# Peer Effects of Corporate Social Responsibility[*]

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## Abstract

We investigate how firms react to their peers' commitment to and adoption of corporate social responsibility (CSR), using a regression discontinuity design that relies on the passing or failing of CSR proposals by a small margin of votes during shareholder meetings. We find the marginal passage of a close-call CSR proposal as well as its implementation are followed by the adoption of similar CSR practices by peer firms. Stock returns around the voting dates are lower for peers in a competing relationship if the CSR proposal was passed, but are higher for peers in an alliance partnership. Our evidence suggests that both herding and social utility mechanisms exist in explaining the peer effects of corporate social responsibility.

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

*JEL Classification*: M14; L10; G14; G30

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# 1. Introduction

Corporate social responsibility (CSR) has increasingly become a mainstream business activity, ranging from voluntary engagement in environmental protection to increasing workforce diversity and employee welfare. Such activity has been growing rapidly regardless of standard economic theories that have predicted the practice should be rather uncommon (Bénabou and Tirole (2010), Kitzmueller and Shimshack (2012)). The neoclassical economic paradigm usually considers CSR as unnecessary and inconsistent with profit maximization (e.g., Friedman (1970)). This discrepancy between theory and real-world observations has attracted much scholarly attention in recent years. The extant literature usually explains such phenomena 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 firm profitability (Dowell, Hart, and Yeung (2000), Edmans (2011), Deng, Kang, and Low (2013), Flammer (2015a)) and cost of capital (El Ghoul, Guedhami, Kwok, and Mishra (2011), Dhaliwal, Li, Tsang, and Yang (2011), Albuquerque, Durnev, and Koskinen (2015)).

Some recent studies begin to show that CSR is not merely driven by a firm's own characteristics but to a greater extent determined by external factors such as legal and economic environment (e.g., Liang & Renneboog (2016, 2017)). In this paper, we extend this line and try to explain the CSR upsurge by examining the reactions of a company's peer firms to its CSR commitment and adoption. Notably, firms do not operate in isolation, and their corporate policies could be outcomes of interacting with other firms in the same product market. Exploring the influence of peer firms will therefore help us understand the dynamics of a firm's CSR engagement through its interaction with its product market

peers. There has been a growing literature documenting that peer firms have a wide impact on corporate policies and stock market activities (e.g., Kaustia and Knüpfer (2012), Georgarakos, Haliassos, and Pasini (2014)). With increasing intra- and inter-industry firm interactions, peer effects have been found to be one of the most import determinants of corporate behavior. For example, according to Leary and Roberts (2014), peer effects are more important for capital structure decision than most previously identified determinants. Such effects are also found in corporate precautionary cash holdings (e.g., Hoberg et al. (2014)), corporate investment decisions (e.g., Foucault and Fresard (2014)), and financial misconduct (e.g., Parsons, Sulaeman, and Titman (2015), Kaustia and Rantala (2015)). Therefore, our study aims to bridge the gap in the literature by addressing the issues of (1) why firms participate in CSR (economic incentives) and (2) understanding peer effects in economic activity.

Theoretically, there are two main potential reasons for the peer effects of corporate social responsibility. Firstly, peer firms are trying to "keep up with the Jones". They herd to mimic the behaviour of the other firms without considering the economic consequences. On the other hand, the mimic behaviour could be a strategic move of the peer firms. As commitment and adoption of new corporate policies could change the profitability of the peer firms, the peers strategically adjust their CSR policy in the future. Despite the nuanced predictions based on theories, we have only limited empirical evidence and the peer effects of CSR are largely unexplored in the literature. The main reason is the challenge of identifying the causality of peer effects among corporations. Both CSR and a firm's peer interactions in the market are arguably endogenous choices of the firm, which posits an empirical challenge as to whether firms and investors react to their peers' CSR actions by changing their CSR practices or whether the pre-existing differences in other unobservable firm characteristics lead different peer firms to adopt CSR to different extents. It is also difficult to apply a typical quasi-natural

experiment approach by exploring exogenous legislative changes because such legislative 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. More specifically, 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% majority threshold) in annual meetings on peer firms' subsequent CSR practices. 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 (2015)). The passage of such close-call proposals is akin to randomly "assigning" CSR to companies and hence is not correlated with peer firm characteristics. Conceptually, there is no reason to expect that a company's peer firm that passes a CSR proposal with 50.1% of the votes is systematically different from a company's peer firm in which a similar proposal fails with 49.9% of the votes. Therefore, close-call CSR proposals provide a source of random variation of a firm's CSR commitment that can be used to estimate the causal effect of CSR on peer firms' CSR practices.[1] 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 of corporate governance proposals on stock returns, both studies examined the focal firm's shareholder value rather than peer effects induced by product market connections. Our empirical setting focusing on peer firms enables us to go beyond the focal firm's perspective and study the dynamic interaction among firms. In addition, we also investigate the implementation of the proposals utilizing different data

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[1] 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 May 19, 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 May 21, 2010. The proposal on reducing total greenhouse gas emissions was passed with 51.2% supporting votes. Our objective is to examine the difference in non-voting peer firm reactions. In our sample Massey Energy Company 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.

sources including corporate news about the actual adoption of CSR. Results from these tests further support those based on the passage of close-call proposals and suggest these effects go beyond pure signalling but can materially influence peer firms.

The two pillars of our empirical analyses are the CSR measurement and the identification of peer groups. First, we measure CSR using the Kinder, Lydenberg, and Domini (KLD) scores—these are the most comprehensive and standard CSR scores used in the literature (e.g., Chatterji, Levine, and Toffel (2009), Hong and Liskovich (2016), Flammer (2015a, 2015b), Cronqvist and Yu (2016), Lins, Servaes, and Tamayo (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 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. Second, 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. This approach essentially identifies peer firms according to the similarity of their products, which better captures the competitive relation between peer firms and also matches the product-centric nature of CSR and the fact that CSR usually spans multiple industries which may not be properly captured by industry-based peer definitions. Nevertheless, we cross-validate our results using 3-digit SIC industry codes. As an extension and for comparison, we also construct a sample of collaborating peers consisting of firms that are strategic alliance partners.

By empirically testing a large sample of more than 3,000 U.S. public non-voting 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 peer firms' subsequent CSR adoption. Specifically, if the voting firm marginally

passes a close-call CSR proposal, the average CSR score for its competing peer firms in the following year is 0.16 points higher than that of the competing peer firms in which the vote marginally fails. This difference is economically significant as it comprises 30% of the standard deviation of the adjusted CSR score. The effect is even stronger if the close-call CSR proposal was implemented in the subsequent year. These results are robust when using global polynomial estimations, different measures of CSR and their sub-scores, and different peer samples. Such effects are absent in non-peer groups and for non-CSR proposals. In addition, the increase in peer firms' CSR is usually through voluntary initiatives rather than reducing CSR concerns, and in the same domain in which their competing voting firm passes the specific type of CSR proposal. We find similar results for the sample of collaborating peers, that is, alliance partners.

We next explore the mechanisms through which such CSR-peer effects take place. First, we investigate the competitive relation between the voting firm and its peers. We find that the aforementioned peer effects are stronger in firms with higher competitive pressure, as measured by the similarity of products between a voting firm and its non-voting peers. Second, we investigate external pressure from financial analysts who regularly cover CSR issues in their reports and thus impose social pressure on firms (Dong, Lin, and Zhan (2016)). We find that peer effects are stronger in firms with more financial analyst coverage. Interestingly, these effects are not likely to be driven by the common analyst that covering both voting firm and its peers.

In order to explore the theoretical reasons behind such strong peer effects, we further investigate the value implications of these CSR-peer effects by examining the stock market reaction to the passage of a CSR proposal by both competing and collaborating peers. Theoretically, if peer firms follow the voting firms' CSR policy without considering the economic consequences, the market reaction from the investors may be unfavorable. However, if the mimic behaviour is of strategic consideration, the market

reaction can be more favourable. We find significantly lower three-day cumulative abnormal returns (CARs) for competing peers and significantly higher CARs for collaborating peers around the passage of a close-call CSR proposal. The unfavorable market reaction of competing peers is stronger for those with high financial constraints and is further supported by changes in the peers' post-voting market shares. These results are consistent with the notion that competing peers are more likely to adopt CSR practice due to uninformed herding, whereas the CSR adoption by collaborating peers who have advantages in information and resource sharing is more likely driven by changes in their market shares and future cash flows. This further demonstrates that CSR adoption can materialistically affect a firm.

Two guideposts can be used to put our findings into the literature context. First, our work echoes the recent academic attention on peer effects in economic activity and corporate behavior. The extant literature has discovered 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 a firm's social engagement—which is usually not motivated by profit-maximization—can also spill over to other firms. As an increasingly important aspect of corporate behavior, CSR provides us an ideal foundation to test a different facet of peer effects that is related to social engagement as well as its implication on financial performance. Our results show that peer effects of CSR are pervasive in economic relationship. However, the value implications of the CSR-peer effect depend on the nature of the peer relation and the financial capacity of the peer firm.

Second, our work contributes to the understanding of the nature of CSR. On the determinants of CSR, the literature mostly focuses on a firm's own financial motives (e.g., Hong et al. (2012), Jo and Harjoto (2012)), trade liberalization (Flammer (2015b)), and institutional environment (e.g., Liang and

7

Renneboog (2016)). Our work extends the scope of this literature by focusing on the dynamic nature of CSR and empirically documenting that a firm's CSR policy can also be substantially changed by its peers' practices. On the consequences of CSR, the literature has shown that it can contribute to the focal firm's stock returns, long-term operating performance (Flammer (2015a)), acquirer return and post-merger performance (Deng, Kang, and Low (2013)), reduction of capital costs (e.g., Dhaliwal et al. (2011), El Ghoul et al. (2011)) and improvement of employee productivity (Flammer (2015b)). Our study further documents that a firm's commitment to CSR can also influence its peer firms' stock returns, and thus extends the understanding of the scope of the CSR effect, namely, that CSR not only influences focal firms' financial performance, but also the financial performance of the peer firms.

## 2. Peer Effects and Corporate Social Responsibility

The existence of peer effects on individual and household financial decision-making and behavior has long been documented (e.g., Kaustia and Knüpfer (2012), Georgarakos et al. (2014)), and can be classified into two broad motivations: social learning and social utility (Bursztyn, Ederer, Ferman, and Yuchtman (2014)). Recent studies have established that substantial externalities and peer effects also exist in corporate policies. Peer effects are believed to be one of the most important determinants of corporate behavior, as firms increasingly interact with other firms within the same industry and across different industries in their daily operations. For example, according to Leary and Roberts (2014), peer effects are more important for capital structure determination than most previously identified determinants. Such peer effects are also found in corporate precautionary cash holdings (e.g., Hoberg et al. (2014)), corporate investment decisions (e.g., Foucault and Fresard (2014)), and financial misconduct (e.g., Parsons et al. (2014), Kaustia and Rantala (2015)). In addition, one type of a firm's behavior may trigger other types, as well as related financial policies of its peer firms, and such effects can

subsequently be reflected in peer firms' stock returns in the events of acquisition (Servaes and Tamayo (2014)) and IPO (Hsu, Reed, and Rocholl (2010)).

Recently, Hoberg and Phillips (2010, 2014, 2015) and Hoberg, Phillips, and Prabhala (2014) develop a measure of peer firms based on a firm pairwise similarity from a text analysis of firms' 10-K product descriptions to study peer effects and product market competition. The authors' measure of peer firms is shown to be highly relevant and consistent in the contexts of mergers and acquisitions, stock market valuations, operating cash flows, payout policies, R&D, and advertising activities induced by a competitive threat in the product market. This measurement captures how managers identify rivals as their peer firms based on product similarity/differentiation, how various effects spill over to peers, and how peer financial returns are affected (Hoberg and Phillips (2015)). This product-market-based classification of peer firms are shown to be important in identifying competing peers and studying subjects that are beyond simple industry classification.

While most of these studies investigate peer effects on a firm's financial policies and performance, little is known about such implications on a firm's social performance, which is theoretically more ambiguous. Following the literature on individual and household peer effects, we argue that, broadly, there are two reasons why a peer's act of engaging in CSR would affect a firm's own choice. The first is due to herding (e.g., Bursztyn et al. (2014)). That is, firms adopt similar CSR practice after observing their peers' CSR adoption because of peer pressures and simply "keep up with the Joneses." The second reason is related to the change in peer firms' utility. That is, CSR can lead to changes in sales and profitability by creating a competition effect. Indeed, many have argued that CSR can have substantial effect on firm performance. For example, Lins, Servaes, and Tamayo (2017) argue that the trust between the firm and both its stakeholders and investors is built through investment in CSR, which is an important social capital, and pays off in hard time.

Of course, there may be other reasons for firms' engagement in CSR which are not unique to its peer effects, and may intertwine with the above mechanisms. For example, peer firms can actually learn from voting firms' favourable stock market reaction to the passage of CSR proposals (Flammer, 2015), and adjust their own CSR strategies accordingly. It could also be that CSR merely reflects an agency problem (Masulis and Reza (2015), Cheng et al. (2016)), as managers may mimic other firms' CSR practice due to their own career concerns for adapting to the norm, regardless of whether doing so is value-enhancing for the firm. This is related to the "keeping up with the Joneses" argument, but the focus is on self-interested manager rather than on the firm. We empirically investigate these mechanisms in the following sections.

## 3. Data and Empirical Strategy

### 3.1. Data, measure, and sample construction

As previously mentioned, our key identification strategy is to investigate the effect of the close-call passage of a firm's CSR proposal on its non-voting peers' subsequent CSR performance. We obtain the data on shareholder-proposal voting results from RiskMetrics and Factset's SharkRepellent. The RiskMetrics data cover 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 complement 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."

Our competing peer-firm data set is retrieved from the Hoberg and Phillips (2010, 2014) text-based product market peer database (Text-Based Network Industry Classifications or TNIC) because it better captures the competitive relation between peers and beyond a single industry, as mentioned above.[2] 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 description in their 10-K files. After linking the shareholder proposal data with the Hoberg-Phillips peer-firm database, we require no missing outcome variables (discussed in the following paragraph) or relevant firm fundamental variables (size, market-to-book, and leverage). 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.[3] This filtering procedure leads to a final competing peer-firm sample of 38,630 (non-voting peer) firm-vote observations, corresponding to 3,452 unique non-voting U.S. public firms. In our robustness tests, we also use the standard 3-digit SIC definitions of industry peers.

Our main analyses focus on the competing peers sample based on the Hoberg-Phillips database, and consists of 1,407 unique firm-votes from 1997 to 2011.[4] Table 1 provides the distribution of our sample, with Panel A showing a summary of the numbers of voting firm-vote observations and non-voting competing peer-vote observations in each year,[5] 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.

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[2] The text-based product market peer data can be obtained from http://cwis.usc.edu/projects/industrydata/
[3] Our stock and bond issuance data comes from the SDC database. The M&As announcement data are obtained from the Zephyr and SDC databases. Dividend payment data are obtained from the CRSP.
[4] 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 that includes broader coverage in Compustat.
[5] 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 covers 1,128 unique firms in 2002 and 2,978 unique firms in 2003.

[Insert Table 1 about here]

To better understand how interactions between firms determine the CSR policy, we further consider the collaborating peers. Specifically, we obtain data on alliance partnership as measures for collaborating peer firms from the Securities Data Company (SDC) platinum database,[6] which includes both joint ventures and non-joint ventures. We keep only alliance deals that have at least two U.S. public companies traded on the NYSE, AMEX, or NASDAQ. We define firms in a deal as partners and then match the alliance data with Compustat and CRSP to construct the links among partners.[7] In the contract, an alliance has a start date and an expiration date. We set the start date as the following month after the deal announcement date to ensure that all partner relations in our sample are publicly known. For the termination date, however, only 2% of alliance deals in our sample have available termination dates as disclosed in the database. Therefore, for deals with valid termination dates, we consider the partnership as lasting until the deal termination date; for deals with missing termination dates, we assume the partnership lasts for five years from the date of the deal announcement.[8] Thus, our CSR test sample starting in 1997 could still be affected by previous alliances that began as early as 1992. After matching the firm-partner link data with CSR proposals and KLD data, the sample contains 9,148 (non-voting) partner-vote observations from 1,392 unique U.S. public firms from 1997 to 2011.[9]

To test non-voting firms' reaction to the passage of a CSR proposal in their peer firm, we mainly rely on the CSR score of the non-voting firms in year *t+1* (the year after their peers' vote) as the

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[6] SDC collects alliance announcement data from sources such as SEC filings, trade publications, and public news. A random check on Factiva suggests that the media promptly covers alliance formations. We follow Cao, Chordia, and Lin (2016) and Cao, Chordia, Lin, and Zhan (2016) on the sample construction of alliance partners.

[7] We use the SDC's 6-digit historical CUSIP (NCUSIP) to match with the CRSP common stocks 8-digit NCUSIP at the time of alliance announcements. For companies with multiple common shares, we keep the one with the largest market cap on the announcement dates.

[8] Cao, Chordia, and Lin (2016) also use a five-year duration for alliances without valid termination dates. In the online appendix, it is shown that the results are consistent for alternative assumptions of a three-year duration or until 2012.

[9] This sample is smaller than the (non-voting) peer firm-vote sample (38,630 observations) for two reasons: (1) the number of firms with available alliance partners is much less than the firms with text-based peers provided by Hoberg and Philips (2010, 2014); and (2) on average, a firm is linked to 2.65 partners each year and the median number of partners is one, which is much less than the number of linked text-based peers.

outcome variable. The data for firm CSR scores are from the KLD database, which 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 conducted a good deed

("Strength") or a harm ("Concern"), and gives one point to either strength or concern for each relevant

firm 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 Relationship, and Environment.[10] 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 pointed out by

Manescu (2011), the raw CSR score may be problematic for evaluating a firm's actual CSR activities

over years as the number of Strengths and Concerns within each category can differ. To overcome this

concern and obtain consistent comparisons in both the cross-sectional 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 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

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[10] We exclude corporate governance from our CSR performance construction, as it is perceived as a mechanism to mitigate conflict between principles and managers (Shleifer and Vishny (1997)) rather than a concern about other stakeholders, such as community and employees. We also exclude the product safety and quality dimension, as it is more likely to be subject to legal restrictions and regulations.

raw CSR score and the change in the adjusted CSR performance score as alternative outcome variables for a robustness check.

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 2.

[Insert Table 2 about here]

*3.2. 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.[11] Similar to Flammer (2015a), we use a voting firm's random passage of CSR proposals for identification, but differ by focusing on the CSR practice and shareholder returns of the non-voting peer firms instead 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 50.1% or by 49.9% is arguably random. Accordingly, such close-call CSR proposals provide a source of random variation in the commitment to CSR that can be used to estimate the causal effect of passing a CSR proposal on peer firms' performance. Our estimate of such an 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" to the left-hand and right-hand sides of the threshold are used to estimate the discontinuity in peer firms' reactions. We follow Imbens and Kalyanaraman (2012) to derive the asymptotically optimal bandwidth

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

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), the nonparametric linear estimation approach allows us to capture the difference in the future CSR performance between peers who observe 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:

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

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—i.e., 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 $\rho$ captures the discontinuity at the majority threshold—the difference in outcome between peer firms of the voting firm that marginally passes a CSR proposal and peer firms of the voting firm that marginally fails 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.

*3.3. Tests for a quasi-randomized assignment*

Our identification strategy requires that passing or failing a close-call CSR proposal is nearly random 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.

*3.3.1. 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 the small margin implies that the vote-share distribution should be smooth and continuous around the majority threshold. Figure 1 visually confirms this. A more formal test is provided in Figure 2, which plots the density of shareholder votes. The dots depict the density and the solid line represents 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 of continuity of the density function at the threshold. With the McCrary (2008) test result, we confirm that no precise manipulation exists and that the assumption of smoothness is validated.

[Insert Figure 1 and Figure 2 about here]

*3.3.2. Pre-existing 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 akin to a random assignment, it should be unrelated to peer-firm characteristics prior to the vote. Intuitively, 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 3 the differences of a few key firm-characteristic variables for these two peer groups (for simplicity, we hereafter call them "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, firm characteristics—firm 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 small margin around the threshold.[12] Overall, this evidence suggests that no systematic and significant difference exists between passing peers and failing peers around the majority threshold, which gives support to our identification strategy.

[Insert Table 3 about here]

## 4. Results

### 4.1. The Effects of CSR commitment on peer firms' following-year CSR levels

Having validated the randomness assumption of our RDD setting, we then formally test the peer effects of CSR by focusing on peer firms' subsequent-year CSR levels following the voting firm's passage/rejection of a close-call CSR proposal. As previously mentioned, we start with competing peers based on Hoberg-Phillips, and report the results of our baseline specifications (Eq. (1))

[Insert Table 4 about here]

Panel A of Table 4 estimates the difference in the commitment to CSR between passing peers and failing peers as previously defined with different bandwidths and with rectangular as well as triangular kernels.[13] It is clearly shown that the estimates are positive and statistically significant above

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[12] We conduct the tests using optimal bandwidth following Imbens and Kalyanaraman (2012). The numbers of observation vary across different variables because the optimal bandwidths are different. The numbers of observation range from 2,199 to 4,642 for failing peers and from 620 to 853 for passing peers in column (4). Our results do not change when we test the pre-existing difference within some other specified small margins such as [48%, 52%] or [49%, 51%].

[13] 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.) and find no evidence of discontinuity for either CAR and subsequent CSR activities, which supports our argument that the effects on peer

the 5% level across different specifications of bandwidth and kernel.[14] 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 points. Given that the adjusted KLD score has a mean of -0.13 and a standard deviation of 0.42, a difference of 0.16 (more than 30% of the standard deviation) should be economically sizable. The results remain significant when we use 50%, 75%, and 150% of the optional bandwidth as shown in columns (2)–(4). These results imply that when a voting firm marginally passes a CSR proposal, its peer firms' CSR practices the following year is significantly increased, which is indicative of the existence of the CSR-peer effect: peer firms follow their competitors' potential adoption of CSR proposals by engaging more in their own CSR.

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.[15] Specifically, we estimate the following model:

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

where $Y_{it}$ is the outcome variable of the (non-voting) peer firm—i.e., an adjusted KLD score in year $t+1$. $Pass_{it}$ is a dummy that equals 1 if the voting firm passes the CSR proposal—i.e., the vote percentage is higher than 50% and 0 otherwise. $P_l(v_{it}, \gamma_l)$ is a flexible polynomial function for

firms' CARs are generated by the exogenous increase of CSR level of the voting firm caused by *marginally* passing the CSR proposal.

[14] The optimal bandwidth for RDD estimation with an adjusted KLD score as the outcome variable is 0.156. Within this optimal bandwidth, there are 135 unique CSR votes.

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

observations on the left-hand side of the majority threshold $\gamma$ (50% in our case) with different orders, and $P_r(v_{it}, \gamma_r)$ is a flexible polynomial function for observations on the right-hand side of the threshold $\gamma$ with different orders. $v$ is the percentage of shares favoring the CSR proposal. We choose a polynomial order of 3 for our analysis. $Z_{it}$ is a set of control variables.

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

*4.2. Passage vs. Implementation*

The results above can be interpreted as, the passage of a CSR proposal could credibly signal a firm's commitment to CSR. However, it is possible that some passed proposals were not implemented (imperfect compliance, because the voting results are non-binding), and some CSR practices were carried out without a proposal being passed. We therefore conduct a fuzzy RDD analysis to overcome the imperfect compliance issue. To do so, we need to decide the implementation of the proposals. As there is no available data, we define the dummy variable of implementation using several resources. First, following Flammer (2015), 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.[16] Second, we define implementation based on another CSR data source ASSET4 as an external validity check. Similar to KLD data, ASSET4 provides a firm's engagement in several environmental and social issues, and we

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

focus on its aggregate environmental and social scores. However, unlike KLD scores, 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 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 corporate website, 10-K filing, third-party websites following 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 a proposal that was passed and implemented if (a) there is a clear indication of a change in corporate behaviour, such as a new report responding to the proposal of the shareholders in the year after the vote, (b) there is 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 the CSR peer effects, and use the three ways to define CSR implementation as mentioned above. The first step of fuzzy RDD is to estimate the probability of implementation at the cut-off, which is 50%. The results are tabulated in Table 5. The first stage of the fuzzy RDD shows that the 50% cut-off has a significant impact on the implementation probability. The probability of implementing the proposal increases by 10% (Panel A) if the voting percentage surpassed 50%. The probability of proposal implementation increases more in other cases. With a significant jump in the probability of implementation, we run the second stage to obtain the estimate adjusting for the imperfect compliance issue. 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 peer effects we have documented are robust after adjusting for the probability of implementation.

[Insert Table 5 about here]

A natural question following is: does an implemented proposal have a larger impact on the peer firms than an un-implemented proposal? Unpacking this will give a hint on whether the CSR-peer effect documented above is a pure signalling effect or has material meaning and impact. To answer this question, we conduct two additional tests. First, we compare the responses of passing peers to the compliance and non-compliance of the passed proposals. Compliance means the proposal is passed and then implemented. Second, we compare the RDD results in the subsamples of implemented and un-implemented CSR proposals, regardless of whether they are passed through voting or not. The results are tabulated in Panel A and Panel B of Table 6, respectively. In Panel A, we find the change in peer firms' CSR performance is much stronger in the subsample of complied proposals compared with the non-compliance subsample. 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 of adjusted KLD score is much lower in peer firms whose related voting firms did not comply with the passed proposal. The difference 0.07 is significant at 10% significance level. The results hold and are even stronger for the other compliance measures. This again suggests that CSR-peer effect is not purely signalling.

In Panel B, we split the sample into subsamples of CSR practices that are implemented and un-implemented, and again examine the effect of CSR proposal passage. We find that the peer effects in the subsample of implemented proposals are stronger, suggesting that the actual implementation of CSR indeed has a large impact on peer firms' future CSR practice. More importantly, we find that even for proposals that were marginally passed but not implemented, there is also a spillover effect to its peers. This may suggest that the passage of CSR proposal itself gives a strong signal for the voting firm's commitment to CSR. In addition, these results potentially give support to both the "keeping up with the

Joneses" hypothesis and the argument that CSR can materially alter competitive landscape in the product market by changing future cash flows, which we will examine in greater detail in the value implication part. Given that the tests on the actual CSR implementation yield very similar (and stronger) results to the tests on the passage of close-call proposals, but the latter have much more observations and the random assignment nature, we stick to testing the passage of close-call proposals in all later analyses to preserve space and avoid duplication. Nevertheless, focusing on the actual implementation for all tests below give very similar results.

[Insert Table 6 about here]

*4.3. Robustness*

In addition to using a global polynomial approach and adjusting for imperfect compliance concerns, we also conduct a few robustness tests with alternative peer samples and placebo tests, and report these results in Table 7. First, we redefine our peer firms according to the standard 3-digit SIC industry classification. Consistent with the Hoberg-Phillips definition evidence, we find similar results in this alternative peer group with a slightly larger economic effect (0.25), as shown in column (1) Panel A. Second, we use our sample of strategic alliance partners to present collaborating peers group and conduct the same RDD analysis used for the competing peers, and also find a positive estimate with an economic magnitude almost twice as large as that between competing peers, suggesting that the spillover effect of CSR is stronger in a collaborative relationship than in a competitive relationship.

[Insert Table 7 about here]

Third, we notice that the numbers of competing peers (based on the Hoberg-Phillips definition) in our sample differ significantly across different voting firms—from 1 to 272. To address the concern that our results might be biased by an imbalanced distribution of peer firms, we conduct similar tests on

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samples with a pre-determined number of peer firms. Specifically, we randomly select samples with arbitrary numbers of peers (for example, 30 and 50). As shown in Panel B of Table 7, the results are still upheld when we randomly select either 30 peer firms (column (1)) or 50 peer firms (column (2)) for each voting firm. [17]

Finally, we conduct two placebo tests to rule out potential confounding effects and report these results in Panel C of Table 7. Column (1) reports the result from the test on non-voting firms that are not product market peers of the voting firms. To do so, we replace each non-voting 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 with the firm size closest to the peer firm. If the abovementioned results had been specific to CSR-peer effects, one would expect no significant reactions by these non-peer firms to the voting firm's passage of a CSR proposal. This is indeed the case, as the differences between passing non-peers' and failing non-peers' adjusted KLD scores are not statistically significant and 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. Column (2) reports the test result on a sample excluding corporate governance proposals, and the estimated difference in CSR remains statistically significant with the "right" signs, indicating that our previous findings are not entirely driven by confounding proposals on corporate governance.

### 4.4. Which CSR matters?

Given the abovementioned findings that a firm's commitment to CSR can affect its peer firms' CSR strategies, one may wonder how peer firms change their CSR practices. In other words, do these firms actively launch new initiatives aimed at solidifying their strengths of social performance, or do

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[17] In unreported tables, we also randomly select 20 or 40 peers. The results are consistent and available upon request.

they reduce their production of negative societal externalities? To answer these questions, we decompose the overall KLD score into "Strengths" and "Concerns" for each KLD dimension. "Strengths" capture a firm's voluntary engagement in CSR issues while "Concerns" capture (potential) negative externalities produced by the firm. For example, under the "Environment" dimension, "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 systems in place for environmental best practice, etc.), as well as property, plans, and equipment having an above-average environment performance. "Concerns" under this dimension include hazard 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).[18] We conduct the same tests on peers' following-year CSR as previously conducted, with the exception of replacing the adjusted KLD score with KLD "Strengths" and KLD "Concerns." As shown in Panel A of Table 8, the RDD estimate of "Strengths" is statistically significant at the 5% level, 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 the firms' social engagement), rather than on "Concerns" (reducing negative externalities).

We also decompose the overall adjusted KLD score into a few sub-dimensions, such as Environment, Employee Relationship, and Workforce Diversity, which are the most important aspects

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[18] For a detailed description of "Strengths" and "Concerns" under each category, please refer to the link below: https://wrdsweb.wharton.upenn.edu/wrds/support/Data/_001Manuals%20and%20Overviews/_070KLD/_001General/_ 002Rating%20Criteria%20Definitions.pdf.cfm.

of CSR,[19] and conduct the same analysis on these sub-dimensions. As shown in Panel B of Table 8, the CSR scores of the passing peers all significantly increase across these sub-dimensions, giving further support to our hypothesis that a voting firm's commitment to CSR induces its peer firms' mimicking behavior through upgrading their engagement in various aspects of CSR such as environmental, employment, and other workforce issues.

A natural question that arises from the abovementioned findings on KLD sub-scores is whether peer firms match the specific CSR strategy that the voting firm potentially adopts. That is, if the voting firm passes a proposal to enhance its environmental strategy, its peer firms will also adopt more environment-related CSR strategies. To test this hypothesis, we further decompose CSR proposals into different types by reading through all of the proposals and classifying them into environment-related proposals, workforce diversity-related proposals, and proposals related to employee relationships. We then conduct the same analysis on these subsamples of different types of CSR proposals as in Panel B, and report the results in Panels C, D, and E, respectively. We indeed find evidence that peer firms match the voting firm's specific CSR strategies. In Panel C, which comprises peer firms associated with environment-related proposals, only the difference in Environment Score between passing and failing peers is significant. In Panel D, which comprises peer firms associated with proposals related to workforce diversity, the Diversity dimension reaction is the strongest. In Panel E, with only proposals related to Employee Relationships, only the estimate of Employee Relationship Score is significant—i.e., peer firms only significantly improve their engagement in issues related to employee relationships.

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[19] Besides 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 flextime, women and minority contracting, innovative hiring programs for the disabled, progressive policies toward gay and lesbian employees, and so forth.

Overall, the empirical evidence in Table 8 suggests that firms react to their (competing) peers' potential CSR adoption by solidifying their CSR strengths and matching the specific CSR strategies of their peers.

[Insert Table 8 about here]

*4.5. The Roles of Peer and External Pressures*

The previous results establish that peer effects of CSR are prevalent, and firms tend to follow suit by engaging in the same domain for which their peers potentially adopt a certain CSR practice. The focus of this section is whether peer pressure and pressures from outside play a significant role, which could shed light on the motivations behind the CSR-peer effects. In particular, if firms indeed herd to keep up with the Joneses, peer effects should be stronger when peer firms feel more pressure to "follow suit" with CSR.

First, 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 *Competitive Pressure* is greater, the firm's products are more similar to its peers' and thus peer firms may have a stronger desire to mimic their competitors' commitment to CSR.[20] Specifically, we partition the peer firms into two groups according to their associated voting firms' *Competitive Pressure* level in the year before the vote; that is, the high *Competitive Pressure* group is subject to more peer pressure than the low *Competitive Pressure* group. A high *Competitive Pressure* group is defined as peer firms whose corresponding voting-firm's *Competitive Pressure* score is above the median of the whole voting-firm sample, and a low *Competitive*

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[20] We do not use a traditional HHI measure or market share because peers are identified by the product rather than by a specified industry. *Fluidity*, which is obtained from 10-K files, shows the competitive dynamics between a firm and its peers identified through a text-based analysis. We admit that the usage of *Fluidity* fails to capture the competition between one firm and one specific peer firm.

*Pressure* group is defined as peer firms whose corresponding voting-firm's *Competitive Pressure* score is below the median of the whole voting-firm sample. The results based on this *Competitive Pressure* measure are reported in Panel A of Table 9. Consistent with the aforementioned conjecture, we find that the CSR-peer effect is mainly present in the high competitive pressure group, namely peer firms whose products are more similar to their competing voting firms' products and thus face greater pressures to engage in CSR. Notably, this gives support to both the competition (change in firm utility) mechanism and the herding (keeping up with the Joneses) argument.

Besides pressures between the voting firm and its peers, the CSR spillover may also be induced by external pressure, such as that from financial analysts. Analysts regularly report CSR practices of firms that they follow, which can draw investor attention to these issues and thus impose additional pressure on the covered firms to engage in CSR (Dong, Lin, and Zhan (2016)). Therefore, one could expect that the peer effects are stronger in peers that have more following from financial analysts.[21] In order to test the potential pressure from analyst coverage, we split the peer firms into two subsamples of high- and low-levels of financial analyst coverage. Again, a high *Analyst Coverage* group is defined as peer firms whose numbers of following analysts are above the median of the whole peer sample, and a low *Analyst Coverage* group is defined as peer firms whose numbers of following analysts are below the median of the whole peer sample. We tabulate the empirical results in Panel B of Table 9. Consistent with the above argument, we find that the peer effect of CSR is much stronger in peers with high analyst coverage than those with low analyst coverage. The empirical results confirm that external pressure as imposed by financial analysts also affect the peer effects of CSR.

Does the above result imply that analysts propagate CSR practice across firms they cover, which potentially explain the peer effects? We investigate this alternative explanation in Panel C of Table 9 by

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[21] Financial analysts have been documented to have an important impact on corporate behavior including innovation (He and Tian (2013)), corporate financing (Derrien and Kecskés (2013)), and CSR (Dong et al. (2016)).

conducting the similar analysis comparing the CSR scores between passing peers and failing peers as in Table 4, but use a different definition of peer firms based on being covered by common analysts. Such alternative definition also helps shed light on the mechanisms of peer effects. However, the RDD results are mostly insignificant, except for 150% of the optimal bandwidth, indicating that common analysts may play a role in propagating CSR peer-effect, but such role is rather marginal. The results are not quite consistent with the arguments that CSR-spillover is driven by analysts' propagation.

[Insert Table 9 about here]


## 5. The Value Implications of CSR-Peer Effects

Our abovementioned findings suggest the existence of strong CSR-peer effects: firms that are connected either through competition or collaboration tend to mimic the potentially adopted CSR practices of their peers. These firms actively follow (more strengths rather than reduced concerns) and specifically (in the same domain) follow in the voting firm's signal of committing to CSR. As a final step, we study the value implications of such mimicking behavior by examining the peer firms' stock market reactions to the voting firms' passage of close-call CSR proposals.

As mentioned before, the mimicking behavior of peer firms could be a result of firms simply "keeping up with the Joneses" (herding) or of peers' utility and future cash flows being affected (strategic response). The former is similar to uninformed herding, which is defined as the behavior of mimicking the voting firm's potential CSR adoption without sufficient information or consideration of whether doing so maximizes value given the firm's own investment capacity; thus the stock market may not react favorably (due to concerns of e.g., potential overinvestment or agency problem). The latter is due to firms deliberately adjust their CSR strategy based on their competitors' CSR practice to avoid their own market shares and future cash flows would being negatively affected by the voting firms' CSR

initiatives. Such strategic CSR adoption also includes inferring from the voting firm's positive stock reactions to its CSR commitment that properly adopting CSR can lead to better financial performance (Flammer (2015a)). Therefore, shareholders would not "penalize" their firms' mimicking behavior, and may even react more favorably in such case as they such CSR adoption as strategic.

Both herding and strategic reaction effects could exist among peer firms, and their relative importance depends on peer relations in which the extent of information and resource sharing can vary. Therefore, to better understand the mechanisms underlying CSR peer effects, we use another group of peer firms which are related to the voting firm by engaging in the same alliance, rather than through competition in product market. Previous literature has suggested the formation of strategic alliance partners (i.e., collaborating peers) for the purpose of sharing information and resources (Robinson (2008)), which can reduce herding and enable more informed decision making process among peers, leading to higher firm utility in terms of enhanced future cash flows and market shares, thus favorable stock market reactions on average. In contrast, the information sharing between competing peers is relatively limited, and therefore the herding ("keeping up with the Joneses") effect is likely to dominate, resulting in less favorable stock market reactions.

We calculate the CAR over the three-day event window [-1, +1] using a market model[22] to measure the stock market reaction to the increased CSR engagement by peer firms. The abovementioned conjectures are confirmed by the CAR results as reported in Panel A of Table 8: Column (1) shows that the three-day CARs (Day -1 to Day 1, with Day 0 being the day of shareholder vote)[23] around passage of close-call CSR proposals of passing competing peers are 0.58% lower than that of failing competing

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

[23] The RDD estimate for abnormal return on the voting day—i.e., day 0, is negative -0.28%—but insignificant. The estimate for cumulative return on the voting day and the day after the voting day—i.e., day [0, +1], is -0.49%—significant at the 5% level.

peers. Column (3) shows that the three-day CARs of passing collaborating peers are 1.17% higher than that of failing collaborating peers.

To confirm the abovementioned results of stock market reactions, we also examine peer firms' changes in market shares one year after their CSR-mimicking behavior. Since we find that peers' CSR mimicking behavior happen in year t+1, we focus on their market share changes from year t+1 to year t+2. Consistent with the evidence from the stock market, we find the passing competing peers on average experience a decrease in market shares relative to the failing competing peers in column (2) while the results for the collaborating peers (alliance partners) are the opposite in column (4). These results suggest that shareholders of competitors interpret the voting outcome as bad news. At first sight, this potentially implies that a firm's adoption of CSR can attract more market shares thus hurts competitors, but this is inconsistent with the fact that these peer firms also adopted more CSR practices (which arguably can help them catch up in competition and regain market shares) later on. In addition, the fact that investors of the alliances react differently from competitors could shed light on the value of CSR, as there should be no loss but rather gain of market shares for alliance partners. Overall, these results give support to the social utility argument only for the collaborating peers. For competing peers, the results are more consistent with "keeping up with the Joneses" argument which suggests that CSR-peer effect among these peers is driven by uninformed herding. They also indicate that herding-driven CSR can be suboptimal, which leads to underperformance in the product market, whereas CSR adopted by collaborating peers can be more effective, resulting in better financial and operating performance.

Second, as previously mentioned, if the lower CARs and market shares of passing competing peers are manifestations of uninformed herding that more likely leads to overinvestment, these effects should be more pronounced in firms with higher financial constraints (i.e., lower capacities) and CSR is more likely an overinvestment for them. Therefore, we look at the differential stock market reactions of

the voting firms' passage of close-call CSR proposals by competing peers that have different levels of financial constraints. Several measures of financial constraints exist, but according to Hadlock and Pierce (2010) (hereafter "HP"), most of these measures generally suffer from too much noise from various firm attributes besides firm size and age. Therefore, we use the financial constraints index developed by HP and partition our competing peer sample into a high financially constrained group and a low financially constrained group.[24] Based on the above reasoning, herding-driven CSR is more likely to be an overinvestment in the former group.

Panel B of Table 10 reports the results of partitioning competing peers into subsamples of high HP and low HP. We repeat the RDD estimates with CARs and changes in market shares as the outcome variables for high- and low-HP peers, respectively. Consistent with the overinvestment argument, we find the negative coefficient on CARs in competing peers is only significant for the high-HP sample (column (1)). In contrast, the difference in CARs for low financially constrained competing peers is not significantly different from zero (column (3)). Consistently, in the high-HP sample, passing competing peers experience a decrease of market shares relative to failing competing peers (column (2)), whereas no significant result is found in the low-HP sample (column (4)). The point estimates in the two subsamples are also statistically significantly different. These results suggest that the underperformance of both stock markets and product markets of competing peers mostly appear from those with higher financial constraints, which arguably suffer more from uninformed herding and competition.

[Insert Table 10 about here]

Overall, our above findings suggest that the value implications of CSR-peer effects depend on the motivation and nature of the mimicking behavior. Both herding and strategic response could explain

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[24] To check the robustness of this result, we also 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 non-voting peer firm distributed dividends in year *t-1* (Denis and Sibilkov (2010)). The results are similar to the results using the HP index.

the peer effects. As collaborating peers may have information and resource-sharing advantages, the mimicking behavior is more likely driven by enhanced social utility, which is evident by an outperformance in both the stock market and product market. In contrast, the mimicking behavior of competing peers is more likely driven by uninformed herding, which potentially leads to sub-optimal investment in CSR. This is reflected by the underperformance in both the stock and product markets. Notably, this underperformance is more pronounced in competing peers with high financial constraints.

## 6. Conclusion

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 the regression discontinuity design approach. We rely on the passage of a firm's 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 product markets (Hoberg and Phillips (2015)) to such potential adoption of CSR, our paper provides novel insight into the motivations behind corporate engagement in social issues.

We find strong evidence on the mimicking behavior of 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 points (30% of the standard deviation). Stronger results are found for passed proposals that were actually implemented. These results are robust with alternative samples of competing peers and strategic alliance partners. The mimicking behavior of peer firms comes from voluntary engagement and following the voting firm's specific CSR commitment. In addition, the abovementioned peer effects are stronger when the products between voting firms and their competing peers are more similar, and when more financial analysts are following the peer firms. Moreover, we explore the value implications of the

CSR-peer effects, which help shed light on whether CSR-peer effects are driven by herding ("keeping up with the Joneses") or by strategic reaction due to change in utility (i.e., changes in peer firms' future cash flows and market shares). We find that on the days around a shareholder meeting, a close-call CSR proposal is related to higher CARs in collaborating peers, but lower CARs in competing peers. In addition, those firms with high financial constraints drive the lower CARs of competing peers. Our results are further supported by findings on peer firms' market shares. These results are consistent with the notion that CSR-peer effect among collaborating partners is more likely driven by strategic response to change in utility. In contrast, CSR-peer effect among competing peers is more likely driven by uninformed herding and potentially leads to overinvestment. As a whole, our analysis identifies an important, yet unexplored, determinant of CSR practice, and further enhances our understanding of peer effects in economic activity.

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**Figure 1**

**Distribution of Non-Voting Peers against the Percentage of CSR Votes**

This figure plots the histogram of the percentage of non-voting peer firms in our sample per each 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 non-voting peers from Hoberg-Phillips industry classifications based on firm pairwise similarity scores from textual analysis of firm 10-K product descriptions. Our sample contains 38,630 unique (non-voting) peer-votes from 3,452 unique U.S. public firms (non-voting peer).
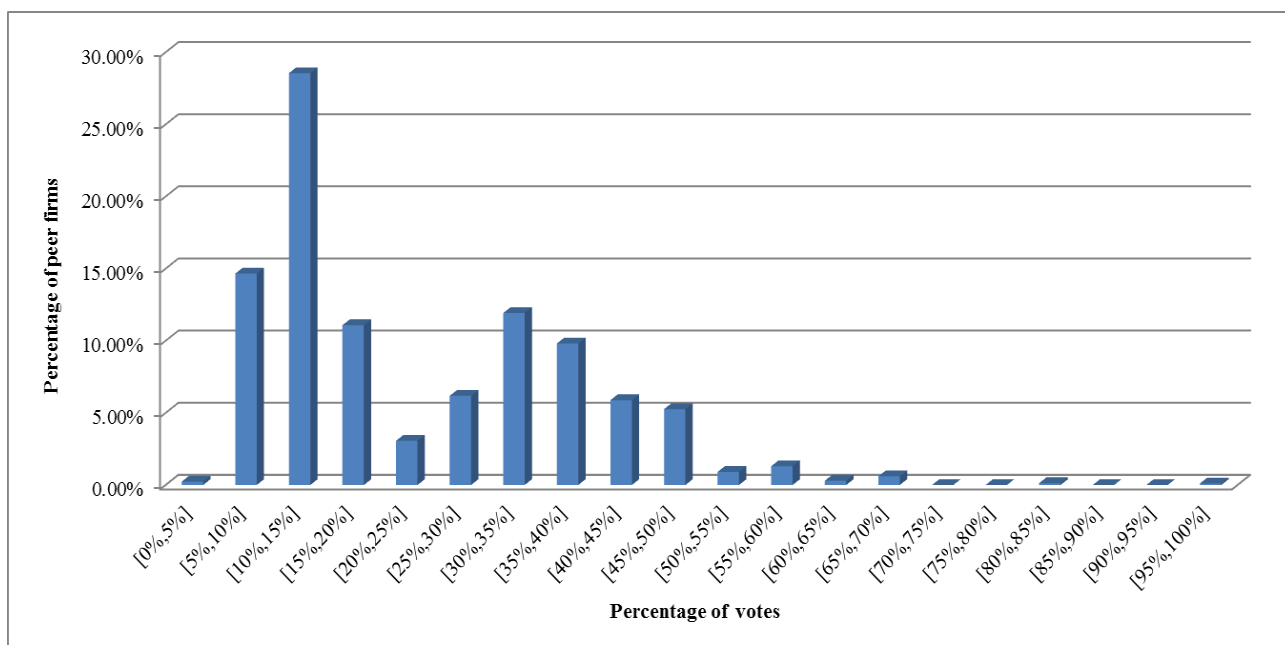
**Figure 2**

**Density of CSR Vote Shares**

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 (the number of votes).
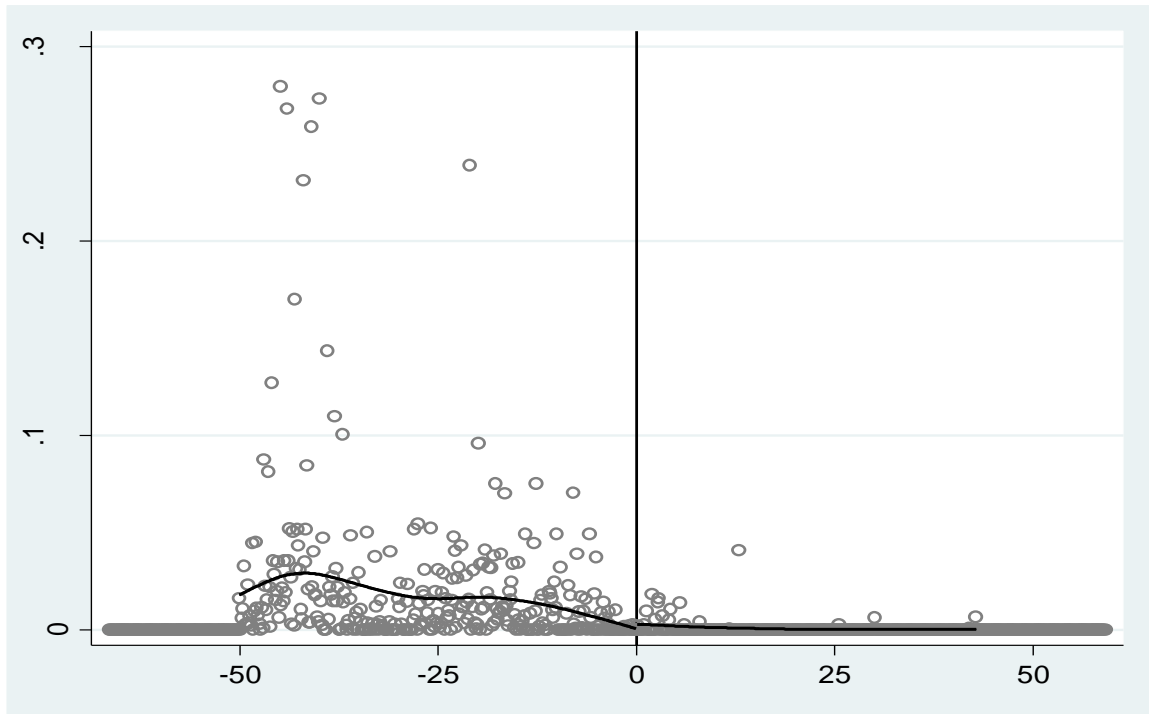
## Table 1

## Sample Distribution of CSR Proposals

This table presents the distributions of CSR proposals and of the affected non-voting peers. Panel A reports the sample distribution by year and Panel B reports the sample distribution by the type of CSR proposals. Our sample contains 1,407 unique CSR votes retrieved from the RiskMetrics and SharkRepellent databases over the period of 1997-2011. We obtain non-voting 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 (non-voting) peer-vote observations that correspond to 3,452 unique U.S. public firms.

### Panel A: Distribution of Events across Years

| Year | # of Votes | # of Non-Voting 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 | # of Votes | # of Non-Voting Peers | Percentage |
|---|---|---|---|
| Community | 84 | 2,592 | 6.71% |
| Corporate Governance | 59 | 3,367 | 8.72% |
| Diversity | 185 | 3,586 | 9.28% |
| Employee Relationship | 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% |

## Table 2

## Summary Statistics

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

| Variable | # 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 |
| 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 |
| Raw KLD Score | 38.630 | 0.04 | 2.59 | -1.00 | 0.00 | 1.00 |
| 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 Relationship 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 |
| Product Market Fluidity | 38,067 | 9.38 | 5,45 | 5.57 | 8.41 | 11.87 |
| Analyst Coverage | 36,442 | 13.00 | 9.63 | 6.00 | 11.00 | 19.00 |
| HP Index | 38,290 | -3.74 | 0.60 | -4.29 | -3.65 | -3.30 |

**Table 3**

**Validity for CSR Vote as Regression Discontinuity Design (Pre-Existing Difference)**

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

| | (1) | | (2) | | (3) | | (4) | |
|---|---|---|---|---|---|---|---|---|
| | Fail | | Pass | | Difference (Fail v.s. Pass) | | Difference within *small margin* (optimal bandwidth) | |
| | Obs. | Mean | Obs | Mean | Estimate | p-value | Estimate | p-value |
| Adj. KLD Score | 37,685 | -0.19 | 945 | -0.18 | -0.015 | 0.313 | -0.011 | 0.653 |
| Size | 37,685 | 7.76 | 945 | 8.16 | -0.399 | 0.000 | -0.138 | 0.156 |
| Market-to-Book | 37,685 | 1.70 | 945 | 1.42 | 0.276 | 0.000 | 0.046 | 0.261 |
| Leverage | 37,685 | 0.21 | 945 | 0.20 | 0.013 | 0.018 | 0.011 | 0.284 |
| ROA | 36,706 | 0.08 | 928 | 0.08 | 0.006 | 0.073 | 0.007 | 0.156 |

**Table 4**

**Responses of Non-Voting Peers to the Passage of a CSR Proposal: Baseline Results**

This table presents peer firms' future CSR performance as a response to the CSR votes. Panel A presents RDD estimations from 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), 75% 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 following 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. *, **, and *** denote significance at 10%, 5% and 1% level, respectively. *, **, and *** denote significance at 10%, 5% and 1% level, respectively.

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

| Adj. KLD Score $t+1$ | Pass v.s. Fail | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| | Optimal Bandwidth | 50% of Optimal Bandwidth | 75% of Optimal Bandwidth | 150% of Optimal Bandwidth | Optimal Bandwidth |
| Estimate | 0.16*** | 0.10** | 0.16*** | 0.12*** | 0.14*** |
| t-stat | 6.18 | 2.28 | 4.31 | 4.26 | 4.37 |
| Obs. | 5,507 | 1,884 | 3,900 | 12,385 | 5,507 |
| 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*** | 0.098** |
| | (0.05) | (0.04) |
| Constant | -0.16*** | -1.26*** |
| | (0.02) | (0.03) |
| Polynomial Order | 3 | 3 |
| Controls | No | Yes |
| Obs. | 38,630 | 37,634 |

**Table 5 Responses of Non-Voting Peers to the Passage of a CSR Proposal:**

**A Fuzzy RDD Approach**

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); 3) there is news or information showing that the proposal was implemented (Panel D). The optimal bandwidth is determined following Imbens and Kalyanaraman (2012).. [*], [**], and [***] denote significance at 10%, 5% and 1% level, respectively. [*], [**], and [***] denote significance at 10%, 5% and 1% level, respectively.

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 |

**Table 6: Response of non-voting peers to the compliance and non-compliance**

This table presents peer firms' future CSR performance conditional on the compliance or implementation of the CSR proposals in the voting firms. In panel A, 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 including 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 performance (two dimensions) in the year after the vote; 3) There is news or information showing that the proposal was implemented. In Panel B, we compare the RDD results for firms that implemented the CSR proposal and for firms that did not implement the CSR proposals. We apply three measure to decide the implementation of the proposal (regardless of the voting outcomes). The criteria are 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 performance (two dimensions) in the year after the vote. The optimal bandwidth is determined according to Imbens and Kalyanaraman (2012). $^{*}$, $^{**}$, and $^{***}$ denote significance at 10%, 5% and 1% level, respectively. $^{*}$, $^{**}$, and $^{***}$ denote significance at 10%, 5% and 1% level, respectively.

Panel A: The response to compliance and non-compliance of passed proposals

| | KLD increase | | ASSET4 Social Score increase | | ASSET4 Environment Score increase | | Corporate news | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Implement | No implement | Implement | No implement | Implement | No implement | Implement | No implement |
| Chg 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 | |

Panel B: The response to passage of proposal--implementation vs. non-implementation

| | KLD increase | | ASSET4 Social Score increase | | ASSET4 Environment Score increase | |
| --- | --- | --- | --- | --- | --- | --- |
| | Implement | No implement | Implement | No implement | Implement | No implement |
| | Pass vs. Fail | Pass vs. Fail | Pass vs. Fail | Pass vs. Fail | Pass vs. Fail | Pass vs. Fail |
| Estimate | 0.18$^{***}$ | 0.09$^{*}$ | 0.31$^{**}$ | -0.10 | 0.90$^{***}$ | 0.24$^{***}$ |
| t-stat | 3.93 | 1.65 | 2.46 | -0.57 | 2.66 | 3.43 |

**Table 7**

**Responses of Non-Voting Peers to the Passage of a CSR Proposal: Robustness**

This table presents the RDD estimates using alternative 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 re-define peer firms. Panel A (1) reports the response from peers in the same 3-digit SIC industries (104,083 non-voting firm-vote observations). Panel A (2) reports the response from strategic alliance partners (9,148 non-voting firm-vote observations). In Panel B, we arbitrarily assign a maximum number of non-voting peers for each voting firm and randomly select its peer firms from the pool of all its non-voting peers into the sample: maximum 30 peers for column (1) and maximum 50 peers for column (2). In Panel C (1), we conduct placebo test using a matched non-peer sample. Specifically, for each peer firm, we find a matched non-peer firm based on firm size, market-to-book and leverage. In Panel C (2), we conduct placebo test by excluding all proposals on corporate governance. Variable definitions are provided in Appendix B. $^{*}$, $^{**}$, and $^{***}$ denote significance at 10%, 5% and 1% level, respectively.

Panel A: Alternative Peer Classification

|  | (1) 3-digit SIC peers | (2) Strategic alliance partners |
|---|---|---|
|  | Pass vs. Fail | |
| Estimate | 0.25$^{***}$ | 0.48$^{**}$ |
| t-stat | 6.77 | 2.19 |
| Obs. | 6,800 | 217 |

Panel B: Randomly Selected Sample with Arbitrarily Assigned Numbers of Peers

|  | (1) 30 peers | (2) 50 peers |
|---|---|---|
|  | Pass vs. Fail | |
| Estimate | 0.12$^{**}$ | 0.12$^{**}$ |
| t-stat | 2.06 | 2.26 |
| Obs. | 2,253 | 3,529 |

Panel C: Placebo Tests

|  | (1) Response from non-peers | (2) Excluding corporate governance proposals |
|---|---|---|
|  | Pass vs. Fail | |
| Estimate | -0.03 | 0.13$^{***}$ |
| t-stat | -0.98 | 2.77 |
| Obs. | 5,241 | 1,823 |

# Table 8

## Responses of Non-Voting Peers to the Passage of a CSR Proposal: Decomposing KLD Score

This table presents the effects of the passage of a CSR proposal on (non-voting) peers' following-year CSR performance by decomposing 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 Relationship (column (2)), and Workforce Diversity (column (3)). Panels C, D, and E replicate the analysis in Panel B on the three major sub-dimensional KLD scores, but within the subsample of environment-related proposals, of diversity-related proposals, and of employee relationship proposals, respectively. 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. *, **, and *** denote significance at 10%, 5% and 1% level, respectively.

| Panel A: Following-Year KLD Strengths Score and Concerns Score of Non-voting Peers | | |
|---|---|---|
| | Pass vs. Fail | |
| (1) Strengths Score | | (2) Concerns Score |
| Estimate | $0.07^{**}$ | -0.02 |
| t-stat | 2.16 | -0.79 |
| Obs. | 2,545 | 2,545 |

| Panel B: Following-Year KLD Sub-Dimensional Scores of Non-voting Peers | | |
|---|---|---|
| | Pass vs. Fail | |
| (1) Adj. Environment Score | (2) Adj. Employee Relationship Score | (3) Adj. Workforce Diversity Score |
| Estimate | $0.03^*$ | $0.02^{**}$ | $0.05^*$ |
| t-stat | 1.74 | 2.05 | 1.75 |
| Obs. | 3,000 | 3,865 | 2,644 |

| Panel C: Environment-Related Proposals and Non-voting Peers' Following-Year KLD Sub-Scores | | |
|---|---|---|
| | Pass vs. Fail | |
| (1) Adj. Environment Score | (2) Adj. Employee Relationship Score | (3) Adj. Workforce Diversity Score |
| Estimate | $0.20^{***}$ | 0.02 | $0.12^*$ |
| t-stat | 2.92 | 0.65 | 1.84 |
| Obs. | 1,233 | 1,233 | 1,966 |

| Panel D: Diversity-Related Proposals and Non-voting Peers' Following-Year KLD Sub-Scores | | |
|---|---|---|
| | Pass vs. Fail | |
| (1) Adj. Environment Score | (2) Adj. Employee Relationship Score | (3) Adj. Workforce Diversity Score |
| Estimate | -0.05 | $0.52^{***}$ | $0.62^{***}$ |
| t-stat | -1.37 | 2.98 | 6.32 |
| Obs. | 723 | 141 | 136 |

| Panel E: Employee Relationship Proposals and Non-voting Peers' Following-Year KLD Sub-Scores | | |
|---|---|---|
| | Pass vs. Fail | |
| (1) Adj. Environment Score | (2) Adj. Employee Relationship Score | (3) Adj. Workforce Diversity Score |
| Estimate | -0.06 | $0.36^{***}$ | 0.00 |
| t-stat | -0.94 | 3.47 | 0.01 |
| Obs. | 128 | 128 | 128 |

## Table 9

## Responses of Non-Voting Peers to the Passage of a CSR Proposal: Channels

This table reports the RDD estimates on subsamples and another way of defining peers, that is the common analyst coverage. Panel A partitions the sample by the product similarity between the voting- and non-voting firms in the year before the CSR vote. *Product Similarity* measures the similarity between the change in a firm's product space and the aggregate change in its competitors' product descriptions. When *Product Similarity* is greater, the firm's products are more similar to its peers' and thus the competitive pressure is greater. A High *Product Similarity* group is defined as peer firms whose associated voting-firm's *Product Similarity* score is above the median of the whole voting-firm sample, and a Low *Product Similarity* group is defined as peer firms whose associated voting-firm's Fluidity score is below the median of the whole voting-firm sample. Panel B partitions the non-voting peer firms into two subgroups according to the number of unique financial analysts following ("Financial Analyst Coverage") in year *t-1*. For each vote, a high *Financial Analyst Coverage* group is defined as non-voting peers whose numbers of analyst following are above the median of the whole non-voting peers sample, and low *Financial Analyst Coverage* group is defined as non-voting peers with the number of analyst following that is below the sample median. Panel C re-define peer firms based on whether two firms are covered by the same financial analyst, and the tests are similar to those in Panel A of Table 4 (except that peer firms are defined based on Hoberg-Philips measure). 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. *, **, and *** denote significance at 10%, 5% and 1% level, respectively.

### Panel A: Product Similarity

|  | Pass vs. Fail | |
|---|---|---|
|  | High | Low |
| Estimate | 0.17** | 0.05 |
| t-stat | 2.02 | 0.84 |
| Obs. | 1,882 | 2,770 |

### Panel B: Financial Analyst Coverage

|  | Pass vs. Fail | |
|---|---|---|
|  | High | Low |
| Estimate | 0.20*** | 0.09*** |
| t-stat | 4.56 | 3.06 |
| Obs. | 1,520 | 1,643 |

### Panel C: Common Analyst

|  | Pass vs. Fail | | | |
|---|---|---|---|---|
|  | Optimal Bandwidth | 50% of Optimal Bandwidth | 75% of Optimal Bandwidth | 150% of Optimal Bandwidth |
| Estimate | 0.05 | 0.01 | 0.01 | 0.06 |
| t-stat | 1.62 | 0.3 | 0.22 | 1.65* |
| Obs. | 13,327 | 3,905 | 7,619 | 25,772 |

**Table 10**

**Value Implications of CSR Peer Effects**

This table presents the RDD estimates of peer firms' stock market reactions and product market share change to the passage of the CSR vote. In Panel A, we report the results from both product market competitors and strategic alliance partners. In Panel B, we report the results for the sample of product market competitors conditional on the financial constraints of these firms. 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. *, **, and *** denote significance at 10%, 5% and 1% level, respectively.

Panel A: Comparison between Competing Peers and Collaborating Peers

| | Pass vs. Fail | | | |
| | Competitors | | Alliance Partners | |
| | (1) | (2) | (3) | (4) |
| | CAR [-1,+1] | ΔMarket Share [t+1,t+2] | CAR [-1,+1] | ΔMarket Share [t+1,t+2] |
| Estimate | -0.58%*** | -0.09%*** | 1.17%* | 0.09%** |
| t-stat | -4.11 | -2.94 | 1.81 | 2.11 |
| Obs. | 5,173 | 5,507 | 242 | 201 |

Panel B: Competing Peers with Different Levels of Financial Constraints

| | Pass vs. Fail | | | |
| | High HP Index | | Low HP Index | |
| | (1) | (2) | (3) | (4) |
| | CAR [-1,+1] | ΔMarket Share [t+1,t+2] | CAR [-1,+1] | ΔMarket Share [t+1,t+2] |
| Estimate | -0.59%*** | -0.10%*** | -0.20% | -0.07% |
| t-stat | -2.94 | -2.65 | -0.98 | -1.60 |
| Obs. | 1,420 | 1,948 | 1,344 | 1,914 |

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

| | Panel A:<br>Example of a Marginally Rejected<br>CSR Proposal | Panel B:<br>Example of a Marginally Approved<br>CSR Proposal |
|---|---|---|
| Company Name: | Massey Energy Company | IDACORP, Inc |
| Company Descriptions: | 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, etc. |
| 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 the 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 November 1, 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 September 30, 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** | # of peers | Average Adj. CSR Score in year t+1 | # 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 | Source |
|---|---|---|
| Firm Size | The logarithm of total assets (item 6) of a firm. | 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). | Compustat |
| Leverage | Book leverage: All debt (item 9 (long-term debt) + item 34 (short-term debt)/Total assets (item 6). | Compustat |
| ROA | ROA is calculated as (item 13 (operating income before depreciation)/item 6 (total assets)). | 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 strength and concern scores for that category. | KLD Database |
| Adj. KLD Strengths | The sum of yearly adjusted community activities, diversity, employee relations, and environmental record KLD STATS CSR Strengths Scores. | KLD Database |
| Adj. KLD Concerns | The sum of yearly adjusted community activities, diversity, employee relations, and environmental record KLD STATS CSR Concerns Scores. | KLD Database |
| Adj. KLD Environment Score | Adjusted environmental record KLD STATS CSR Score, calculated by scaling the raw environmental strength 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. | KLD Database |
| Adj. KLD Employee Relationship Score | Adjusted employee relationship record KLD STATS CSR Score, calculated by scaling the raw employee strength 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. | KLD Database |
| Adj. KLD Diversity Score | Adjusted diversity record KLD STATS CSR Score, calculated by scaling the raw diversity strength 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. | KLD Database |
| Adj. KLD Community Score | Adjusted community record KLD STATS CSR Score, calculated by scaling the raw community strength 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. | KLD Database |
| Product Similarity | The Product Similarity score is proxied by the Fluidity measure as in Hoberg, Phllips, and Prabhala (2014), which is a "cosine" similarity between a firm's products and changes in the peers' products and scaled between 0 and 1. Larger fluidity indicates greater product market threats. Details are in Hoberg, Phillips, and Prabhala (2014). | Hoberg-Phillips Data Library |
| Relative CSR Performance | The gap in adjusted KLD scores between non-voting and voting firms in year before the vote. | KLD Database |
| Hadlock-Pierce Index | Hadlock and Pierce (2010) financial constraint index, with higher value indicating more financial constraint: $HP_{i,t} = -0.737 \times Size_{i,t} - 0.043 \times Size_{i,t}^2 - 0.040 \times Age_{i,t}$ | Compustat |
| Dividend Payment | An indicator variable that equals one if the firm has a non-zero dividend (Data21) this year and zero otherwise. | Compustat |
| Financial Analyst Coverage | Number of unique financial analysts following the company each year. | I/B/E/S |
| Market Shares | Proportion of a firm's sales revenue in its text-based peer industry. | Compustat |