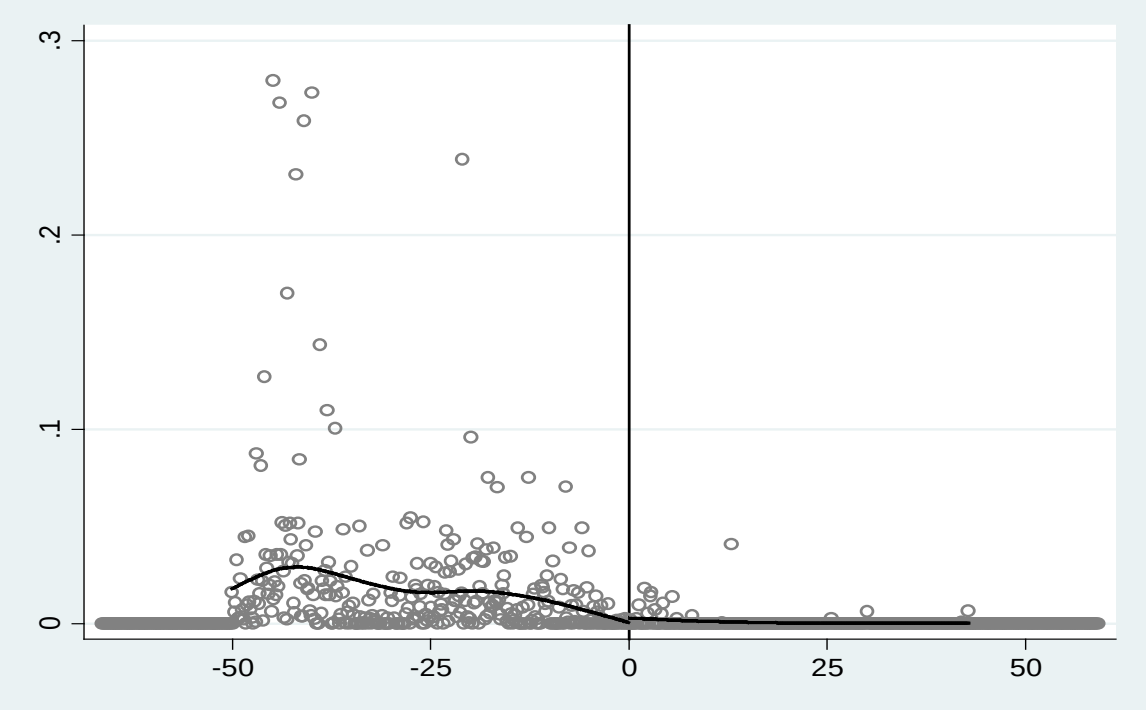
Notes. This table presents the distributions of CSR proposals and of the affected nonvoting peers. Panel A reports the sample distribution by year, and Panel B reports the sample distribution by type of CSR proposal. Our sample contains 1,407 unique CSR votes retrieved from the RiskMetrics and SharkRepellent databases over the period of 1997–2011. We obtain nonvoting peers from Hoberg-Phillips industry classifications based on firm pairwise similarity scores from text analysis of firm 10-K product descriptions. Our sample contains 38,630 unique (nonvoting) peer-vote observations that correspond to 3,452 unique U.S. public firms. The jump in the number of peer-vote observations from 2002 (1,330) to 2003 (2,980) is due to the change in coverage in the KLD database. The KLD database covered 1,128 unique firms in 2002 and 2,978 unique firms in 2003.

Appendix D.1. Distribution of Nonvoting Peers against the Percentage of CSR Votes



Notes. This figure plots the histogram of the percentage of nonvoting peer firms in our sample per voting share interval (each interval represents 5% of voting shares). Our sample contains 1,407 unique CSR votes retrieved from the RiskMetrics and SharkRepellent databases from 1997 to 2011. We obtain nonvoting peers from Hoberg-Phillips industry classifications based on firm pairwise similarity scores from the textual analysis of firm 10-K product descriptions. Our sample contains 38,630 unique (nonvoting) peer votes from 3,452 unique U.S. public firms (nonvoting peer).

Appendix D.2. Density of CSR Vote Shares



Notes. This figure plots the density of CSR vote shares following the procedure in McCrary (2008). The *x*-axis is the distance (in percentage of votes) from the majority threshold of passing a proposal. The dots depict the density estimate. The solid line represents the fitted density function of the forcing variable (number of votes).

Appendix E: More Pre-existing Difference Test

	(1)		(2)		(3)		(4)	
	Fail		Pass		Difference (Fail vs. Pass)		Difference within *Narrow Margin* (Optimal Bandwidth)	
	Obs.	Mean	Obs.	Mean	Estimate	p-value	Estimate	p-value
Market Leverage	37,685	0.156	945	0.164	0.008	0.089	0.010	0.191
Cash Flow/Total Assets	36,004	0.035	898	0.049	0.014	0.021	-0.012	0.157
Adj. Environment Score	37,685	-0.011	945	-0.002	0.009	0.029	0.007	0.411
Adj. Employee Score	37,685	-0.044	945	-0.021	0.024	0.000	-0.001	0.883
Adj. Community Score	37,685	-0.004	945	-0.019	-0.015	0.035	-0.012	0.371
Adj. Diversity Score	37,685	-0.068	945	-0.088	-0.020	0.050	0.006	0.404

Notes. This table shows differences in several observable characteristics—adjusted KLD score, firm size, market-to-book ratio, leverage ratio, and ROA—between (nonvoting) peer firms that are associated with the passage ("Pass") of a CSR proposal in voting firms and those that are associated with the rejection ("Fail") of a CSR proposal in voting firms by a small margin. We define the margin as the optimal bandwidth following Imbens and Kalyanaraman (2012).

Appendix F: Robustness

Panel A. RDD Estimation on Actual CSR (Environmental) Practices of Peer Firms

	Panel A.1 Voting Firm's Passage of Any CSR Proposal		Panel A.2 Voting Firm's Passage of An Environmental Proposal	
	RDD estimates	*t*-stat	RDD estimates	*t*-stat
Report on biodiversity impact	0.29***	4.16	0.55***	5.35
Restoring ecosystems	0.23**	2.37	0.87***	7.81
Environmental investment initiative	0.38***	4.74	0.57***	9.12
Environmental R&Ds	0.13***	1.98	0.17***	4.16
Environmental training on employees	0.30***	3.11	0.79***	7.91
Environmental R&D Score (ASSET4)	11.09*	1.78	15.16***	5.08
Renewable/Clean Energy Products Score (ASSET4)	4.86*	1.72	20.46***	3.33

Panel B. Alternative Product-Market Peer Classification

	(1) 3-Digit SIC Peers	(2) 50 Arbitrarily Chosen Peers
	Pass vs. Fail	
Estimate	0.25***	0.12**
t-stat	6.77	2.26

Panel C. Placebo Tests

	(1) Response from Nonpeers	(2) Excluding Corporate Governance Proposals
	Pass vs. Fail	
Estimate	-0.03	0.13***
t-stat	-0.98	2.77

Notes. This table presents the RDD estimates using alternative CSR measures and peer-firm samples. We follow Imbens and Kalyanaraman (2012) and estimate the effects of the passage of a close-call CSR proposal using local linear regression with the optimal bandwidth. In Panel A, we examine peer firms' specific CSR actions using Asset4 database. In Panel B, we redefine peer firms. Panel B (1) reports the response from peers in the same 3-digit SIC industries (104,083 nonvoting firm-vote observations). In Panel B (2) we arbitrarily assign a maximum of 50 nonvoting peers for each voting firm and randomly select its peer firms from the pool of all its nonvoting peers into the sample. In Panel C (1), we conduct placebo test using a matched non-peer sample. Specifically, for each peer firm we find a matched nonpeer firm based on firm size, market-to-book, and leverage. Panel C (2) represents a control created by excluding all proposals on corporate governance. Variable definitions are provided in Appendix B. The symbols *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.