Social Networks and Corporate Environmental Policy

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Abstract

This paper documents whether and how the directors' social network affects firms' environmental policies. We show that the degree of similarity in environmental policy between the two firms is positively associated with the number of directors' connections they share. This study also highlights the asymmetric effects of good vs. bad behaviors. Specifically, if socially connected firms engage in poor environmental behaviors without facing significant punishment, firms tend to mimic their environmental policy. In contrast, companies are likely to amend their own environmental policy when their network peers are significantly punished for their poor environmental behaviors. We use directors' deaths to address endogeneity concerns, and we find that firms' environmental policies are less similar when a director connecting them dies. The social network effect is particularly prominent among successful firms (those capable of learning) and those with a CSR committee (those willing to learn). Furthermore, this paper attributes social network to both bright-side, such as differentiation strategy, and dark-side, such as agency problems in environmental activities.

Keywords: Environmental Policy, Social Network, Environmental social and governance (ESG)

JEL Codes: G10, G30, G32, M14, Z13

1 Introduction

In recent years, environmental issues have gained increasing prominence. There has been a significant rise in the adoption of corporate environmental policy, with almost all S&P 500 companies now implenmenting such policies and regularly publishing sustainability reports.[1] Given the escalating importance of corporate environmental policy, numerous studies have focused on this topic, and most of these studies assume that environmental policy decisions are made internally within the firm.[2] However, studies have also highlighted the influence of behaviors from peer firms, including industry peers and local peers (Cao, Liang, and Zhan, 2019; Li and Wang, 2022) on environmental policy.

As one of peers, individuals' behaviors are also affected by their social networks (Galeotti et al., 2010). The effects of social networks are widespread in the financial context. In the merger and acquisition area, target managers rely on social connections with the acquirer CEO to remain in the company after the merger (Ishii and Xuan, 2014). In the corporate investment area, investment firms leverage their network of service providers (headhunters, patent attorneys, investment bankers, etc.) to help investee companies succeed. (Hochberg, Ljungovist and Lu, 2007). In the corporate governance area, managers gather information through social networks to improve firms' governance (Intintoli, Kahle and Zhao, 2018; Schabus, 2022).

While the literature documents the prevalence of the effect of social networks in many financial contexts, the impact of social networks as a critical factor in the decision-making process affecting environmental policy has received less attention. Nevertheless, there is little systematic evidence that environmental policy can be affected by individuals' social networks.

[1]Retrived from https://www.businesswire.com/news/home/20221116005152/en/New-GA-Institute-Research-Shows-Sustainability-Reporting-by-Largest-U.S.-Public-Companies-Reached-All-Time-Highs-in-2021.

[2]For instance, Di Giuli and Kostovetsky (2014); Shive and Forster (2020); Xu and Kim (2022)

This paper aims to investigate the impact of socially connected directors on corporate environmental policy, and also examine the mechanisms and rationales behind such influence. Social interactions are capable of influencing managerial decision-making, primarily through the dissemination of information within social networks.[3] The uncertain information environment managers face and the financial implications of corporate environmental policy[4] , i.e., BP's oil spill, further enhances the importance of information acquired through social networks. Consequently, managers are compelled to exercise caution when making environmental policy decisions. In this context, managers often rely on gathering information through social networks, as these sources are perceived to offer reliable insights for their own environmental policy decisions.

We begin by collecting information about social, educational, and professional connections among board members of 2180 firms that in the sample period belonged to the S&P 1500 index. We then track these social connections over a span of 10 years, from 2009 to 2019. Individual connections are then aggregated to define a measure of social connectivity between each firm pair, named the social network connection. Following Fernando, Sharfman and Uysal (2017), we utilize the environmental rating provided by the MSCI ESG KLD STATS database to assess firms' environmental policy. We then examine how social connections between firm pairs influence their corporate environmental policy decisions. In particular, we want to test whether directors who are socially connected make more similar decisions. We thus create a measure of similarity in environmental policy between the two firms and relate it to whether the two firms' directors are socially connected or not for each pair of firms. After controlling for common drivers of environmental policy, we find that firms who share social connections have more similar environmental policy and change their environmental policy

[3]Theoretical and empirical research has emphasized the phenomenon of word-of-mouth communication. Theoretical contributions include Ellison and Fudenberg (1995). Empirical evidence in financial contexts is provided by Hong, Kubik, and Stein (2005), and Cohen, Frazzini, and Malloy (2008).

[4]This is evident through recent incidents like 2010 British Petroleum (BP) oil spill in the Gulf of Mexico, which has incurred BP expenses exceeding $50 billion in terms of losses, damages, and penalties up to the present day.

more similarly. The results are also economically significant. Specifically, one increase in the type of social connection, 2.8% more similar to the two firms' environmental policy. The results are robust to controlling for macroeconomic shocks and cross-sectional endogeneity using various fixed effects. In addition, we find that other activity connections are the most effective in influencing environmental policy decisions. Overall, a firm's environmental policy corresponds to the environmental policy of its socially connected firms.[5]

Our findings on social network connections and firms' environmental policy are robust to the use of alternative data sets and a battery of additional tests. Specifically, other firms operating in the same industry, or region, or those that are rivals may have an influence on a firm's environmental policy (Cao, Liang, and Zhan, 2019; Li and Wang, 2022). To account for these effects, we use the Hoberg-Phillips Data Library, Fama-French 49 industry classification, and the Bureau of Economic Analysis (BEA) economic region to identify rival firms, same industry firms, and same region firms. The results of these tests support the hypothesis that social connections exert a significant influence on a firm's environmental policy, even when considering firms in the same industry or region, or those that are rivals. These effects are also qualitatively similar to the findings with alternative databases, Sustainalytics and Refinitiv ESG.[6]

Next, we use firms' carbon emissions as a proxy of firms' environmental policy. These data avoid the potential concerns about greenwashing, and reveal firms' real environmental performance.[7] The results remain consistent with baseline results, suggesting that social connections have a real impact on the environment rather than the potential greenwashing activities.

We address endogenous concerns using the death of directors as an exogenous shock to

[5]Two firms are socially connected if a firm has at least one director who has any social connection with another firm.

[6]Berg, Kölbel, and Rigobon (2022) show a measurement divergence among different ESG rating agencies.

[7]Yang (2022) shows better ESG ratings do not predict less future corporate bad behavior, indicating firms may utilize ESG ratings to do greenwashing activities.

social networks. In a difference-in-differences specification, we find that after the death of a connected director, environmental policy tends to diverge more than after the death of an unconnected director. Although the departure of connected and unconnected directors could have a differential impact on firm policy for reasons other than social connections, the results suggest that social connections have a causal effect on corporate environmental policy.

Next, we analyze how firms learn from their socially connected firms. The learning motives derived from social networks can be broadly categorized into two distinct channels: mimicking and introspecting. Mimicking from socially connected individuals refers to directors imitating the actions of their socially connected directors, regardless of the potential negative outcomes. As a result, firms may adopt similar environmental policy, even if that policy result in negative externality. On the other hand, introspecting from socially connected individuals implies that directors reduce the likelihood of imitation when their socially connected directors engage in negative behavior. Consequently, firms may adopt environmental policy that has positive externality. To test these two channels, we use negative environmental news from the RepRisk database as an exogenous shock. The findings indicate that, on average, firms' environmental policy get worse when their socially connected firms have negative environmental news. Additionally, the severity of the negative news plays a critical role in influencing firms' environmental policy. Specifically, firms' environmental policy deteriorate when their socially connected firms are linked to low-severity negative environmental news, whereas they improve when their socially connected firms are associated with high-severity negative environmental news.[8] Another exogenous shock is applied by examining environmental penalties, which further corroborates the results. These findings align with social theory, suggesting that observing the punishment of a peer for negative behavior reinforces social norms against such behavior and reduces the likelihood of imitation (Bandura, 1971). Conversely, when negative behavior goes unnoticed, is difficult to detect, or remains unpunished, it may be perceived as socially acceptable and therefore more imitable (Bandura,

[8]RepRisk Database has a classification of low-severity, medium severity, and high severity negative news.

1965).

We then explore which firms learn environmental policy from their socially connected firms. Specifically, we investigate if firms' learning capability and learning willingness affect the learning results from their socially connected firms. This study first examines whether firms' learning ability from their socially connected firms is influenced by their available resources. Reppenhagen (2010) suggests that firms with greater resources are more inclined to analyze the practices and methods of other firms, subsequently incorporating them into their own organization. Additionally, Xu and Kim (2022) propose that relaxing financial constraints reduces firms' toxic releases, as financially constrained firms may lack the necessary resources to implement the environmental policy aimed at reducing toxic releases. Consistent with these studies, we find that firms with enough financial resources are more likely to learn environmental policy from their socially connected firms, while the inverse relationship is not observed. This suggests that the availability of resources acts as a constraint on firms' learning ability. We then investigate if firms' learning willingness affects the learning results from their socially connected firms. Firms with Corporate Social Responsibility (CSR) committees influence firms' environmental policy because they need to fulfill stakeholders' environmental expectations (Dixon-Fowler et al., 2017). Similarly, the results indicate that firms with CSR committees are more likely to learn environmental policy from their socially connected firms, whereas the opposite relationship is not observed. This suggests that firms' willingness to learn indeed impacts their learning outcomes. Overall, the study highlights that firms' learning results from their socially connected firms are contingent on the availability of resources and their willingness to learn, providing insights into the factors that shape the process of environmental policy learning in organizations.

Learning environmental policy from social networks is probably driven by both positive and negative motivations. Albuquerque, Koskinen and Zhang (2019) propose that firms adopt an ESG strategy including environmental policy to differentiate their products and

enhance competitiveness in the market. Flammer (2015) further suggests that firms operating in highly competitive environments increase their engagement in ESG practices as part of their differentiation strategy. Managers may communicate their differentiation strategy through social networks. Supporting this hypothesis, our results indicate that firms operating in highly competitive industries are more inclined to implement environmental policy that closely resemble those adopted by their socially connected counterparts, and this phenomenon becomes particularly pronounced when these socially connected firms also operate within highly competitive industries, indicating a motivation for differentiation strategy. On the other hand, negative motivations exist as well. Bénabou and Tirole (2010) argue that ESG activities including environmental policy can serve as accomplices to managers pursuing their own interests at the expense of shareholders. Consequently, managers may communicate strategies for personal gain at the expense of shareholders through social networks. In line with this hypothesis, we observe that firms with significant agency problems tend to learn environmental policy from their socially connected firms; however, the opposite does not hold true. Overall, these results suggest that both positive and negative behaviors regarding environmental policy can spread through social networks.

First, our study contributes to the existing literature that emphasizes the importance of corporate policy propagation through social networks. Previous studies have examined the propagation of corporate policy, including executive compensation and financial policy, along social networks (Shue, 2013; Fracassi, 2017). By focusing on social networks, our study extends this research by investigating the propagation of environmental policy. The findings highlight the significance of considering social network effects when making sustainable investment decisions and demonstrate that certain corporate policies, such as environmental policy, can propagate through social networks.

Second, Our study contributes to the understanding of the factors that influence a firm's environmental policy. Existing studies typically assume such policy decisions are indepen-

dently determined. These studies have established correlations between manager characteristics, such as leaders' gender, multinational board members, political affiliations, and overconfidence, and a firm's environmental policy decisions (Di Giuli and Kostovetsky, 2014; McCarthy et al., 2017; McGuinness et al., 2017; Iliev and Roth, 2020). Our study diverges from this conventional perspective by highlighting the significant impact of social connections on environmental policy. We demonstrate that, in addition to a manager's individual attributes, the environmental policy decisions of firms are also influenced by other managers within the same social network.

Third, our research emphasizes the effect of punishment, specifically highlighting its role in reinforcing social norms and reducing the chances of bad behavioral imitation. Social network theory suggests that witnessing the punishment of a peer for negative behavior strengthens the social norms against that behavior and discourages imitation. Conversely, when negative behavior remains undetected, unpunished, or private, it may be perceived as socially acceptable and thus more likely to be imitated. Although prior studies have discussed the importance of punishment, no empirical evidence has been provided to validate this theory. For instance, most of the existing studies suggest punishment only affects punished firms' including stock price, earnings, and management turnover (Desai, Hogan, and Wilkins, 2006; Murphy, Shrieves, and Tibbs, 2009; Armour, Mayer, and Polo, 2017). Cheng, Felix, and Indjejikian (2019) examine the impact of punishment by showing the decrease in a firm's negative behavior due to board-interlocked firms' punishment. However, they only demonstrate the influence of observed punishment on other firms' behavior through board interlock rather than social networks and do not provide a comparison illustrating how the absence of punishment might lead to the spread of undesirable behavior. This study fills this gap by presenting empirical evidence that underscores how bad behavior propagates through social networks in the absence of punishment and highlights that punishment for such behavior reduces the likelihood of imitation through social networks.

Finally, our research contributes to the ongoing debate around corporate social responsibility (CSR). The debate centers around two contrasting perspectives: the stakeholder value maximization view, which posits that CSR engagement enhances a firm's competitiveness and overall value by maximizing the wealth of both stakeholders and shareholders (Jiao, 2010; Servaes and Tamayo, 2013); and the agency problem view, which suggests that implementing CSR practices benefits various stakeholders, such as employees, suppliers, and creditors, but potentially comes at the expense of shareholders (Pagano and Volpin, 2005; Cronqvist et al., 2009; Cheng et al., 2016). In our study, we demonstrate that the propagation effect of the social network is driven by a combination of differentiation strategy and agency problem motivation.

2 Data

2.1 Data and Sample Selection

Following Fracassi (2017), the sample selection process begins with the inclusion of all companies listed in the S&P 500 (large cap), S&P 400 (mid cap), and S&P 600 (small cap) indices between the years 2009 and 2019. Our starting database consists of 2,180 firms, providing 12,423,800 firm-pair-year observations. To capture the social networks, we collect detailed information on the board of director membership from the BoardEx database. Furthermore, we acquire measures of corporate environmental policy from the MSCI ESG KLD STATS database. Then, we obtain the firm's performance and fundamental information from Compustat. After merging the starting database with the relevant data from MSCI ESG KLD STATS and the Compustat database, the final sample consists of 3,987,786 firm-pair year observations, representing 1,400 unique firms.

2.2 Corporate Environmental Policy Measures

Following Fernando, Sharfman and Uysal (2017), we use environmental policy measures from MSCI ESG KLD STATS. However, one concern of MSCI ESG KLD STATS is that the number of environmental strengths and concerns varies over time. To overcome this concern and obtain consistent comparisons in both the cross-section and time-series analyses, following Cao, Liang, and Zhan (2019), we calculate environmental policy by dividing the number of strengths or concerns for each firm-year within the environmental category by the maximum possible number of strengths or concerns in the environmental category per year to obtain the strength or concern index. We then subtract the adjusted concern index from the adjusted strength index. The environmental policy ranges from -1 to +1, where the concern index is subtracted from the strength index. In the robustness test, we also use Sustainalytics and Refinitiv ESG, two alternative data sources on firm-level environmental policy.

To reveal firms' real environmental performance, we also obtain data on firms' carbon emissions from Sustainalytics as a proxy of firms' environmental policy Sustainalytics divides carbon emission into direct carbon emission and indirect carbon emission. Specifically, direct emissions" refers to the emissions originating from sources owned or managed by the reporting entity. "indirect emissions" refers to emissions that arise as a byproduct of the reporting entity's activities but occur at sources owned or controlled by external entities.

2.3 Social Connections Measures

Following Engelberg, Gao, and Parsons (2013), El-Khatib, Fogel, and Jandik (2015) and Fracassi (2017), this study utilizes biographical information sourced from the BoardEx database to define four types of social connections that capture different types of social connections, and we assume that once formed, social connections continue to exist until one party of the pair dies. The first type is the Current Employment Connection (CE), which identifies

two individuals as socially connected if they work in the same firm and hold positions on the board of directors. This connection encompasses both the traditional board interlock network, where two companies share a common director, as well as situations where individuals from two distinct firms serve on the board of a third firm. The second type is the Past Employment Connection (PE), representing individuals who have previously worked together within the firm and during the same time period. The Education Connection (ED) denotes individuals who attended the same educational institution and graduated within one year of each other. Lastly, the Other Activities Connection (OA) identifies individuals who share memberships in clubs, organizations, or charities, considering active roles rather than mere membership status.[9] To measure the social connection between two firms (A and B), a dummy variable is assigned a value of 1 if at least one director from firm A is connected to a director from firm B across any of the four types of connections. The overall level of social connections is then determined by summing the social connection dummies across the four connection types.

One unique feature of our research pertains to the dynamic nature of the social networks we have established. This aspect enables us to track the evolving relationships between companies over several years, facilitating a comprehensive longitudinal analysis of the interaction between corporate environmental policy and social connections.

2.4 Control variables

Following Cao, Liang, and Zhan (2019), Dai, Liang and Ng (2021), and Li and Wang (2022), we include several control variables that have been shown to be associated with environmental policy such as firm size (the natural logarithm of total assets), leverage, dividend, Market-to book (MB) ratio, tangible assets, and Tobin's Q.

Firm size is measured as the natural logarithm of total assets at the end of a fiscal year.

[9] An active role means that the role description needs to be more than just "member" for all organizations except clubs.

Dividend is defined as cash dividends scaled by total assets. Market-to-book (MB) is the ratio of the market value of equity to the book value of equity. Tangibility is defined as net property, plant, and equipment divided by total assets. Leverage is defined as total debt scaled by lagged total assets. Return on asset (ROA) is defined as net income divided by total assets. Then, all control variables are calculated by the absolute value of the difference between firm A's control variables and firm B's control variables.

2.5 Summary Statistics

Panel A of Table 1 tabulates the summary statistics for each firm pair. On average, there is almost 40% chance that two firms are socially connected. The past employment connection is the largest network, accounting for approximately 45% of all social connections, whereas the current employment, education, and other activity connections represent 14%, 16%, and 25% of total connections, respectively. Panel B of Table 1 presents other firm-pair-level and firm-level variables. The dissimilarity between the two firms' environmental policy ranges from 0 to 1.381 which indicates S&P 1500 firms do not implement similar environmental policy given the mean of a firm-level environmental policy is 0.0368.

3 Social network effects of corporate environmental policy

3.1 Baseline results

In this section, we investigate whether the social connections between directors influence the similarity of environmental policy between firms, we estimate the following regression model:

$$\text{Environmental Policy Dissimilarity}_{i,j,t} = \beta_0 + \beta_1 \text{Social Connections}_{i,j,t} + \text{Control}_{i,j,t} \quad (1)$$

Where the Environmental Policy Dissimilarity$_{i,j,t}$ is the absolute value of the difference between firm i's environmental rating and firm j's environmental rating in year t; Social Connections$_{i,j,t}$ is if firm i and firm j has social connections as we defined above; Control$_{i,j,t}$ is the absolute value of the difference between firm i's control variables and firm j's control variables. To minimize the influence of outliers, we winsorize all firm fundamental variables at the 1% and 99% levels. we also control firm-pair fixed effect and double cluster at the firm level.

The results are reported in Table 2. All regressions control firm-pair fixed effect and year fixed effect. In column (1) to column (3), we use the full sample. In column (4) to column (6), we forward the dependent variable one term. This specification alleviates the reverse causality concern.

In column (1), we present the baseline regression that includes only the social connections as the independent variable. The coefficient of All Connection is -0.002 and statistically significant at the 1% level, supporting the hypothesis that social connections make firms' environmental policy more similar. In column (2), we add several firm fundamental variables as the control variables. The estimated coefficient of environmental policy is -0.002, significant at the 1% level. Fracassi (2017) shows that a firm's investment has a convergence effect due to social connections. Our findings document that a firm's environmental policy is also influenced by socially connected firms. Given the environmental policy has a mean of 0.0842 and a standard deviation of 0.123, the small coefficient of social connections (-0.003) should be economically significant. On average, a one-unit increase in the number of types of social connections leads to a 2.8% increase in the similarity between the environmental policy of the two firms.

In column (3), we add an additional control variable which is the number of directors. The number of directors is the absolute value of the difference between the number of directors in firm i and the number of directors in firm j. Firms with large board sizes may have similar environmental policy as these firms might be more conservative and stable in their

environmental decisions. Moreover, firms with large board sizes tend to have more social connections which confound the results. The coefficient of social connections remains significantly positive which suggests the results are not affected by the inclusion of this variable.

From column (4) to column (6), we forward the dependent variable one term, and we find among these three columns, the coefficients of social connections are significantly negative, suggesting that the effect of social connections is persistent over time. Meanwhile, the findings together imply that socially connected firms' environmental policy is reflected and incorporated into a firm's environmental policy quickly. To ensure robustness, we also control the double firm fixed effect in Appendix Table A2 and find similar results.

3.2 Further evidence and robustness test

To date, our empirical findings have revealed a pronounced convergence effect in the environmental policy of a focal firm and its socially connected counterparts. In the subsequent subsection, we aim to enhance the robustness and rigor of our analysis by conducting various supplementary tests.

3.2.1 Rival, industry, and region effect

Existing literature demonstrates that the ESG activities of firms are influenced by industry peers, rival peers, and local peers. (Cao, Liang, and Zhan, 2019; Li and Wang, 2022). Consequently, one might express concern regarding the interpretability of comparing the environmental policy of firms that are not rivals, as well as those operating within distinct industries and regions.

In Table 3, we test if two firms are rivals, two firms are in the same industry and two firms are in the same region affect our baseline results. In column (1), we add a dummy variable Rival which equals 1 if two firms are rivals, 0 otherwise. We find the coefficient of social connections is significantly negative (-0.002). In column (2) and column (3), we use Fama-

French 49 industry classification to restrict the sample only to firm pairs in the same industry. We find the coefficients of social connections are still significantly negative (-0.0019) but are larger than the coefficients of social connections (-0.0024) in baseline results. Similarly, in column (4) and column (5), we use BEA regions classification to restrict the sample only to firm pairs in the same region.[10] The coefficients of social connections (-0.0017) are larger than the coefficients of social connections (-0.0024) in baseline results. These results indicate that even when considering firm pairs are rivals, or operating within the same industry or region, social connections continue to exhibit the effect in terms of similar environmental policy despite the significant reduction in sample size. Remarkably, the economic magnitude of the effect is smaller in the reduced sample, suggesting that firms do not necessarily need to learn environmental policy solely from their socially connected counterparts if they have already assimilated such policy through industry and local peers. These results align with recent empirical evidence demonstrating that a firm's ESG activities are influenced by other firms operating within the same industry and region.

3.2.2 Robustness tests

Berg, Kölbel, and Rigobon (2022) have demonstrated a significant divergence in environmental ratings across various rating agencies due to the utilization of distinct methodologies in assessing firms' environmental policy. Consequently, we perform additional tests in order to ascertain the consistency of the results using alternative measures of environmental policy. These findings are reported in Table 4.

In columns (1) and (2), the environmental policy measure is sourced from Sustainalytics, while in columns (3) and (4), the measure is obtained from Refinitiv ESG. The observed convergence effect of environmental policy remains broadly consistent with the baseline results bolstering the robustness and reliability of our baseline results.

[10] We do not add the same industry dummy and same region dummy because of perfect collinearity.

3.2.3 Subnetworks

In Table 5, we break down the main results by social connection type (CE, PE, ED, OA). From column (1) to column (4), we present results for each type of connection (current employment, past employment, education, and other activities) separately. Overall, almost all types of social connections can affect environmental policy except the education connections, and the other activity connections seem to be the most important connection influencing investment policy, followed by current employment connections, and at last by past employment connections. Prior studies have demonstrated that managers attending clubs are harmful to shareholders' value. For instance, Yermack (2006) found that long-distance golf club memberships significantly explain managers' aircraft usage. Biggerstaff, Cicero, and Puckett (2017) have shown that CEO participation in golfing activities is associated with lower operating performance and reduced firm values. However, our research suggests that, despite the drawbacks of managers attending clubs, it represents the most effective way to build connections and gather information relevant to making policy decisions. Our results are also consistent with third place theory. Specifically, third place refers to places where people spend time between home ('first' place) and work ('second' place). Compared to other association that is based on narrow work loyalties, third place easily serves to bring people into cooperative and good-natured association with people different from themselves (Oldenbur and Brissett, 1982). From column (5) to column (8), we forward dependent variables one term, and the coefficients of all types of connections are significantly negative, which suggests the effect of almost all types of connections is persistent over time.

3.2.4 Externality

Li and Wu (2020) suggest some firms commit to increasing environmental impact but engage in environmental actions with no subsequent real impact. In order to investigate whether the environmental policy adopted by firms learning from their socially connected counterparts translates into real environmental impacts, we conduct supplementary tests to examine the

influence of social connections on emissions. The outcomes of these tests are presented in Table 6.

In column (1) and column (2), we use the absolute value of the difference in total emission between firm pairs as the dependent variable, and we find that the social connections indeed lead to greater similarity in firms' total emissions. In column (3) and column (4), we use the absolute value of the difference in direct emission between firm pairs as the dependent variable, and we find a significant result. When examining the absolute difference in indirect emissions between firm pairs as the dependent variable in columns (5) and (6), the coefficients are still evident that social connections foster similarity in firms' indirect emissions. Notable, the effect of social connections on indirect emissions is larger than the effect of social connections on direct emissions (-0.604 vs -0.054). These results align with the findings of Zhang (2022), which suggests that Scope 2 and Scope 3 carbon emissions (indirect emissions) have a more substantial impact on firms' future stock returns compared to Scope 1 carbon emissions (direct emissions). Consequently, firms appear to learn more knowledge regarding indirect emissions from their socially connected firms, as these emissions carry greater significance for their operations. Overall, our results indicate that social connections prompt real changes in firms' environmental impact, particularly in relation to indirect emissions.

3.2.5 Endogenous

We have found that a correlation exists between corporate environmental policy and social network connections. Particularly, two companies with more social connections tend to have more similar environmental policy. However, it is important to consider potential biases resulting from omitted variables and reverse causality. Companies implementing new environmental policy is more inclined to hire directors with specific social connections to align with their new environmental policy. For instance, companies pursuing sustainable development are more inclined to recruit directors with relevant education and past employment experiences conducive to driving environmental policy changes within the organization. Ad-

ditionally, directors of companies with similar environmental policy are more likely to become socially connected, as they exhibit similar environmental preferences.

We have provided suggestive evidence that a causal relationship exists from social networks to corporate environmental policy. Firstly, we run regressions with a forwarded dependent variable. Employing a forwarded dependent variable alone does not entirely resolve the identification problem, particularly when highly persistent variables are utilized as independent variables. Nevertheless, it does mitigate concerns regarding contemporaneous endogenous effects. Secondly, the past employment and education connections predate the policy decisions, making it more challenging to establish a reverse causality narrative where social connections are influenced by similar environmental policy.

Nevertheless, endogenous problems persist. Therefore, an exogenous shock to the social network is required to examine the causal direction between social connections and corporate environmental policy. We utilize individuals' deaths as an exogenous shock to a firm's social connections. Upon an individual's death, their social connections with other network members cease to exist, thereby exogenously altering the social connections between firms. To examine the impact of social connections, we compare the deaths of socially connected individuals to those of individuals who are not socially connected.

We collect data on the director's death from BoardEx. Table 7 presents the results of a difference-in-difference approach, encompassing all observations in the sample, including firms that did not experience death during the sample period. Subsequently, the dissimilarity in environmental policy between firms is compared before and after the death. The variable of interest is the interaction between "After Death" and "Connected," a dummy variable taking the value of one if the two companies were connected by the deceased individual. We use the full sample from Column (1) to Column (4). From Column (5) to (8), we forward the dependent variable one term. In Appendix Table A3, we also present the results of the restricted sample, comprising all firm pairs in which a director's death occurred during the

sample period.

In most of the specifications, the coefficient on "After Death" is negative and statistically significant, indicating that, on average, a firm adopts less idiosyncratic environmental policy after the death of a director. This finding aligns with Weisbach's (1995) results, which revealed an increased likelihood of divesting unprofitable acquisitions by management during transitions, implying that new managers tend to adopt policies that are more popular or less idiosyncratic. The interaction coefficient "Connected * After Death" is positive and statistically significant in the most of specifications except the forward dependent variable with a Firm-Pair fixed effect, indicating that the death of a connected director leads to greater dissimilarity in environmental policy compared to the death of an unconnected director.

Chen, Crossland and Huang (2020) suggest that the death of a firm's director increases the firm's subsequent pro-social behavior because other managers realize the inevitability of death. Thus, one may concern that the divergence in environmental policy is probably driven by the awareness of the inevitability of death rather than the end of social connections. However, the awareness of the inevitability of death is probably similar for a connected director's death and an unconnected director's death. Nonetheless, we do an additional test to mitigate this concern. Specifically, in a given firm-pair, only if a director of one firm died and the environmental policy of this firm was better than that of the other firm, the divergence in environmental policy is probably due to the awareness of the inevitability of death. Consequently, in Appendix Table A4 and Appendix Table A5, we drop observations that a firm's director died while that firm's environmental policy was better than another firm's, and we find similar results. Overall, the findings from the difference-in-differences regression suggest a causal relationship between changes in social connections and changes in environmental policy.

4 How firms learn from their socially connected counterparts: Imitation vs Reflecting

The motives behind learning from social networks can be further categorized into two distinct actions: learning and reflecting. When a firm's socially connected counterpart exhibits unethical behavior, specifically in terms of poor environmental policy, the firm faces the choice of either imitating this unethical behavior, thus adopting similar subpar environmental policy, or engaging in reflection to improve its own environmental policy. Two perspectives shed light on whether firms are more inclined to learn or reflect from their socially connected counterparts.

Firstly, social theory suggests that the propagation of unethical behavior depends on the presence of punishment. Bandura (1971) argues that observing the punishment of a peer for a negative act reinforces social norms against that act and diminishes the inclination to imitate it. Conversely, when negative behavior remains private, difficult to detect, or unpunished, it becomes socially acceptable and, consequently, imitable (Bandura, 1965). Hence, from this perspective, if poor environmental performance by a socially connected firm goes unpunished, firms are more likely to imitate rather than reflect upon such unethical behavior.

Secondly, economic theory posits that all decisions, including decisions to modify environmental policy, are shaped by a fundamental cost-benefit trade-off (Becker, 1968). Given the exorbitant costs associated with environmental abatement, firms will only engage in reflection regarding their environmental policy if the cost of poor environmental policy by their socially connected firms is high, such as environmental penalties or highly influential negative environmental news.

In summary, from both social theory and economic theory perspectives, firms tend to implement poor environmental policy in response to socially connected firms facing low-cost

negative environmental events. However, when their socially connected firms experience high-cost negative environmental events, firms are more likely to enhance their environmental policy.

To explore the causal relationship between whether firms imitate or reflect from their socially connected firms, we use negative environmental news as an exogenous shock. Specifically, we estimate the following regression:

$$\begin{aligned}\text{Environmental Policy}_{j,t+1} = \beta_0 + \beta_1 &\text{Social Connections}_{i,j,t} * \text{Negative Env Events}_{i,t} \\ &+ \beta_2 \text{Social Connections}_{i,j,t} + \beta_3 \text{Negative Env Events}_{i,j,t} + \text{Control}_{i,j,t}\end{aligned} \tag{2}$$

Where the Environmental Policy$_{j,t+1}$ is the firm j's environmental rating in year t+1, and firm j does not have negative environmental events before firm i that has negative environmental events; Social Connections$_{i,j,t}$ is if firm i and firm j has social connections as we defined above; Negative Env Events$_{i,t}$ is the number of negative environmental news for firm i in year t or whether firm i in year t have negative environmental, 0 otherwise; Control$_{i,j,t}$ includes both firm i's and firm j's control variables which are same as above regressions. To minimize the influence of outliers, we winsorize all firm fundamental variables at the 1% and 99% levels. we also control firm-pair fixed effect and double cluster at the firm level.

The results are presented in Table 8 Panel A, where negative environmental news is employed as an exogenous shock. In columns (1) and (2), we use the negative environmental news dummy as an independent variable which takes the value of 1 if firm i has negative environmental news, 0 otherwise. In column (1), we do not add control variables, and we find there is a significantly negative β_1. In column (2), we add all control variables, and the β_1 remains significantly negative. In column (3) and column (4), we use the number of negative environmental news as an exogenous shock, yielding similar results. These results suggest that, on average, firms tend to mimic the environmental policy of their socially con-

nected firms, even in the presence of negative environmental news. These results are likely due to the relatively low reputation punishment imposed on firms by such negative news on average, leading them to believe that the costs of environmental policy outweigh the costs of reputation punishment. Consequently, they perceive this behavior as socially acceptable and imitable.

To further explore whether firms reflect or imitate when facing high costs of reputation punishment, negative environmental news is further classified into two categories based on severity (high and low) using the severity classification from the RepRisk database in Table 8 Panel (B). Firms experiencing high-severity negative environmental news are more likely to face substantial reputation punishment compared to those with low-severity negative environmental news. In column (1) and column (2), we find that firms mimic their socially connected firms with low-severity negative environmental news. However, in column (3) and column (4), we find a significantly positive coefficient indicating that firms amend their environmental policy when their network peers face high-severity negative environmental news.

RepRisk Database also has medium severity negative environmental news. Thus, in Panel C, we add medium-severity negative environmental news as an independent variable, and put high-severity and low-severity negative environmental news into one regression, yielding similar results. Interestingly, the coefficient for medium-severity negative environmental news is insignificant, suggesting a non-linear relationship. Given that environmental penalties significantly impact firms' performance and stock returns, we also employ whether firms have received environmental penalties as an exogenous shock, enhancing the robustness that firms amend their own environmental policy when their socially connected firms face significant punishment.

Overall, these results indicate that whether firms imitate or reflect depends on the cost of punishment. Specifically, firms exchange information and observe the results of environmen-

tal policy from their socially connected firms, then engage in a cost-benefit trade-off when it comes to environmental policy. They imitate unethical behavior and implement poor environmental policy when the cost of unethical environmental behavior is low because it is perceived as socially acceptable and imitable. In contrast, when the cost of unethical environmental behavior is high, firms reflect on their environmental policy and enhance their environmental policy.

5 Which firms learn from their socially connected counterparts: learning capability and learning willingness

5.1 Learning capability – Leaders and Followers

The influence of prior adopters is likely to vary among firms. Some firms are more susceptible to propagation effects than others. [11] The extent to which firms are prone to learning from their socially connected firms depends on their capability and willingness (Mossel and Mueller-Frank, 2020). From a learning capability perspective, leader firms are presumed to possess greater resources that can be allocated to learning their socially connected firms' methods and subsequently integrating those methods into their organization. From a learning willingness perspective, follower firms are motivated to learn from their socially connected firms' methods or practices in an effort to enhance their own performance. However, it is essential to note that learning capability holds more significance than learning willingness since the former acts as a prerequisite for the latter. For instance, a firm may exhibit a strong willingness to learn from its socially connected firms regarding environmental policy, but if it lacks the necessary resources to implement such policy, its environmental policy will not undergo any substantial changes. Consequently, we expect leader firms to be more likely to learn environmental policy from their socially connected firms.

[11] Strang and Soule (1998) shows that practices diffuse at different rates and via different pathways in social networks.

Following Leary and Roberts (2014), we classified firms as either leaders or followers based on the median profitability of firms within their respective industries each year. Subsequently, we conduct separate regression analyses for the 'leaders' and 'followers' subsamples. The results are presented in Panel A of Table 9. In column (1) and column (3), we do not add control variables and find that the leaders group displays a significant Environmental Score*All Connection coefficient of 0.011, while the followers group's Environmental Score*All Connection coefficient is 0.007 and insignificant. When control variables are incorporated in columns (2) and (4), we observe similar results. These results are consistent with the view that more successful firms are inclined to learn environmental policy from their socially connected firms due to their ample resources. Thus, our results indicate that the propensity of firms to learn from their socially connected firms depends on their learning capability.

Our findings may appear contradictory to those of Reppenhagen (2010) and Leary and Roberts (2014). Specifically, Reppenhagen (2010) suggests that less successful firms are more susceptible to information-based contagion in terms of accounting methods. Similarly, Leary and Roberts (2014) demonstrate that the financial policy of less successful firms is highly influenced by those of more successful firms, but not vice versa. On one hand, Milton Friedman (1970) argued that the sole responsibility of corporations is to maximize shareholder wealth. Accounting methods and finance policy primarily align with this shareholder-oriented perspective, whereas environmental policy is partly stakeholder-oriented. On the other hand, the concept of "doing good by doing well" posits that firms engage in more environmental, social, and governance (ESG) activities when they possess sufficient financial resources. Xu and Kim (2022) provide evidence supporting this notion, showing that financial constraints increase firms' toxic emissions, which is in line with the idea of "doing good by doing well." Consequently, less successful firms tend to learn accounting methods and financial policy from more successful firms because their primary responsibility is to enhance profitability. In contrast, less successful firms may perceive environmental policy as less significant than

financial policy, particularly for their own circumstances. Hence, they may not actively seek to learn environmental policy from more successful firms, as they may allocate limited resources primarily to financial policy, rather than environmental ones, and may not anticipate a direct impact on their performance from adopting environmental policy. In Appendix Table A6, we also use market share to classify firms into leaders and followers and find similar results.[12]

5.2 Learning willingness – CSR committee

Signaling theory suggests firms establish CSR committees to signal to stakeholders that their environmental, social, and governance (ESG) demands are explicitly considered in the composition of the board of directors (Spence, 1973). Following this signaling, firms are expected to meet the ESG expectations of their stakeholders (Freeman et al. 2010). In this context, firms recognize the need to enhance the expertise of their CSR committees, as this fosters better accountability and strengthens the link between firms and stakeholders. Therefore, it can be assumed that firms with CSR committees are more inclined to learn and adopt environmental policy compared to firms without such a function. By increasing the environmental expertise of their board members, firms aim to better meet stakeholders' expectations. Consequently, we anticipate that firms with CSR committees are more willing to learn environmental policy from their socially connected firms.

The data on CSR committees is sourced from Refinitiv ESG, and firms are categorized into two groups: those with CSR committees and those without, based on the presence of a CSR committee each year. We then re-estimate the regression model for the subsamples of 'CSR committee' and 'Non-CSR committee'. The results are reported in Table 10. In columns (1) and (3), without the inclusion of control variables, the CSR committee group

[12]In Appendix Table A6, the coefficient of Environmental Score*All Connection for follower firms is also significant. However, the coefficient for the follower firm is significant at 10% level, the coefficient for the leader firm is significant at 5% level, and the effect is larger for leader firms than follower firms (0.009 vs 0.003).

exhibits a significant coefficient of 0.01 for the interaction term Environmental Score *All Connection. Conversely, the non-CSR committee group shows an insignificant coefficient of 0.006 for the same interaction term. Adding control variables in columns (2) and (4) yields similar results. These findings support the view that firms with CSR committees learn environmental policy from their socially connected firms, but not vice versa. These results indicate that, alongside firms' learning capability, their propensity to learn from socially connected firms also depends on their learning willingness. The presence of a CSR committee signals a stronger commitment to environmental considerations and suggests a greater willingness to learn knowledge and insights from socially connected firms.

6 Why firms learn from their socially connected counterparts: good behavior motivation or bad behavior motivation

Prior literature has identified various motivations that drive firms to engage in environmental activities, including both positive and negative incentives. Among the positive motivations, Albuquerque, Koskinen and Zhang (2019) suggests that firms adopt an Environmental, Social, and Governance (ESG) strategy, including environmental policy, to differentiate their products and enhance their competitive position in the market. As for the negative motivations, Bénabou and Tirole (2010) propose that corporate social responsibility (CSR) and environmental activities can be driven by managerial self-interest and the desire to enhance personal reputation. On one hand, managers may exploit environmental activities for their own gains, potentially undermining shareholder interests. On the other hand, investments in environmental activities can serve as a signal to consumers that firms are genuinely concerned about the environment, garnering support and bolstering their competitive standing, thereby increasing firm value. This section aims to examine whether firms engage in environmental

activities driven by positive or negative motivations.

6.1 Good behavior motivation: Differentiation Strategy

The environmental policy is often employed as a strategic tool for differentiation. Extensive research has established a positive association between firms' ESG activities and their adoption of the differentiation strategy.[13]. Firms operating in highly competitive environments are increasingly adopting ESG policy, including environmental policy, as a differentiation strategy. In such contexts, firms demonstrate a heightened willingness to achieve and sustain a competitive advantage, wherein ethical behaviors, such as environmental activities, contribute to gaining a competitive edge (Jones, 1995). Environmental activities, as a form of ethical behavior, have been theorized to enhance firms' efficiency and bolster their reputation, brand image, and stakeholder trust (Barney, 1991; Hart, 1995; Russo and Fouts, 1997). Empirical evidence supports these theoretical arguments. Delmas, Russo, and Montes-Sancho (2007) uncover that electric utility firms, faced with increased competition due to economic deregulation, augmented their production of "green" power. Similarly, Flammer (2015) demonstrates that firms respond to heightened competitive pressures by intensifying their engagement in ESG activities as a means of differentiation.

Within the context of social networks, firms operating in highly competitive environments may engage in information exchange and learn from their socially connected firms regarding the utilization of environmental policy as a differentiation strategy. Firms operating in highly competitive environments are more likely to adopt the observed differentiation strategies adopted by firms also operating in highly competitive environments because they have extensive experience in effectively using environmental policy to achieve differentiation. Consequently, We anticipate that for firms in highly competitive environments, the impact of social networks on environmental policy is more pronounced, and these firms are more sen-

[13]See, for instance, Elfenbein and McManus (2010), Elfenbein et al. (2012), Oikonomou, Brooks, and Pavelin (2012), and Hilger et al. (2019).

sitive to the environmental policy of their socially connected firms in the highly competitive environment.

We define high competition environment following Dai, Liang, and Ng (2021). Specifically, we employ the Herfindahl-Hirschman Index (HHI) as a measure of competition intensity. Each year, we categorize firms into high-competition industries and low-competition industries based on the median HHI value. A higher HHI index means higher competitive industries. Subsequently, we re-estimate the regression model for the 'high-competition' and 'low-competition' subsamples. The results are presented in Panel A of Table 11. In column (1) and column (3), we exclude control variables and observe significantly positive coefficients for Environmental Score*All Connection. We find firms situated in high-competition industries exhibit a higher degree of environmental social network effects (0.012) compared to their counterparts in low-competition industries (0.006), thus indicating a greater sensitivity to their socially connected firms' environmental policy. In column (2) and column (4), we introduce control variables and observe similar findings.

To further investigate the propensity of firms in high-competition environments to learn differentiation strategies from socially connected firms with relevant experience. In panel B of Table 11, we focus on a subsample of firm pairs that possess social connections and introduce a competition dummy variable, which takes a value of 1 for firms in high-competition industries and 0 otherwise. In column (1) and column (2), we find the coefficients of Environmental Score*competition Dummy are insignificant, indicating that the learning target is immaterial for firms operating in low-competition industries as they do not require learning much knowledge about differentiation strategies. In contrast, in column (3) and column (4), we find the coefficients of Environmental Score*Competition Dummy are significantly positive. These suggest that firms in highly competitive industries are more inclined to learn differentiation strategies from their socially connected firms in similar competitive settings, leveraging their socially connected firms' experience in successful differentiation strategies.

Overall, the findings presented in this subsection provide empirical support for the view that firms are driven to learn knowledge about their socially connected firms' environmental policy in order to enhance their differentiation strategy and gain a competitive advantage. The results indicate a slightly greater sensitivity to the social network effect of environmental policy among firms operating in high-competition environments. Moreover, firms in such high-competition environments demonstrate a higher propensity to learn environmental policy from their socially connected firms in similar competitive settings.

6.2 Bad behavior motivation: Agency channel

One perspective regarding firms' engagement in ESG activities, including environmental activities, posits that agency problems drive such actions. Specifically, managers may implement environmental policy to advance their own self-interests, even if it comes at the expense of shareholder value (Bénabou and Tirole, 2010). Empirical evidence supporting this perspective has been documented in the literature. For instance, Barnea and Rubin (2010) suggest that insiders of a firm may overinvest in ESG activities to enhance their personal reputations and gain private benefits. Borghesi, Houston, and Naranjo (2014) find a positive association between ESG activities and free cash flow, indicating that firms may engage in ESG activities as a result of agency problems. Furthermore, Cheng, Hong, and Shue (2023) provide direct evidence that managers of large US firms enjoy private benefits through investments in ESG. Overall, the notion that environmental activities stem from bad behavior motivations underscores the existence of agency problems and raises concerns regarding corporate governance (Jensen and Meckling, 1976).

Although the adoption of environmental policy may stem from agency problems, the underlying question remains: why do managers learn such behavior from their socially connected individuals? DeMarzo, Vayanos, and Zwiebel (2003) propose that word-of-mouth communication plays a pivotal role in shaping individuals' behavior, particularly when influenced by their socially connected individuals. Compared to other communication channels, word-of-

mouth communication offers a greater degree of privacy and confidentiality. Additionally, individuals tend to place more trust in those with whom they share social connections. Consequently, the propagation of bad behavior becomes more feasible through social networks.[14] Accordingly, we expect that firms characterized by higher agency problems will exhibit greater sensitivity to the environmental policy of their socially connected firms.

We adopt free cash flow as a proxy to capture agency problems.[15] Specifically, firms with higher levels of free cash flow are considered to have higher agency problems. We classify the firms in our sample into two groups: those with high agency problems and those with low agency problems, based on the median value of free cash flow within the industry each year. If the agency channel is indeed the primary motivation for firms to learn from their socially connected firms, we would anticipate that firms characterized by higher agency problems would exhibit a significantly stronger social network effect.

We re-estimate our regression model for the high and low agency problem subsamples. The results are reported in Table 12. In columns (1) and (3), the model does not include control variables, and it reveals that the group characterized by high agency problems exhibits a significant coefficient of 0.013 for the interaction term Environmental Score*All Connection, whereas the group with low agency problems shows an insignificant coefficient of 0.007 for the same interaction term. In columns (2) and (4), when control variables are added, similar results are obtained. These findings align with the notion that firms are inclined to learn environmental policy from their socially connected firms due to the pursuit of private benefits by managers. In summary, our analysis provides significant evidence supporting the agency channel, indicating that agency issues and managers' personal motivations are among the key factors driving firms to learn environmental policy from their socially connected firms.

[14]Lavy, Silva, and Weinhardt (2012) find significant and substantial negative effects stemming from negative peers among individuals.

[15]Jensen (1986) posits that agency problems can be particularly pronounced when a firm generates substantial free cash flows that exceed the financing requirements for all positive net present value projects.

7 Conclusion

Individuals learn from their socially connected individuals to make decisions is prevalent in society and can be attributed to constraints on our ability to acquire or process costly information. This study sheds light on how firms rely on their socially connected firms when making decisions, specifically in the context of directors learning about environmental policy from their socially connected directors. By analyzing the biographical information of board members, we establish four types of social connections: current employment, past employment, education, and other activities. The findings highlight significant evidence that these social connections influence the formulation of corporate environmental policy. In other words, the greater the number of social connections between two firms, the more similar their environmental policy become, with the most substantial effect observed in the case of other activity connections. On average, a one-unit increase in the type of social connection leads to a 2.8% increase in the similarity of the environmental policy of the two firms. Importantly, the observed social network effect is not driven by greenwashing but has real environmental implications, as carbon emissions indicate.

The propagation of environmental policy through social networks is likely a result of information exchange and the observation of the outcomes of actions taken by socially connected firms. Different information and action outcomes give rise to distinct learning mechanisms, such as imitation and reflection. The specific learning mechanisms employed for environmental policy depend on the cost-benefit trade-offs perceived by managers. In instances where a socially connected firm's environmental policy carries no significant punishment, such as low-severity negative environmental news, firms tend to imitate (implement poor environmental policy) the policy of their socially connected firms. Conversely, when a socially connected firm's environmental policy incurs significant punishment, such as high-severity negative environmental news or environmental penalties, firms tend to reflect on their own environmental policy (enhance environmental policy).

Furthermore, the social network effect of environmental policy varies across firms, depending on their learning capabilities and willingness. Learning behavior is more concentrated among successful firms, which possess ample resources, and firms with a CSR committee, reflecting their high motivation to learn. Firms also exhibit different motivations for learning environmental policy. On the one hand, firms operating in highly competitive industries are more inclined to learn environmental policy from their socially connected firms due to the differentiation strategy. On the other hand, firms with pronounced agency problems are more likely to engage in learning environmental policy. Overall, firms learn from their socially connected firms regarding environmental policy due to both the bright side (differentiation strategy) and the dark side (agency problem) associated with environmental activities.

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Table 1: Descriptive Statistics

This table shows the summary statistics for the variables used in this paper. Panel A presents statistics on social connections variables at the firm-pair level. Past Employment represents individuals who have previously worked together within the firm and during the same time period. Current Employment represents two individuals as socially connected if they work in the same firm and hold positions on the board of directors. Education represents individuals who attended the same educational institution and graduated within one year of each other. Other Activities represents individuals who share active role memberships in clubs, organizations, or charities. To measure the social connection between two firms (A and B), a dummy variable is assigned a value of 1 if at least one director from firm A is connected to a director from firm B across any of the four types of connections. All Connections is the sum of the social connection dummies across the four connection types. Panel B presents financial statistics at the firm-pair level and firm level. Environmental Policy Dissimilarity is the absolute value of the difference between two firms' environmental ratings. Same BEA Economic Region is a dummy variable equal to 1 if the two firms are in the same BEA region. Same Industry is a dummy variable equal to 1 if the two firms are in the same FF49 industry.

Panel A: Social Connections Variables					
VARIABLES	N	mean	sd	min	max
Past Employment	3,987,786	0.182	0.386	0	1
Current Employment	3,987,786	0.0577	0.233	0	1
Education	3,987,786	0.0608	0.239	0	1
Other Activity	3,987,786	0.103	0.304	0	1
All Connection	3,987,786	0.404	0.716	0	4
Panel B: Control Variables					
VARIABLES	N	mean	sd	min	max
Firm-pair-level control variables					
Environmental Policy Dissimilarity	3,987,786	0.0842	0.123	0	1.381
Cash Flow Dissimilarity	3,987,786	0.0797	0.0724	0.00105	0.387
Leverage Dissimilarity	3,987,786	1.793	5.034	0	40.60
ROA Dissimilarity	3,987,786	0.0759	0.0737	0.000944	0.402
Firm Size Dissimilarity	3,987,786	1.752	1.327	0.0272	5.804
Tobin's Q Dissimilarity	3,987,786	1.204	1.325	0.0115	7.115
Tangibility Dissimilarity	3,987,786	0.220	0.203	0.00221	0.813
Dividend Dissimilarity	3,987,786	0.0244	0.0323	0	0.194
MB Dissimilarity	3,987,786	5.411	14.43	0.0267	112.0
No. Director Dissimilarity	3,987,786	3.628	3.575	0	21
Rival	3,987,786	0.0134	0.115	0	1
Same BEA Economic Region	3,987,786	0.130	0.337	0	1
Same Industry	3,987,786	0.0376	0.190	0	1
Total Emission Dissimilarity	356,890	2.394	1.904	0	20.88
Indirect Emission Dissimilarity	280,768	3.084	2.327	0	17.47
Direct Emission Dissimilarity	269,830	1.945	1.442	0	9.518
Firm-level control variables					
Environmental Policy	9,365	0.0368	0.108	-0.714	0.833
Cash Flow	9,365	0.0941	0.0712	-0.139	0.308
Leverage	9,365	0.689	1.604	-7.862	8.514
ROA	9,365	0.0560	0.0691	-0.192	0.260
Firm Size	9,365	8.018	1.566	5.031	12.31
Tobin's Q	9,365	2.070	1.227	0.837	7.429
Tangibility	9,365	0.222	0.211	0.00434	0.876
Dividend	9,365	0.0173	0.0265	0	0.152
MB	9,365	3.344	4.657	-17.86	27.57
No. Directors	9,365	9.708	3.457	3	24
Total Emission	2,710	12.95	2.144	-2.254	18.78
Direct Emission	2,385	11.77	2.716	1.099	18.72
Indirect Emission	2,342	12.28	1.718	6.685	16.57

Table 2: Social Connections and Dissimilarity in Environmental Policy

The dependent variable is Environmental Policy Dissimilarity between firm pairs. Columns (1)–(3) include all observations. Columns (4)–(6) include observations that forward one-term dependent variable. Cash Flow Dissimilarity is the absolute difference between Cash Flow of the two firms. Leverage Dissimilarity is the absolute difference between leverage ratio (total debt over total debt plus market value of equity) of the two firms. ROA Dissimilarity is the absolute difference between Return on Assets of the two firms. Firm Size Dissimilarity is the absolute difference between Log Total Assets of the two firms. Tobin's Q Dissimilarity is the absolute difference between Tobin's Q of the two firms. Tangibility Dissimilarity is the absolute difference between Tangibility (net property, plant, and equipment divided by total assets) of the two firms. Dividend Dissimilarity is the absolute difference between dividend (cash dividends scaled by total assets) of the two firms. MB Dissimilarity is the absolute difference between Market-to-Book ratio (the ratio of the market value of equity to the book value of equity) of the two firms. No. Director Dissimilarity is the absolute difference between the number of director of the two firms. The OLS coefficients are reported, with t-statistics in parentheses. Standard errors are corrected for clustering of the error term at both firms level using the double-clustering algorithm from Petersen (2009). A constant is included, but not reported, in all specifications.*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Environmental Policy Dissimilarity					
	Full Sample			Forward Dependent Variable		
	(1)	(2)	(3)	(4)	(5)	(6)
All Connection	-0.00238***	-0.00238***	-0.00237***	-0.00333***	-0.00330***	-0.00328***
	(-3.93)	(-3.91)	(-3.95)	(-5.15)	(-5.12)	(-5.16)
Cash Flow Dissimilarity		0.04720***	0.04727***		0.05212**	0.05228**
		(3.65)	(3.66)		(2.19)	(2.20)
Leverage Dissimilarity		-0.00079***	-0.00079***		-0.00070**	-0.00070**
		(-2.74)	(-2.73)		(-2.15)	(-2.15)
ROA Dissimilarity		-0.03426**	-0.03428**		-0.04909*	-0.04915*
		(-2.35)	(-2.35)		(-1.92)	(-1.93)
Firm Size Dissimilarity		0.00618***	0.00620***		0.00494**	0.00497**
		(3.57)	(3.59)		(2.08)	(2.10)
Tobin's Q Dissimilarity		-0.00218***	-0.00218***		-0.00192***	-0.00192***
		(-3.76)	(-3.76)		(-2.71)	(-2.71)
Tangibility Dissimilarity		-0.01899	-0.01897		-0.00217	-0.00219
		(-1.44)	(-1.44)		(-0.16)	(-0.16)
Dividend Dissimilarity		-0.02753	-0.02748		0.00713	0.00722
		(-1.11)	(-1.11)		(0.31)	(0.31)
MB Dissimilarity		0.00028***	0.00027***		0.00015	0.00015
		(2.79)	(2.79)		(1.61)	(1.61)
No.Director Dissimilarity			-0.00009			-0.00012
			(-0.28)			(-0.40)
Observations	3,987,786	3,987,786	3,987,786	3,013,497	3,013,497	3,013,497
R-squared	0.620	0.620	0.620	0.675	0.676	0.676
Year FE	YES	YES	YES	YES	YES	YES
Firm Pair FE	YES	YES	YES	YES	YES	YES

Table 3: Rival, Same Industry, Same Region

The dependent variable is Environmental Policy Dissimilarity between firm pairs. Column (1) adds a dummy variable Rival which equals to 1 if two firms are competitors. Columns (2) and (3) include only observations for pairs in the same FF49 industry. Columns (4) and (5) include only observations for pairs in the same BEA region. Cash Flow Dissimilarity is the absolute difference between Cash Flow of the two firms. Leverage Dissimilarity is the absolute difference between leverage ratio (total debt over total debt plus market value of equity) of the two firms. ROA Dissimilarity is the absolute difference between Return on Assets of the two firms. Firm Size Dissimilarity is the absolute difference between Log Total Assets of the two firms. Tobin's Q Dissimilarity is the absolute difference between Tobin's Q of the two firms. Tangibility is the absolute difference between Tangibility Dissimilarity (net property, plant, and equipment divided by total assets) of the two firms. Dividend Dissimilarity is the absolute difference between dividend (cash dividends scaled by total assets) of the two firms. MB Dissimilarity is the absolute difference between Market-to-Book ratio (the ratio of the market value of equity to the book value of equity) of the two firms. No. Director Dissimilarity is the absolute difference between the number of director of the two firms. The variable Rival is equal to 1 if two firms are competitors. The OLS coefficients are reported, with t-statistics in parentheses. Standard errors are corrected for clustering of the error term at both firms level using the double-clustering algorithm from Petersen (2009). A constant is included, but not reported, in all specifications. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Environmental Policy Dissimilarity				
	Rival	Within Industry		Within Region	
	(1)	(2)	(3)	(4)	(5)
All Connection	-0.00237***	-0.00191*	-0.00187*	-0.00166**	-0.00161**
	(-3.95)	(-1.89)	(-1.85)	(-2.16)	(-2.10)
Rival	0.00216		0.00308		0.00152
	(1.62)		(1.51)		(0.62)
Cash Flow Dissimilarity	0.04728***		0.02642		0.02933**
	(3.66)		(1.56)		(1.99)
Leverage Dissimilarity	-0.00079***		-0.00075***		-0.00092***
	(-2.73)		(-2.78)		(-2.76)
ROA Dissimilarity	-0.03427**		-0.01963		-0.02023
	(-2.35)		(-1.20)		(-1.28)
Firm Size Dissimilarity	0.00620***		0.00149		0.00659***
	(3.59)		(0.61)		(3.64)
Tobin's Q Dissimilarity	-0.00218***		-0.00141**		-0.00240***
	(-3.76)		(-2.05)		(-3.54)
Tangibility Dissimilarity	-0.01897		-0.03818**		-0.02674*
	(-1.44)		(-2.53)		(-1.82)
Dividend Dissimilarity	-0.02749		-0.05360*		-0.02646
	(-1.11)		(-1.91)		(-0.86)
MB Dissimilarity	0.00027***		0.00022***		0.00030**
	(2.79)		(2.58)		(2.49)
No.Director Dissimilarity	-0.00009		-0.00062		-0.00019
	(-0.28)		(-1.53)		(-0.56)
Observations	3,987,786	149,766	149,766	519,282	519,282
R-squared	0.620	0.648	0.649	0.623	0.623
Year FE	YES	YES	YES	YES	YES
Firm Pair FE	YES	YES	YES	YES	YES

Table 4: Robustness test

The dependent variable is Environmental Policy Dissimilarity between firm pairs. Columns (1) and (2) use data from Sustainalytics. Columns (3) and (4) use data from Refinitiv ESG. Cash Flow Dissimilarity is the absolute difference between Cash Flow of the two firms. Leverage Dissimilarity is the absolute difference between leverage ratio (total debt over total debt plus market value of equity) of the two firms. ROA Dissimilarity is the absolute difference between Return on Assets of the two firms. Firm Size Dissimilarity is the absolute difference between Log Total Assets of the two firms. Tobin's Q Dissimilarity is the absolute difference between Tobin's Q of the two firms. Tangibility Dissimilarity is the absolute difference between Tangibility (net property, plant, and equipment divided by total assets) of the two firms. Dividend Dissimilarity is the absolute difference between dividend (cash dividends scaled by total assets) of the two firms. MB Dissimilarity is the absolute difference between Market-to-Book ratio (the ratio of the market value of equity to the book value of equity) of the two firms. No. Director Dissimilarity is the absolute difference between the number of director of the two firms. The variable Rival is equal to 1 if two firms are competitors. The OLS coefficients are reported, with t-statistics in parentheses. Standard errors are corrected for clustering of the error term at both firms level using the double-clustering algorithm from Petersen (2009). A constant is included, but not reported, in all specifications.*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Environmental Policy Dissimilarity			
	Sustainalytics		Refinitiv	
	(1)	(2)	(3)	(4)
All Connection	-0.13931**	-0.13896**	-0.00739***	-0.00747***
	(-2.17)	(-2.20)	(-2.88)	(-2.98)
Rival		0.16832		-0.00125
		(0.69)		(-0.15)
Cash Flow Dissimilarity		-0.54181		0.06860
		(-0.41)		(1.54)
Leverage Dissimilarity		-0.05911		0.00013
		(-1.37)		(0.16)
ROA Dissimilarity		-0.65248		-0.03352
		(-0.48)		(-0.80)
Firm Size Dissimilarity		0.06476		0.02491***
		(0.24)		(2.61)
Tobin's Q Dissimilarity		-0.17484		0.00339
		(-1.19)		(1.18)
Tangibility Dissimilarity		0.01974		-0.03730
		(0.02)		(-1.04)
Dividend Dissimilarity		-2.10085		0.01707
		(-0.79)		(0.17)
MB Dissimilarity		0.02251		-0.00035
		(1.52)		(-1.29)
No.Director Dissimilarity		0.02025		0.00051
		(0.80)		(0.61)
Observations	354,000	354,000	267,395	267,395
R-squared	0.916	0.916	0.850	0.851
Year FE	YES	YES	YES	YES
Firm Pair FE	YES	YES	YES	YES

Table 5: Subnetworks

The dependent variable is Environmental Policy Dissimilarity between firm pairs. Columns (1) and (2) use data from Sustainalytics. Columns (3) and (4) use data from Refinitiv ESG. Cash Flow Dissimilarity is the absolute difference between Cash Flow of the two firms. Leverage Dissimilarity is the absolute difference between leverage ratio (total debt over total debt plus market value of equity) of the two firms. ROA Dissimilarity is the absolute difference between Return on Assets of the two firms. Firm Size Dissimilarity is the absolute difference between Log Total Assets of the two firms. Tobin's Q Dissimilarity is the absolute difference between Tobin's Q of the two firms. Tangibility Dissimilarity is the absolute difference between Tangibility (net property, plant, and equipment divided by total assets) of the two firms. Dividend Dissimilarity is the absolute difference between dividend (cash dividends scaled by total assets) of the two firms. MB Dissimilarity is the absolute difference between Market-to-Book ratio (the ratio of the market value of equity to the book value of equity) of the two firms. No. Director Dissimilarity is the absolute difference between the number of director of the two firms. The variable Rival is equal to 1 if two firms are competitors. The OLS coefficients are reported, with t-statistics in parentheses. Standard errors are corrected for clustering of the error term at both firms level using the double-clustering algorithm from Petersen (2009). A constant is included, but not reported, in all specifications.*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Environmental Policy Dissimilarity							
	Full Sample				Forward Dependent Variable			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Past Employment	-0.00159*				-0.00259***			
	(-1.84)				(-2.86)			
Current Employment		-0.00182**				-0.00201***		
		(-2.35)				(-2.62)		
Education			-0.00103				-0.00327***	
			(-0.97)				(-2.73)	
Other activity				-0.00682***				-0.00811***
				(-4.89)				(-4.81)
Rival	0.00216	0.00214	0.00215	0.00216	-0.00106	-0.00110	-0.00109	-0.00108
	(1.62)	(1.61)	(1.61)	(1.62)	(-0.68)	(-0.70)	(-0.70)	(-0.69)
Cash Flow	0.04726***	0.04722***	0.04723***	0.04723***	0.05228**	0.05220**	0.05221**	0.05221**
	(3.66)	(3.65)	(3.65)	(3.65)	(2.20)	(2.20)	(2.20)	(2.20)
Leverage	-0.00079***	-0.00079***	-0.00079***	-0.00079***	-0.00070**	-0.00070**	-0.00070**	-0.00071**
	(-2.73)	(-2.73)	(-2.72)	(-2.74)	(-2.14)	(-2.14)	(-2.14)	(-2.16)
ROA	-0.03433**	-0.03431**	-0.03432**	-0.03421**	-0.04922*	-0.04916*	-0.04916*	-0.04903*
	(-2.35)	(-2.35)	(-2.35)	(-2.35)	(-1.93)	(-1.93)	(-1.93)	(-1.93)
Firm Size	0.00622***	0.00622***	0.00622***	0.00620***	0.00500**	0.00500**	0.00500**	0.00495**
	(3.60)	(3.60)	(3.60)	(3.59)	(2.11)	(2.11)	(2.11)	(2.09)
Tobin's Q	-0.00218***	-0.00218***	-0.00218***	-0.00218***	-0.00192***	-0.00192***	-0.00191***	-0.00192***
	(-3.75)	(-3.75)	(-3.75)	(-3.76)	(-2.71)	(-2.71)	(-2.70)	(-2.71)
Tangibility	-0.01901	-0.01902	-0.01901	-0.01888	-0.00226	-0.00225	-0.00224	-0.00209
	(-1.44)	(-1.45)	(-1.44)	(-1.44)	(-0.16)	(-0.16)	(-0.16)	(-0.15)
Dividend	-0.02763	-0.02759	-0.02761	-0.02745	0.00704	0.00704	0.00704	0.00728
	(-1.11)	(-1.11)	(-1.11)	(-1.11)	(0.30)	(0.30)	(0.30)	(0.31)
MB	0.00027***	0.00027***	0.00027***	0.00028***	0.00015	0.00015	0.00015	0.00015
	(2.78)	(2.78)	(2.78)	(2.80)	(1.59)	(1.59)	(1.59)	(1.61)
No. Director	-0.00010	-0.00010	-0.00010	-0.00009	-0.00013	-0.00014	-0.00013	-0.00013
	(-0.29)	(-0.30)	(-0.30)	(-0.28)	(-0.42)	(-0.43)	(-0.43)	(-0.41)
Observations	3,987,786	3,987,786	3,987,786	3,987,786	3,013,497	3,013,497	3,013,497	3,013,497
R-squared	0.620	0.620	0.620	0.620	0.676	0.676	0.676	0.676
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Firm Pair FE	YES	YES	YES	YES	YES	YES	YES	YES

Table 6: Externality

The dependent variable is Environmental Policy Dissimilarity between firm pairs. Columns (1) and (2) use Total Carbon Emission Dissimilarity. Columns (3) and (4) use Direct Carbon Emission Dissimilarity. Columns (5) and (6) use Indirect Carbon Emission Dissimilarity. Cash Flow Dissimilarity is the absolute difference between Cash Flow of the two firms. Leverage Dissimilarity is the absolute difference between leverage ratio (total debt over total debt plus market value of equity) of the two firms. ROA Dissimilarity is the absolute difference between Return on Assets of the two firms. Firm Size Dissimilarity is the absolute difference between Log Total Assets of the two firms. Tobin's Q Dissimilarity is the absolute difference between Tobin's Q of the two firms. Tangibility Dissimilarity is the absolute difference between Tangibility (net property, plant, and equipment divided by total assets) of the two firms. Dividend Dissimilarity is the absolute difference between dividend (cash dividends scaled by total assets) of the two firms. MB Dissimilarity is the absolute difference between Market-to-Book ratio (the ratio of the market value of equity to the book value of equity) of the two firms. No. Director Dissimilarity is the absolute difference between the number of director of the two firms. The variable Rival is equal to 1 if two firms are competitors. The OLS coefficients are reported, with t-statistics in parentheses. Standard errors are corrected for clustering of the error term at both firms level using the double-clustering algorithm from Petersen (2009). A constant is included, but not reported, in all specifications.*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Environmental Policy Dissimilarity					
	Total Emission		Direct Emission		Indirect Emission	
	(1)	(2)	(3)	(4)	(5)	(6)
All Connection	-0.06912***	-0.05098**	-0.06629**	-0.05375**	-0.07472***	-0.06044***
	(-2.99)	(-2.32)	(-2.49)	(-2.03)	(-4.21)	(-3.64)
Rival		-0.07944*		-0.03193		-0.03557
		(-1.80)		(-0.48)		(-0.80)
Cash Flow Dissimilarity		0.04574		0.97665*		0.10225
		(0.09)		(1.76)		(0.18)
Leverage Dissimilarity		0.02510***		0.02397***		0.01475**
		(3.11)		(3.58)		(2.29)
ROA Dissimilarity		-1.03127**		-1.44702**		-0.06117
		(-2.19)		(-2.37)		(-0.10)
Firm Size Dissimilarity		0.39618***		0.23973***		0.34523***
		(10.46)		(5.43)		(11.67)
Tobin's Q Dissimilarity		0.10875***		0.06268**		0.05927**
		(4.01)		(1.98)		(2.43)
Tangibility Dissimilarity		1.56921***		1.38857***		0.98255***
		(4.94)		(3.47)		(3.81)
Dividend Dissimilarity		-2.45962***		-1.18336		-0.03562
		(-2.98)		(-1.43)		(-0.05)
MB Dissimilarity		-0.00159		-0.00535***		-0.00228
		(-0.88)		(-2.83)		(-1.61)
No.Director Dissimilarity		-0.00616		-0.01126		0.00117
		(-1.17)		(-1.41)		(0.22)
Observations	356,890	356,890	280,768	280,768	269,830	269,830
R-squared	0.531	0.574	0.657	0.669	0.472	0.519
Year FE	YES	YES	YES	YES	YES	YES
Industry Pair FE	YES	YES	YES	YES	YES	YES

Table 7: Endogeneity: Difference-in-Difference Using Individuals' Deaths

The dependent variable is Environmental Policy Dissimilarity. The term After Death Dummy is a dummy variable that equals 1 in the period after the decease of a director and 0 before. Connected is a dummy variable that equals 1 if the deceased director was socially connecting the two companies. Cash Flow Dissimilarity is the absolute difference between Cash Flow of the two firms. Leverage Dissimilarity is the absolute difference between leverage ratio (total debt over total debt plus market value of equity) of the two firms. ROA Dissimilarity is the absolute difference between Return on Assets of the two firms. Firm Size Dissimilarity is the absolute difference between Log Total Assets of the two firms. Tobin's Q Dissimilarity is the absolute difference between Tobin's Q of the two firms. Tangibility Dissimilarity is the absolute difference between Tangibility (net property, plant, and equipment divided by total assets) of the two firms. Dividend Dissimilarity is the absolute difference between dividend (cash dividends scaled by total assets) of the two firms. MB Dissimilarity is the absolute difference between Market-to-Book ratio (the ratio of the market value of equity to the book value of equity) of the two firms. No. Director Dissimilarity is the absolute difference between the number of director of the two firms. The variable Rival is equal to 1 if two firms are competitors. The OLS coefficients are reported, with t-statistics in parentheses. Standard errors are corrected for clustering of the error term at both firms level using the double-clustering algorithm from Petersen (2009). A constant is included, but not reported, in all specifications. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Environmental Policy Dissimilarity							
	Full Sample				Forward Dependent Variable			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Connected * After Death	0.01315**	0.01323**	0.02497***	0.02385***	0.00230	0.00505	0.02343***	0.02333***
	(2.38)	(2.20)	(7.62)	(6.69)	(0.28)	(0.51)	(3.76)	(3.74)
After Death	-0.00679*	-0.00663*	-0.04131***	-0.04021***	-0.00311	-0.00302	-0.04882***	-0.04756***
	(-1.87)	(-1.84)	(-11.98)	(-11.88)	(-0.87)	(-0.85)	(-14.17)	(-14.02)
Rival		0.00217		-0.00427***		-0.00108		-0.00460***
		(1.63)		(-3.38)		(-0.69)		(-3.30)
Cash Flow Dissimilarity		0.04651***		0.04977***		0.05186**		0.04400**
		(3.60)		(3.99)		(2.18)		(2.31)
Leverage Dissimilarity		-0.00078***		-0.00033		-0.00070**		-0.00034
		(-2.71)		(-1.06)		(-2.13)		(-1.05)
ROA Dissimilarity		-0.03375**		-0.03117**		-0.04885*		0.01525
		(-2.32)		(-2.29)		(-1.92)		(0.69)
Firm Size Dissimilarity		0.00624***		0.01183***		0.00501**		0.01343***
		(3.61)		(15.27)		(2.11)		(14.55)
Tobin's Q Dissimilarity		-0.00217***		-0.00404***		-0.00191***		-0.00455***
		(-3.76)		(-7.88)		(-2.71)		(-7.02)
Tangibility Dissimilarity		-0.01851		0.00138		-0.00196		0.00493**
		(-1.40)		(0.67)		(-0.14)		(2.42)
Dividend Dissimilarity		-0.02886		-0.01394		0.00627		0.01873
		(-1.16)		(-0.55)		(0.27)		(0.68)
MB Dissimilarity		0.00027***		-0.00001		0.00015		-0.00011
		(2.74)		(-0.13)		(1.56)		(-1.09)
No. Director Dissimilarity		-0.00010		-0.00012		-0.00014		-0.00030
		(-0.31)		(-0.48)		(-0.46)		(-1.13)
Observations	3,987,786	3,987,786	3,987,786	3,987,786	3,013,497	3,013,497	3,013,497	3,013,497
R-squared	0.620	0.620	0.373	0.384	0.675	0.676	0.389	0.402
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Pair FE	YES	YES	NO	NO	YES	YES	NO	NO
Double Firm FE	NO	NO	YES	YES	NO	NO	YES	YES

Table 8: How firms Learn

The dependent variable is the environmental policy of firms which do not have negative environmental news. The All Connection is the mumber of the social connection between firm-pair. The negative news dummy is a dummy variable which takes value of 1 if a firm has negative environmental news. The negative news count is the number of negative environmental news for a firm. In Panel B, the sample is separated into firms with low severity negative environmental news and firms with high severity negative environmental news. Control Variables are firm-level control variables. Cash Flow is Cash Flow of the firm. Leverage is the leverage ratio of the firm. ROA is the Return on Assets of the firm. Firm Size is the Log Total Assets of the firm. Tobin's Q is the Tobin's Q of the firm. Tangibility is the Tangibility of the firm. Dividend is the dividend of the firms. MB is the Market-to-Book ratio of the firm. No. Director is the number of director of the firm. The variable Rival is equal to 1 if two firms are competitors. The OLS coefficients are reported, with the t-statistics in parentheses. Standard errors are corrected for clustering of the error term at both firms level using the double clustering algorithm from Petersen (2009). A constant is included, but not reported, in all specifications.*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Negative News				
	Environmental Policy			
	(1)	(2)	(3)	(4)
Negative News Dummy *	-0.00245***	-0.00244***		
All Connection	(-2.82)	(-2.84)		
Negative News Count * All			-0.00012***	-0.00012***
Connection			(-2.70)	(-2.72)
Negative News Dummy	0.00121**	0.00120*		
	(2.09)	(1.82)		
Negative News Count			0.00015***	0.00014***
			(3.65)	(3.45)
All Connection	-0.00256***	-0.00215**	-0.00288***	-0.00246***
	(-2.67)	(-2.41)	(-3.07)	(-2.82)
Observations	2,689,236	2,689,236	2,689,236	2,689,236
R-squared	0.651	0.652	0.651	0.652
Controls	NO	YES	NO	YES
Year FE	YES	YES	YES	YES
Firm Pair FE	YES	YES	YES	YES
Panel B: Low Severity vs High Severity				
	Environmental Policy			
	(1)	(2)	(3)	(4)
Low Severity * All	-0.00023***	-0.00023***		
Connection	(-3.27)	(-3.27)		
High Severity * All			0.00109***	0.00108***
Connection			(4.06)	(4.00)
Low Severity	0.00027***	0.00027***		
	(4.28)	(4.01)		
High Severity			-0.00096***	-0.00095***
			(-4.17)	(-3.76)
All Connection	-0.00280***	-0.00238***	-0.00344***	-0.00303***
	(-3.00)	(-2.74)	(-3.57)	(-3.36)
Observations	2,689,236	2,689,236	2,689,236	2,689,236
R-squared	0.652	0.652	0.651	0.652
Controls	NO	YES	NO	YES
Year FE	YES	YES	YES	YES
Firm Pair FE	YES	YES	YES	YES

Panel C: News Severity and Environmental Penalty				
	Environmental Policy			
	(1)	(2)	(3)	(4)
High Severity * All	0.00128***	0.00127***		
Connection	(4.31)	(4.26)		
Low Severity * All	-0.00026***	-0.00025***		
Connection	(-4.38)	(-4.34)		
Medium Severity * All	0.00002	0.00002		
Connection	(0.20)	(0.19)		
Environmental Penalty *			0.00140**	0.00136**
All Connection			(2.42)	(2.33)
Environmental Penalty			-0.00107**	-0.00102*
			(-2.02)	(-1.68)
All Connection			-0.00470***	-0.00404***
			(-4.42)	(-4.04)
Observations	2,689,236	2,689,236	2,614,609	2,614,609
R-squared	0.652	0.653	0.664	0.665
Controls	NO	Yes	NO	YES
Year FE	YES	YES	YES	YES
Firm Pair FE	YES	YES	YES	YES

Table 9: Leader-Follower

The Table separates firms into Leaders and Followers. In column (1) and (2), the dependent variable is the Followers' environmental score. In column (3) and (4), the dependent variable is the Leaders' environmental score. The variable Competition Dummy equals 1 if the firms are in high-competition industry. Control Variables are firm-level control variables. Cash Flow is Cash Flow of the firm. Leverage is the leverage ratio (total debt over total debt plus market value of equity) of the firm. ROA is the Return on Assets of the firm. Firm Size is the Log Total Assets of the firm. Tobin's Q is the Tobin's Q of the firm. Tangibility is the Tangibility (net property, plant, and equipment divided by total assets) of the firm. Dividend is the dividend (cash dividends scaled by total assets) of the firms. MB is the Market-to-Book ratio (the ratio of the market value of equity to the book value of equity) of the firm. No. Director is the number of director of the firm. The variable Rival is equal to 1 if two firms are competitors. The OLS coefficients are reported, with the t-statistics in parentheses. Standard errors are corrected for clustering of the error term at both firms level using the doubleclustering algorithm from Petersen (2009). A constant is included, but not reported, in all specifications.*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Environmental Policy			
	Follower		Leader	
	(1)	(2)	(3)	(4)
Environmental Score * All	0.00685	0.00642	0.01063***	0.01066***
Connection	(1.49)	(1.41)	(2.60)	(2.63)
Environmental Score	-0.00409*	-0.00380	-0.00524**	-0.00528**
	(-1.76)	(-1.64)	(-2.43)	(-2.48)
All Connection	-0.00363***	-0.00315**	-0.00622***	-0.00571***
	(-2.67)	(-2.46)	(-4.16)	(-4.18)
Observations	2,275,216	2,275,216	2,246,634	2,246,634
R-squared	0.694	0.696	0.740	0.741
Controls	NO	Yes	NO	Yes
Year FE	YES	YES	YES	YES
Firm Pair FE	YES	YES	YES	YES

Table 10: CSR Committee

The Table separates firms into firms with CSR Committee and firms without CSR Committee. In column (1) and (2), the dependent variable is the environmental score for firms without CSR Committee. In column (3) and (4), the dependent variable is the environmental score for firms with CSR Committee. Control Variables are firm-level control variables. Cash Flow is Cash Flow of the firm. Leverage is the leverage ratio (total debt over total debt plus market value of equity) of the firm. ROA is the Return on Assets of the firm. Firm Size is the Log Total Assets of the firm. Tobin's Q is the Tobin's Q of the firm. Tangibility is the Tangibility (net property, plant, and equipment divided by total assets) of the firm. Dividend is the dividend (cash dividends scaled by total assets) of the firms. MB is the Market-to-Book ratio (the ratio of the market value of equity to the book value of equity) of the firm. No. Director is the number of director of the firm. The variable Rival is equal to 1 if two firms are competitors. The OLS coefficients are reported, with the t-statistics in parentheses. Standard errors are corrected for clustering of the error term at both firms level using the doubleclustering algorithm from Petersen (2009). A constant is included, but not reported, in all specifications.*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Environmental Policy			
	No CSR Committee		CSR Committee	
	(1)	(2)	(3)	(4)
Environmental Score *	0.00530	0.00509	0.00919**	0.00864**
All Connection	(1.13)	(1.12)	(2.41)	(2.27)
Environmental Score	-0.00170	-0.00161	-0.00549**	-0.00491*
	(-0.79)	(-0.78)	(-2.03)	(-1.79)
All Connection	-0.00335**	-0.00385***	-0.00326**	-0.00228*
	(-2.17)	(-2.59)	(-2.28)	(-1.70)
Observations	2,326,991	2,326,991	2,100,733	2,100,733
R-squared	0.700	0.701	0.724	0.729
Year FE	YES	YES	YES	YES
Pair FE	YES	YES	YES	YES

Table 11: Differentiation Strategy

The Table separates firms into firms in low-competition industry and firms in high-competition industry. In column (1) and (2), the dependent variable is the low-competition industry firms' environmental score. In column (3) and (4), the dependent variable is the high-competition industry firms' environmental score. Panel A includes the full sample. Panel B includes sample that has social connections. The variable Competition Dummy equals 1 if the firms are in high-competition industry. Control Variables are firm-level control variables. Cash Flow is Cash Flow of the firm. Leverage is the leverage ratio (total debt over total debt plus market value of equity) of the firm. ROA is the Return on Assets of the firm. Firm Size is the Log Total Assets of the firm. Tobin's Q is the Tobin's Q of the firm. Tangibility is the Tangibility (net property, plant, and equipment divided by total assets) of the firm. Dividend is the dividend (cash dividends scaled by total assets) of the firms. MB is the Market-to-Book ratio (the ratio of the market value of equity to the book value of equity) of the firm. No. Director is the number of director of the firm. The variable Rival is equal to 1 if two firms are competitors. The OLS coefficients are reported, with the t-statistics in parentheses. Standard errors are corrected for clustering of the error term at both firms level using the doubleclustering algorithm from Petersen (2009). A constant is included, but not reported, in all specifications.*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A				
	Environmental Policy			
	Low-Competition		High-Competition	
	(1)	(2)	(3)	(4)
Environmental Score * All	0.00577*	0.00553*	0.01190*	0.01156*
Connection	(1.83)	(1.76)	(1.84)	(1.74)
Environmental Score	-0.00308*	-0.00289*	-0.00633*	-0.00610*
	(-1.91)	(-1.80)	(-1.81)	(-1.70)
All Connection	-0.00498***	-0.00429***	-0.00258	-0.00289
	(-4.47)	(-4.17)	(-1.12)	(-1.37)
Observations	2,874,858	2,874,858	1,153,402	1,153,402
R-squared	0.677	0.680	0.705	0.710
Controls	No	Yes	No	Yes
Year FE	YES	YES	YES	YES
Firm Pair FE	YES	YES	YES	YES
Panel B				
	Environmental Policy			
	Low-Competition		High-Competition	
	(1)	(2)	(3)	(4)
Environmental Score *	-0.00028	0.00019	0.00990**	0.00799**
Competition Dummy	(-0.09)	(0.06)	(2.36)	(2.10)
Environmental Score	0.00045	-0.00036	0.00019	0.00032
	(0.28)	(-0.22)	(0.26)	(0.19)
Competition Dummy	-0.00018	-0.00028	-0.00140	-0.00141
	(-0.44)	(-0.73)	(-1.22)	(-1.15)
Observations	828,913	828,913	343,941	343,941
R-squared	0.723	0.727	0.743	0.747
Controls	NO	Yes	NO	Yes
Year FE	YES	YES	YES	YES
Firm Pair FE	YES	YES	YES	YES

Table 12: Agency Problem

The Table separates firms into firms with low-agency problem and firms with low-agency problem. In column (1) and (2), the dependent variable is the environmental score for firms with low-agency problem. In column (3) and (4), the dependent variable is the environmental score for firms with high-agency problem. Control Variables are firm-level control variables. Cash Flow is Cash Flow of the firm. Leverage is the leverage ratio (total debt over total debt plus market value of equity) of the firm. ROA is the Return on Assets of the firm. Firm Size is the Log Total Assets of the firm. Tobin's Q is the Tobin's Q of the firm. Tangibility is the Tangibility (net property, plant, and equipment divided by total assets) of the firm. Dividend is the dividend (cash dividends scaled by total assets) of the firms. MB is the Market-to-Book ratio (the ratio of the market value of equity to the book value of equity) of the firm. No. Director is the number of director of the firm. The variable Rival is equal to 1 if two firms are competitors. The OLS coefficients are reported, with the t-statistics in parentheses. Standard errors are corrected for clustering of the error term at both firms level using the doubleclustering algorithm from Petersen (2009). A constant is included, but not reported, in all specifications.*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Environmental Policy			
	Low Agency		High Agency	
	(1)	(2)	(3)	(4)
Environmental Score * All Connection	0.00659	0.00622	0.01330***	0.01346***
	(1.19)	(1.13)	(2.77)	(2.81)
Environmental Score	-0.00404	-0.00386	-0.00735***	-0.00738***
	(-1.55)	(-1.50)	(-2.85)	(-2.87)
All Connection	-0.00393***	-0.00342**	-0.00453***	-0.00421***
	(-2.90)	(-2.53)	(-2.90)	(-2.91)
Observations	2,176,918	2,176,918	2,112,565	2,112,565
R-squared	0.726	0.728	0.731	0.734
Controls	NO	YES	NO	YES
Year FE	YES	YES	YES	YES
Pair FE	YES	YES	YES	YES

Appendix

Table A1: Variables Definition

Variables	Definition
Past Employment	A dummy variable equal to 1 if in the firm pair there is at least one director in a firm with a past employment connection with one or more directors in the other firm. Sourced from BoardEx
Current Employment	A dummy variable equal to 1 if in the firm pair there is at least one director in a firm with a current employment connection with one or more directors in the other firm. Sourced from BoardEx
Education	A dummy variable equal to 1 if in the firm pair there is at least one director in a firm with an education connection with one or more directors in the other firm. Sourced from BoardEx
Other Activity	A dummy variable equal to 1 if in the firm pair there is at least one director in a firm with an other activity connection with one or more directors in the other firm. Sourced from BoardEx
All Connection	The sum of Past Employment, Current Employment, Education, and Other Activity.
Environmental Policy	The number of strengths or concerns for each firm-year within the environmental category by the maximum possible number of strengths or concerns in environmental category per year to obtain the strength or concern index. Then the adjusted concern index is subtracted from the adjusted strength index. Sourced from MSCI KLD
Cash Flow	Income before extraordinary items (ibc) + depreciation and amortization (dp))/total assets (at) Sourced from Compustat
Leverage	(Long-term debt (dltt) + debt in current liabilities (dlc))/stockholders' equity (seq) Sourced from Compustat
ROA	Net income (ni)/ total assets (at) Sourced from Compustat
Firm Size	Natural logarithm of total assets (at) Sourced from Compustat
Tobin's Q	(Total assets (at) - stockholders' equity (seq) + common shares outstanding (csho) * Price close (prcc))/total assets (at) Sourced from Compustat
Tangibility	Net property, plant and equipment (ppent)/total assets (at) Sourced from Compustat
Dividend	(Dividends common (dvc) + preferred dividends (dvp))/total assets (at) Sourced from Compustat
MB	Price close (prcc) * common shares outstanding (csho)/total equity (ceq) Sourced from Compustat
No. Director	The number of directors of a firm. Sourced from BoardEx
Rival	A dummy variable equal to 1 if the firm pair is the competitor. Sourced from Hoberg-Phillips Data Library
Total Emission	Natural logarithm of total emission Sourced from Refinitiv
Direct Emission	Natural logarithm of direct emission Sourced from Refinitiv
Indirect Emission	Natural logarithm of indirect emission Sourced from Refinitiv
Connected	A dummy variable equal to 1 if in the firm pair there is at least one decreased director in a firm with a socially connection with one or more directors in the other firm. Sourced from BoardEx

Variables	Definition
After Death	A dummy variable equal to 1 in the period after the decrease of a director. Sourced from BoardEx
Negative News Dummy	A dummy variable equal to 1 if a firm has at least one negative environmental news. Sourced from RepRisk
Negative News Count	The number of negative environmental news of a firm. Sourced from RepRisk
Low Severity	A dummy variable equal to 1 if a firm has at least one low severity negative environmental news. Sourced from RepRisk
High Severity	A dummy variable equal to 1 if a firm has at least one high severity negative environmental news. Sourced from RepRisk
Medium Severity	A dummy variable equal to 1 if a firm has at least one medium severity negative environmental news. Sourced from RepRisk
Environmental Penalty	A dummy variable equal to 1 if a firm receives an environmental penalty. Sourced from goodjobfirst.org
Competition Dummy	A dummy variable equal to 1 if a firm is in a high-competition industry based on HHI Index.

Table A2: Social Connections and Dissimilarity in Environmental Policy

The dependent variable is Environmental Policy Dissimilarity between firm pairs. Columns (1)–(3) include all observations. Columns (4)–(6) include observations that forward one-term dependent variable. Cash Flow Dissimilarity is the absolute difference between Cash Flow of the two firms. Leverage Dissimilarity is the absolute difference between leverage ratio (total debt over total debt plus market value of equity) of the two firms. ROA Dissimilarity is the absolute difference between Return on Assets of the two firms. Firm Size Dissimilarity is the absolute difference between Log Total Assets of the two firms. Tobin's Q Dissimilarity is the absolute difference between Tobin's Q of the two firms. Tangibility Dissimilarity is the absolute difference between Tangibility (net property, plant, and equipment divided by total assets) of the two firms. Dividend is the absolute difference between dividend (cash dividends scaled by total assets) of the two firms. MB Dissimilarity is the absolute difference between Market-to-Book ratio (the ratio of the market value of equity to the book value of equity) of the two firms. No. Director Dissimilarity is the absolute difference between the number of director of the two firms. The variable Rival is equal to 1 if two firms are competitors. The OLS coefficients are reported, with t-statistics in parentheses. Standard errors are corrected for clustering of the error term at both firms level using the double-clustering algorithm from Petersen (2009). A constant is included, but not reported, in all specifications.*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Environmental Policy Dissimilarity					
	Full Sample			Forward Dependent Variable		
	(1)	(2)	(3)	(4)	(5)	(6)
All Connection	-0.00799***	-0.00578***	-0.00577***	-0.00894***	-0.00626***	-0.00625***
	(-12.56)	(-12.14)	(-12.12)	(-12.16)	(-11.57)	(-11.57)
Cash Flow Dissimilarity		0.02872***	0.02868***		0.02647*	0.02642*
		(3.04)	(3.04)		(1.68)	(1.68)
Leverage Dissimilarity		-0.00093***	-0.00093***		-0.00096***	-0.00096***
		(-3.38)	(-3.38)		(-3.19)	(-3.19)
ROA Dissimilarity		-0.01142	-0.01142		-0.01565	-0.01564
		(-1.00)	(-0.99)		(-0.85)	(-0.85)
Firm Size Dissimilarity		0.01088***	0.01086***		0.01232***	0.01230***
		(15.04)	(15.04)		(14.22)	(14.22)
Tobin's Q Dissimilarity		-0.00212***	-0.00212***		-0.00194***	-0.00194***
		(-5.39)	(-5.39)		(-4.02)	(-4.02)
Tangibility Dissimilarity		0.00231	0.00231		0.00289*	0.00289*
		(1.35)	(1.35)		(1.71)	(1.71)
Dividend Dissimilarity		0.07120***	0.07116***		0.10381***	0.10377***
		(3.12)	(3.12)		(4.19)	(4.19)
MB Dissimilarity		0.00031***	0.00031***		0.00023**	0.00023**
		(3.45)	(3.45)		(2.54)	(2.54)
No. Director Dissimilarity			0.00007			0.00005
			(0.32)			(0.24)
Observations	3,987,786	3,987,786	3,987,786	3,013,497	3,013,497	3,013,497
R-squared	0.471	0.479	0.479	0.497	0.508	0.508
Year FE	YES	YES	YES	YES	YES	YES
Double Firm FE	YES	YES	YES	YES	YES	YES

Table A3: Endogeneity: Difference-in-Difference Using Individuals' Deaths (Restricted Sample)

The sample comprises all firm pairs in which a director's death occurred during the sample period. The dependent variable is environmental policy dissimilarity between firm pairs. The term After Death Dummy is a dummy variable that equals 1 in the period after the decease of a director and 0 before. Connected is a dummy variable that equals 1 if the deceased director was socially connecting the two companies. Cash Flow is the absolute difference between Cash Flow of the two firms. Leverage is the absolute difference between leverage ratio (total debt over total debt plus market value of equity) of the two firms. ROA is the absolute difference between Return on Assets of the two firms. Firm Size is the absolute difference between Log Total Assets of the two firms. Tobin's Q is the absolute difference between Tobin's Q of the two firms. Tangibility is the absolute difference between Tangibility (net property, plant, and equipment divided by total assets) of the two firms. Dividend is the absolute difference between dividend (cash dividends scaled by total assets) of the two firms. MB is the absolute difference between Market-to-Book ratio (the ratio of the market value of equity to the book value of equity) of the two firms. No. Director is the absolute difference between the number of director of the two firms. The variable Rival is equal to 1 if two firms are competitors. The OLS coefficients are reported, with the t-statistics in parentheses. Standard errors are corrected for clustering of the error term at both firms level using the doubleclustering algorithm from Petersen (2009). A constant is included, but not reported, in all specifications.*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Environmental Policy Dissimilarity							
	Full Sample				Forward Dependent Variable			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Connected * After Death	0.01422**	0.01434**	0.02163***	0.02034***	0.00050	0.00169	0.01760***	0.01622***
	(2.38)	(2.10)	(5.91)	(5.59)	(0.08)	(0.20)	(2.96)	(3.15)
After Death	-0.00935**	-0.00908**	-0.00889**	-0.00859**	-0.00438	-0.00418	-0.00417	-0.00378
	(-2.38)	(-2.32)	(-2.53)	(-2.49)	(-1.09)	(-1.04)	(-1.15)	(-1.05)
Rival		0.00061		-0.00621***		-0.00383*		-0.00724***
		(0.31)		(-3.12)		(-1.69)		(-3.39)
Cash Flow Dissimilarity		0.05386***		0.03252***		0.05333		0.02355
		(3.88)		(2.80)		(1.59)		(1.00)
Leverage Dissimilarity		-0.00088**		-0.00107***		-0.00073*		-0.00105***
		(-2.01)		(-2.68)		(-1.69)		(-2.69)
ROA Dissimilarity		-0.03966**		-0.01121		-0.04534		-0.00428
		(-2.32)		(-0.72)		(-1.21)		(-0.15)
Firm Size Dissimilarity		0.00551**		0.01307***		0.00420		0.01421***
		(2.38)		(12.95)		(1.46)		(12.36)
Tobin's Q Dissimilarity		-0.00323***		-0.00278***		-0.00327***		-0.00281***
		(-3.89)		(-4.59)		(-3.02)		(-3.69)
Tangibility Dissimilarity		-0.02622		0.00439**		0.01723		0.00704***
		(-1.45)		(2.02)		(0.99)		(3.26)
Dividend Dissimilarity		0.02275		0.13948***		0.06644**		0.17477***
		(0.73)		(4.21)		(2.06)		(4.73)
MB Dissimilarity		0.00035***		0.00040***		0.00014		0.00023**
		(2.78)		(3.41)		(1.34)		(2.25)
No. Director Dissimilarity		-0.00012		0.00009		0.00015		0.00026
		(-0.25)		(0.28)		(0.37)		(0.89)
Observations	1,775,842	1,775,842	1,775,842	1,775,842	1,428,928	1,428,928	1,428,928	1,428,928
R-squared	0.603	0.603	0.455	0.466	0.659	0.660	0.479	0.492
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Pair FE	YES	YES	NO	NO	YES	YES	NO	NO
Double Firm FE	NO	NO	YES	YES	NO	NO	YES	YES

Table A4: Alternative Explanation: Difference-in-Difference Using Individuals' Deaths

The dependent variable is Environmental Policy Dissimilarity between firm pairs. The term After Death Dummy is a dummy variable that equals 1 in the period after the decease of a director and 0 before. Connected is a dummy variable that equals 1 if the deceased director was socially connecting the two companies. Cash Flow Dissimilarity is the absolute difference between Cash Flow of the two firms. Leverage Dissimilarity is the absolute difference between leverage ratio (total debt over total debt plus market value of equity) of the two firms. ROA Dissimilarity is the absolute difference between Return on Assets of the two firms. Firm Size Dissimilarity is the absolute difference between Log Total Assets of the two firms. Tobin's Q Dissimilarity is the absolute difference between Tobin's Q of the two firms. Tangibility Dissimilarity is the absolute difference between Tangibility (net property, plant, and equipment divided by total assets) of the two firms. Dividend Dissimilarity is the absolute difference between dividend (cash dividends scaled by total assets) of the two firms. MB Dissimilarity is the absolute difference between Market-to-Book ratio (the ratio of the market value of equity to the book value of equity) of the two firms. No. Director Dissimilarity is the absolute difference between the number of director of the two firms. The variable Rival is equal to 1 if two firms are competitors. The OLS coefficients are reported, with t-statistics in parentheses. Standard errors are corrected for clustering of the error term at both firms level using the double-clustering algorithm from Petersen (2009). A constant is included, but not reported, in all specifications. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Environmental Policy Dissimilarity							
	Full Sample				Forward Dependent Variable			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Connected * After Death	0.01265**	0.01261**	0.02512***	0.02401***	0.00496	0.00750	0.01994***	0.02070***
	(2.48)	(2.21)	(4.78)	(4.44)	(1.04)	(1.12)	(2.74)	(2.61)
After Death	-0.00646*	-0.00630*	-0.04240***	-0.04126***	0.00075	0.00079	-0.04813***	-0.04684***
	(-1.89)	(-1.86)	(-12.48)	(-12.40)	(0.25)	(0.26)	(-14.41)	(-14.30)
Rival		0.00225*		-0.00403***		-0.00083		-0.00429***
		(1.67)		(-3.20)		(-0.55)		(-3.06)
Cash Flow Dissimilarity		0.04541***		0.05055***		0.04455*		0.03731**
		(3.52)		(4.12)		(1.89)		(1.99)
Leverage Dissimilarity		-0.00076***		-0.00031		-0.00063**		-0.00029
		(-2.71)		(-1.03)		(-2.07)		(-0.98)
ROA Dissimilarity		-0.03329**		-0.03333**		-0.04171		0.02152
		(-2.31)		(-2.51)		(-1.64)		(0.98)
Firm Size Dissimilarity		0.00625***		0.01183***		0.00509**		0.01353***
		(3.56)		(15.14)		(2.11)		(14.36)
Tobin's Q Dissimilarity		-0.00197***		-0.00389***		-0.00140**		-0.00429***
		(-3.38)		(-7.58)		(-2.16)		(-6.85)
Tangibility Dissimilarity		-0.01795		0.00157		-0.00083		0.00529**
		(-1.34)		(0.76)		(-0.06)		(2.55)
Dividend Dissimilarity		-0.02813		-0.01626		0.00595		0.01449
		(-1.12)		(-0.64)		(0.25)		(0.52)
MB Dissimilarity		0.00026***		-0.00002		0.00014		-0.00013
		(2.64)		(-0.22)		(1.42)		(-1.17)
No. Director Dissimilarity		-0.00009		-0.00012		-0.00023		-0.00036
		(-0.27)		(-0.46)		(-0.72)		(-1.36)
Observations	3,896,796	3,896,796	3,896,796	3,896,796	2,883,912	2,883,912	2,883,912	2,883,912
R-squared	0.624	0.625	0.378	0.388	0.687	0.687	0.397	0.410
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Pair FE	YES	YES	NO	NO	YES	YES	NO	NO
Double Firm FE	NO	NO	YES	YES	NO	NO	YES	YES

Table A5: Alternative Explanation: Difference-in-Difference Using Individuals' Deaths (Restricted Sample)

The dependent variable is environmental policy dissimilarity between firm pairs. The term After Death Dummy is a dummy variable that equals 1 in the period after the decease of a director and 0 before. Connected is a dummy variable that equals 1 if the deceased director was socially connecting the two companies. Cash Flow is the absolute difference between Cash Flow of the two firms. Leverage is the absolute difference between leverage ratio (total debt over total debt plus market value of equity) of the two firms. ROA is the absolute difference between Return on Assets of the two firms. Firm Size is the absolute difference between Log Total Assets of the two firms. Tobin's Q is the absolute difference between Tobin's Q of the two firms. Tangibility is the absolute difference between Tangibility (net property, plant, and equipment divided by total assets) of the two firms. Dividend is the absolute difference between dividend (cash dividends scaled by total assets) of the two firms. MB is the absolute difference between Market-to-Book ratio (the ratio of the market value of equity to the book value of equity) of the two firms. No. Director is the absolute difference between the number of director of the two firms. The variable Rival is equal to 1 if two firms are competitors. The OLS coefficients are reported, with the t-statistics in parentheses. Standard errors are corrected for clustering of the error term at both firms level using the doubleclustering algorithm from Petersen (2009). A constant is included, but not reported, in all specifications.*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Environmental Policy Dissimilarity							
	Full Sample				Forward Dependent Variable			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Connected * After Death	0.01315**	0.01339*	0.03133***	0.02998***	0.00212	0.00289	0.02550***	0.02481***
	(2.22)	(1.95)	(5.23)	(4.88)	(0.61)	(0.51)	(3.63)	(3.25)
After Death	-0.00890**	-0.00862**	-0.05173***	-0.05007***	0.00050	0.00064	-0.05582***	-0.05380***
	(-2.42)	(-2.37)	(-13.26)	(-13.14)	(0.14)	(0.18)	(-14.79)	(-14.56)
Rival		0.00065		-0.00699***		-0.00364*		-0.00689***
		(0.33)		(-3.36)		(-1.68)		(-3.01)
Cash Flow Dissimilarity		0.05190***		0.05931***		0.04010		0.03867
		(3.79)		(3.77)		(1.16)		(1.34)
Leverage Dissimilarity		-0.00083**		-0.00038		-0.00056		-0.00044
		(-1.98)		(-0.81)		(-1.51)		(-1.05)
ROA Dissimilarity		-0.03988**		-0.04067**		-0.03284		0.04174
		(-2.38)		(-2.26)		(-0.84)		(1.16)
Firm Size Dissimilarity		0.00539**		0.01372***		0.00425		0.01534***
		(2.25)		(12.82)		(1.46)		(12.27)
Tobin's Q Dissimilarity		-0.00278***		-0.00505***		-0.00223**		-0.00600***
		(-3.26)		(-6.10)		(-2.34)		(-6.04)
Tangibility Dissimilarity		-0.02559		0.00272		0.02228		0.00912***
		(-1.35)		(1.08)		(1.20)		(3.51)
Dividend Dissimilarity		0.02713		0.01774		0.07206**		0.06054
		(0.85)		(0.51)		(2.10)		(1.51)
MB Dissimilarity		0.00034***		0.00006		0.00012		-0.00010
		(2.61)		(0.42)		(1.00)		(-0.63)
No. Director Dissimilarity		-0.00009		-0.00007		0.00001		-0.00026
		(-0.18)		(-0.18)		(0.03)		(-0.72)
Observations	1,684,852	1,684,852	1,684,852	1,684,852	1,299,349	1,299,349	1,299,349	1,299,349
R-squared	0.612	0.613	0.371	0.383	0.682	0.682	0.392	0.407
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Pair FE	YES	YES	NO	NO	YES	YES	NO	NO
Double Firm FE	NO	NO	YES	YES	NO	NO	YES	YES

Table A6: Leader-Follower - Market Share

The Table separates firms into Leaders and Followers. In column (1) and (2), the dependent variable is the Followers' environmental score. In column (3) and (4), the dependent variable is the Leaders' environmental score. The variable Competition Dummy equals 1 if the firms are in high-competition industry. Control Variables are firm-level control variables. Cash Flow is Cash Flow of the firm. Leverage is the leverage ratio (total debt over total debt plus market value of equity) of the firm. ROA is the Return on Assets of the firm. Firm Size is the Log Total Assets of the firm. Tobin's Q is the Tobin's Q of the firm. Tangibility is the Tangibility (net property, plant, and equipment divided by total assets) of the firm. Dividend is the dividend (cash dividends scaled by total assets) of the firms. MB is the Market-to-Book ratio (the ratio of the market value of equity to the book value of equity) of the firm. No. Director is the number of director of the firm. The variable Rival is equal to 1 if two firms are competitors. The OLS coefficients are reported, with the t-statistics in parentheses. Standard errors are corrected for clustering of the error term at both firms level using the double clustering algorithm from Petersen (2009). A constant is included, but not reported, in all specifications.*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Environmental Policy			
	Follower		Leader	
	(1)	(2)	(3)	(4)
Environmental Score * All Connection	0.003*	0.003*	0.009***	0.009**
	(1.87)	(1.94)	(2.67)	(2.55)
Environmental Score	-0.000	-0.000	-0.004*	-0.003
	(-0.92)	(-0.76)	(-1.83)	(-1.37)
All Connection	-0.001	-0.000	-0.003***	-0.003***
	(-0.97)	(-0.65)	(-2.62)	(-2.88)
Observations	2,265,973	2,265,973	2,255,718	2,255,718
R-squared	0.587	0.588	0.698	0.703
Controls	NO	YES	NO	YES
Year FE	YES	YES	YES	YES
Firm Pair FE	YES	YES	YES	YES