The Social Geography of Misconduct*

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Abstract

We construct physical and social proximity measures between pairs of firms, using board-member and geographic data. A firms' tendency to engage in future corporate misconduct and earnings management increases with its social proximity to firms exhibiting similar past behavior. The effect is stronger when the link involves board members that are likely to be more influencing because of age, multiple board participation, or business achievements. It is also higher in firms that are smaller, have poorer ESG disclosure ratings, and limited analysts coverage. A structural model estimation shows that, while selection is relevant, the results are not driven by the endogenous matching between firms and directors. The effect is independent to that of local norms, which we also document, suggesting that both norms and social interaction matter for firm behavior.

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1 Introduction

Corporate misconduct seems to be pervasive (Graham et al. [2005], Dyck et al. [2021]). It hurts trust in people and organizations, ultimately dampening economic efficiency (Arrow [1974], Arrow [2010]).[1] It can take several forms, such as mistreatment of employees, environmental regulation violations, financial fraud, earnings management, and represents an extreme departure from the standards society and financiers increasingly expect from firms. These conducts are hard to deter because of the difficulty in detecting and punishing them. Regulation and market discipline help but are not sufficient (Dyck et al. [2010]). Simple cost-benefit and incentives analyses come short in explaining the widespread existence of the phenomenon. Ethical norms on what is acceptable and what is not play a role (Parsons et al. [2018]). But it may also be that what your peers think and do affects how you behave regarding these issues. This paper explores the relevance of peer effects and their role in spreading corporate misbehavior.

Economists have embraced social interactions as a key mechanism shaping several aspects of economic activity by facilitating the exchange of information and resources. The profession has also acknowledged that the effects of social interactions must be interpreted with caution as they can be easily confounded with other possible unobserved factors —e.g. local social norms, namely culture and/or ethics.

While the economic literature has found evidence of commonality in behaviors among connected/peer economic agents, recent studies show that some behavioral patterns can also cluster geographically mainly due to a regional context. For instance, in a seminal work, Glaeser et al. [1996] argues that local social norms can account for the persistent cross-sectional differences in crime rates. More recently, Parsons et al. [2018] use different misbehavior measures to proxy for local social norms and they show that local customs can have an important role in explaining the observed regional differences in corporate financial misconduct.

However, disentangling the role of social interactions from local social norms in influenc-

[1] "Now trust has a very important pragmatic value, if nothing else. Trust is an important lubricant of a social system. It is extremely efficient; it saves a lot of trouble to have a fair degree of reliance on other people's word."

ing corporate (mis)behavior remains a lingering challenge. Local social norms are hard to measure accurately, although some have tried.[2] This is especially the case when using broad geographic areas as cities and states. Besides, corporate misconduct could cluster within different groups of firms. Then, some conducts that can be attributed to geographical factors related to norms may just be a manifestation of the fact that firms of similar characteristics or in the same industry tend to locate close to each other. Lastly, geographical and social clusters could also be endogenously co-determined. Indeed, workers may sort into places because of their social networks, and concurrently their social networks might be an emergent feature of local interactions (the reflection problem, Manski [1993]).

In this paper, we contribute to this debate by assessing the importance of social interactions implied by a board members' social network, in shaping different types of corporate misconduct.

To accomplish this goal, we exploit cross-firms variation in the "proximity" to misconduct implied by an industrial, geographical, and boards-induced firms' network, which we later use to understand the confluent effects of these interactions on the firms' future misconduct decisions. We ask whether a firm's tendency to engage in misconduct in the future increases with its proximity to other firms having done that in the past.

We use data at the director-firm level to develop a measure of social proximity that intends to capture peers' effects beyond conventional proxies (e.g. industry- or geographical-related measures). In particular, we rely on the professional background of board members to assess the extent to which they have interacted with each other by measuring the time that they have concurrently served as directors at the same institution in the past. This allows us to compute a firm-to-firm pairwise social distance.

We also use the specific location of firms' headquarters (geographic coordinates), to measure bilateral distances between firms, as another proxy for local peer interactions. By doing this, we can separate commonalities that stem from concurrently sharing locations (e.g. local culture captured by area fixed effects), from influences that depend directly

[2]For instance, Camerer and Fehr [2004] have measured social norms using experimental games in laboratory settings. Certainly, measuring social norms in non-controlled environments is a much harder task.

on bilateral distances that can proxy for potential local interactions. Furthermore, given our granular measure of location, we can construct different geographical zones, to pin down the radius of influence of local social norms.

Our boards-induced network reveals that the social network we exploit captures information beyond geographical factors. In our sample, a large fraction of a firm's boards-induced connecting neighbors reside in a geographically distant location.[3] Moreover, this aspect of the social network appears stronger among central (high-degree) and therefore more influential firms in the network.[4] This suggests that if there exists additional diffusion of (mis)practices along the social network, this does not necessarily takes place across firms with similar characteristics.

By following firms in time, we build time-varying measures of exposure to misconduct based on the social and physical proximity to firms having engaged on these type of behaviors in the recent past. The panel structure of the data also allows to control for many potential confounding effects. Since local norms and corporate culture change slowly in time, an empirical strategy using location- and firm-fixed effects can absorb part of these confounding influences.

Furthermore, we exploit our director-level data, to estimate a structural matching model which takes account for the sorting that takes place between firms and board members, therefore correcting for potential endogeneities in the data.

We document that a firm's tendency to engage in future corporate misconduct (CM) as well as in earnings management (EM) is positively affected by its geographical and social proximity to firms with a high past misconduct. Firms that are one standard deviation closer in terms of social connections to a firm engaged in misconduct —equivalent to six more years of board overlapping —are 14 percent more likely to commit CM, while its measure of EM is 0.6 standard deviations higher. Likewise, a geographical exposure to misconduct commensurate to being 450 miles closer to a firm engaged in CM is associated to an increase of 17 percent in the probability of also behaving that way and a 0.16

[3]Figure 3 (D) shows that more than half of a firm's socially connecting neighbors have their headquarters located in regions outside a 500-mile radius.

[4]Figure 3 (E) shows that for high-degree firms, there is less dispersion in the fraction of socially-connected neighboring firms belonging to distant locations.

standard deviations increase in the extent to which it manages its reported earnings. These effects are independent to those of being part of the same industry or locality (e.g. state or metropolitan area), for which we also provide evidence. Thus, our results are consistent with both social interactions and local norms being determinants of the misconduct phenomena.

The importance of the boards-induced social network diffusing misconduct depends importantly on the "types" of board members considered. Specifically, the marginal effect of the "social-proximity" measure to misconduct on a firm's tendency to misbehave tends to be larger when we focus on the allegedly more influential board members -i.e. board members exhibiting above-median levels of multiple board participation or business achievements- to construct the social network.

The role of social interaction also differs across specific firms depending on differences in their fundamentals. In fact, for CM, the effect of social-proximity to misconduct on firms' future misbehavior seems to increase for firms featuring below-median level of total asset or ESG disclosure, as well as for those exhibiting above-median fraction of board members participating in multiple boards. For EM, the effect of social-proximity to misconduct on firms' future misbehavior increases for firms featuring below-median level of analyst coverage. These results altogether suggest that spillovers related to misbehavior appear to be stronger when the actions are less likely to be detected, such as when the firms are small, they provide little information on how they take care of ESG issues, and when are not thoroughly followed by analysts.

Following previous literature on economic networks, these estimates need to be interpreted with caution as our social network and physical network can be endogenously co-determined. Our empirical analysis addresses various concerns regarding the endogenous formation of the physical and social networks since we control dynamically for various firms' observable features that may proxy for managers' benefits of being part of a network or locating closer to other firms. To further assure ourselves, we exploit the boards' institutional features to estimate a two-sided matching structural model (à la Sørensen [2007]) which intents to account for the potential director-firm sorting on various unob-

servable characteristics. Specifically, we exploit characteristics of other directors in the market to separately identify and estimate the influence of firms' characteristics and the extent of the sorting on a firm's tendency to commit misconduct. We find that, while matching does exist, our results are not driven nor biased by this type of sorting.[5]

Overall, our analysis shows that the effects of social peers on diffusing undesirable corporate practices are pervasive, large in magnitude, and seem to relate to ties among key common corporate agents.

This paper contributes to several strands of the corporate finance and accounting literatures. In finance, recent studies document that corporate decisions —such as, investment prospects (Fracassi [2016]), compensation structures (Geletkanycz et al. [2001]), and M&A deals parties (Shue [2013]) —, are more similar if the key decision-makers (e.g. board members) are part of the same social network. This literature has also showed that social interactions play a role in asset management (Cohen et al. [2008]), and household finance choices (Brown et al. [2008], Kuchler and Stroebel [2020]). Yet, it has been documented that social interactions can also lead to undesirable corporate behavior, in particular when they involve top-level corporate members. For instance, Fracassi and Tate [2012] show that social linkages between CEOs and board members can lead to decreased monitoring, ultimately lowering firm value. Similarly, Hwang and Kim [2009] document that CEOs are paid more when CEOs and directors are more connected, while Nguyen [2012] shows that these linkages make the board less effective in getting rid of poorly performing CEOs. Our paper contributes to this strand of the literature by exploring which types of board members are most relevant to explain misconduct spillovers. We find that the marginal effect of the "social-proximity" measure to misconduct on a firm's tendency to misbehave, tends to increase as we focus on the allegedly more influencing board members. Furthermore, by incorporating measures of geographical distance, we try to disentangle social network effects from potentially confounding local social norms. The paper also relates to the recent emerging literature on the role of interdependence in corporate decision making (e.g. Leary and Roberts [2014], Fracassi [2016]). In particular,

[5]Table 10 shows that our main findings do not dramatically change after accounting for this type of selection bias.

we relate to a strand of the literature looking at how regional factors can influence corporate decisions. For example, Dougal et al. [2015] show that corporate investment depends on regional externalities outside of industry relationships; Almazan et al. [2010] show that agglomerated firms have more acquisition opportunities; and, Engelberg et al. [2018] show that geography facilitates knowledge spillovers between information intermediaries. We contribute to this research by focusing on corporate misconduct, and disentangling the role of local factors, from confounding social interactions.

By studying distinct types of misconduct spillovers through the lens of different types of firms' networks, our paper also intends to contribute to the accounting literature. In fact, while the accounting literature has already documented how managers' tendency to manipulate real activities and accruals can be influenced by connecting firms' (mis)behavior, most of the research has relied on measures of boards interlocks that require a contemporaneous professional board-to-board link. Recently, Chiu et al. [2013] show that a firm is more likely to manipulate earnings when it shares a common director with current earnings-managing firm. Brown and Drake [2014] find that a firm's tax-avoidance behavior relates to its boards-induced ties to firms facing low industry-adjusted tax rates. Bizjak et al. [2009] examines the role of contemporaneous board connections in explaining how the practice of backdating employee stock options spread across firms and industries. Ivanova and Prencipe [2020] suggest that an auditor might decide to raise its audit fees charged to a firm after a perceived increase in the firm's audit engagement risk stemming from its board-connection to other firms exhibiting recent financial fraud allegations.[6,7] We contribute to this strand of the accounting research by examining whether managerial misconduct decisions can be affected by firms' connections stemming from historic-professionally driven boards' connections. This approach allows us to fully exploit our rich firm-level data of misconduct and social connections by being able to examine a more comprehensive set of firm-to-firm social links which we ultimately use to strengthen our econometric analysis.

[6]The accounting literature has also documented a positive effect of board members' ties on managerial decisions (see Braam and Borghans [2014], Zhong et al. [2017]).

[7]Beyond boards-induced connections, the accounting research has also examined whether other common agents (e.g. common stakeholders) affects firms' voluntary disclosure decision (see Park et al. [2019], Dhaliwal et al. [2016], Bushee and Goodman [2007], Maffett [2012]).

There is extensive literature in accounting, economics, and finance showing a direct relationship between personal ethics, and corporate behavior. For instance, Griffin et al. [2013] show that corporate behavior depends on individual traits in multiple settings. This literature shows evidence on how managerial traits affects firm on different dimensions (Bertrand and Schoar [2003]) like managerial indiscretions (Cline et al. [2018]), personal risk-taking (Cain and McKeon [2016]), frugality and misconduct record (Davidson et al. [2015], Egan et al. [2019]), the propensity to corrupt (Mironov [2015]), military service (Benmelech and Frydman [2015]), optimism and managerial risk-aversion (Graham et al. [2013]), personal mortgage leverage (Cronqvist et al. [2012]), and early-life experiences (Malmendier et al. [2011]). Overall, it is well documented that certain managerial features are important determinants for firm behavior.

There is parallel literature analyzing how situational features like corporate culture affects corporate behavior. In particular, (Guiso et al. [2015] and Biggerstaff et al. [2015]) show the importance of corporate culture and how the corporate culture interacts with local norms (Dyck et al. [2010], DeBacker et al. [2015], and Parsons et al. [2018]).

Finally, it is important to understand the role of peer effects in diffusing corporate misbehavior. In that regard, (Dimmock et al. [2018]) show that coworkers influence matter in an individual's propensity to commit financial misconduct, and (Grieser et al. [2021]) uses a peer network approach for estimating peer effects in corporate financial policies.

We add to this literature by focusing on a high stake setting, boards, to show that there are peer effects in financial misconduct for board members and that these peer effects are independent of director personal traits, and situational features such as local social norms and corporate culture.

This paper is organized as follows. Section II presents the data. Section III describes the methodology, Section IV presents the main results. Section V shows the selection model, and finally, section VI concludes.

2 Data

2.1 Misconduct

2.1.1 Corporate Misconduct

We identify corporate misconduct (CM) events from the Violation Tracker file provided by Good Jobs First.[8] This database covers nonviolent criminal offenses related to banking, consumer and labor protection, false claims, environmental, price-fixing, bribery, among others.[9] Table 1 shows the CM used in our baseline analysis, where most of the CM considered relates to "workplace safety or health violence", "railroad safety", "environmental", "wage and hour", "aviation safety", and "labor relations" violations. The cases correspond to claims resolved by more than 40 federal regulatory agencies of the Justice Department between 2000 and 2018.

In our Compustat sample, each year t, a firm i is classified as "committing CM" (i.e. $\text{M\_Event(CM)}_{it} = 1$) if it exhibits a penalty paid over that year on this data set. Table 2, panels (A) and (C) reports some time-series descriptive statistics of the CM measure considered. Time-series descriptive statistics are provided both for the entire Compustat sample considered in our study (which corresponds to 42,453 firm-year observations) and for the sample used over the conditional panel data analysis we conduct (31,133 firm-year observations). As the conditional analysis focuses on the effect of each independent variable on CM at the firm level (within analysis), it requires each firm to exhibit variability along the dependent variable, i.e. the CM classification dummy. A firm which presents an invariant CM classification dummy over the period studied is excluded from this analysis. In both samples, the average CM rate shows a positive trend. This may be a reflection of either a more stringent regulatory enforcement or an increase in firms' corporate misconduct.[10] We include time fixed effects to insulate our results from the presence of this trend.

The measure of corporate misconduct classifies firms as misbehaving only if they have

[8] See Li and Raghunandan [2019], Marinescu et al. [2020], Heese and Pérez-Cavazos [2019], Stubben and Welch [2020], Raghunandan [2019].

[9] `goodjobsfirst.org/violation-tracker`.

[10] Apart from very few exceptions, the database covers the same set of regulatory agencies since 2000.

been discovered and fined. Of course, we know that many times these conducts go undetected. For instance, Dyck et al. [2021] recently show that only one third of corporate frauds are actually detected. Thus, our CM measure is in many cases classifying firms as not having committed misconduct when they were actually doing it (false negatives). This error makes it more difficult to identify any peer effects in our setting. CM will not only measure actual misconduct but also pick up any change in the efficiency with which the authorities prosecute misbehavior. It also focuses on a subset of conducts that are probably more salient and/or easy to prosecute, complicating the generalization of the results. Furthermore, it reduces our sample since our methodology focuses only on those firms that have at least one misconduct case. Lastly, CM is a discrete variable that classifies firms as either misbehaving or not, when we know that behavior is rarely that clear cut. Of course, the main advantage of the measure is that we are certain that the behavior took place, i.e. that there are no false positives (if we are to believe the courts).

2.1.2 Earnings Management

We complement the CM indicator with an index of the extent to which the company is engaging in earnings management (EM). There is a large literature documenting that many firms engage regularly in the management of accounting figures. Dyck et al. [2021], for instance, estimate that as many as 43% of the corporations misrepresent their financial reports. Although this is a misrepresentation, EM is not always illegal nor easily detected. As such, the measure is less subject to the type II error described above. It can can also be measured for a larger number of firms and does not restrict ourselves to analyse only those firms that have at least one case of misconduct. It can also be measured as a continuous index, which allows to analyse the intensive margin. Of course, it is also possible that we are incurring on type I error and this is why both measures complement each other.

In this study, we employ the absolute value of the modified Jones [1991] model to proxy for financial reporting quality, i.e. earnings management. As in previous research studying earnings management,[11] we use the absolute value of discretionary accruals since we do

[11]Recent works using this measure: Johnson et al. [2002], Ashbaugh-Skaife et al. [2008], Warfield et al. [1995], Cornett et al. [2008], Klein [2002], Frankel et al. [2002], Balsam et al. [2003], Chandar et al.

not have a priori a directional expectation regarding the management's motivation for incurring in this type of (mis)behavior. To operationalize this measure, we estimate —for each industry-year (SIC two digits, conditional on having at least 20 firm-years) —a cross-sectional variant of the model proposed by Jones [1991] using Compustat data. Panels (B) and (C) of Table 2 show how the average EM measure has varied over time. While the CM measure has increased, EM has been relatively stable apart from the big spike around the financial crisis. Looking at this alternative measure of misconduct further reassures us that we are not just picking changes over time in the way CM is constructed which may affect differently firms with these behaviors from others without it. Panel (D) shows the entire distribution of EM across firms in different moments in time, confirming that the distribution is more or less stable.

2.2 Social Network

We aim to compute a measure of the exposure of each firm to misconduct based on the proximity to other firms engaging in that behavior. We think of proximity as a proxy for the extent of social interaction. We compute two proxies for proximity: one based on the overlap of board members in different firms (i.e. the social network) and one on the geographical distance between firms' headquarter (physical proximity).

To build the firms' boards-induced social network, we use BoardEx/Individual Networks file which compiles full employment history and complete profiles of directors and senior managers working on around 18,000 companies worldwide. We focus on the employment history of directors, which includes their experience on any board position.[12] The final "network" data set used in our study comprises job records of 175,549 board members.

As a first step of our analysis, we use the board members' job history data set to construct a network of board-to-board connections. We do this for each year in our sample. Table 3 reports descriptive statistics, at the board-level, of the boards' social network. We use the year 2017 to illustrate the characteristics of this network. Table 3 Panel (A) shows that the typical director has been part of the same board with 15.8 current directors in

[2012], Ebrahim [2007], Chung and Kallapur [2003], Cao et al. [2016], DeFond et al. [2017].

[12]That is, from BoardEx, we focus on those individuals' historical positions exhibiting a "Board Position Indicator" field different from "No".

the past.[13]

However, these averages mask a wide dispersion across the number and the extent of those boards connections. According to Table 3 Panel (B), the number of connections range from 1 to more than 50. The typical duration of a connection, that is, the number of years in which the two directors shared the same board, is 4.3 years. Again, the duration varies significantly, in some cases exceeding 10 years. Thus, there is ample variation in one of the key elements that will help identify the effect of the exposure to other firm's misconduct on one's own behavior.

Board-to-board connections also vary along board characteristics. Table 3 Panel (A) shows that relative to young directors (lower than median age), older ones exhibit approximately 5 more connections, stemming from a professional overlap that lasts 2-years longer. This result highlights the importance of controlling for other features of board members because the size of the network can be correlated to them. Interestingly, Table 3 also shows that connections to other boards tend to be larger in number but slightly weaker in terms of the link length, for boards that have an above-median level of achievements, involvement in other activities as well as for female boards, and whose boards possess at least one director with a graduate degree.[14] We will later use these varying board characteristics to measure the likely influence that a board has in a firm's decision making.

In Section 2.4, we exploit these connections between board members to uncover the implied connections among firms. In particular, we aggregate the board-to-board connections to the firm-level in order to build a time-varying-proximity matrix among organizations. Next, in Section 2.4.3, we utilize the time-varying-proximity matrix to build our main variable of interest: a firm-level measure of exposure to misconduct induced by the boards' social network.

2.3 Physical Network

In order to construct the firms' physical network, we utilize the US Census Geocoder which allows us to transform the firms' headquarters addresses from Compustat into

[13]Notice that the current directors can be part of the same or a different firm currently.

[14]Appendix A provides details of the variable construction.

approximate geographic coordinates. In Section 2.4, we utilize this network to compute the implied physical proximity matrix across firms, which we later use to build a firm-level geographic measure of exposure to misconduct.

2.4 Variable Description

2.4.1 Social Proximity

We start with the boards' social network described in Section 2.2, which we use to uncover the implied links among organizations. In particular, each year t, we construct a firm-level "social" proximity matrix ($\{C_{ijt}^{\text{Brd}}\}_{i,j=1}^{N}$) among the N firms in our sample. We proceed by aggregating the connections between directors of firm i and j arising from historical past overlaps through their board experience. Directors' connections are weighted by the corresponding overlapping number of years to capture the extent to which two directors have interacted.

Table 4 Panel (A) shows some features of the aggregated firm-by-firm links. On average, each "socially" connected firm will be connected to another firm by 1.6 members of its board. In fact, Table 4 Panel (A), sixth column, shows that each of these connected board members will establish on average 2.5 connections to board members at the connecting firms; where each of these connections will correspond to a professional overlap in the past that on average, lasted 4.4 years. Interestingly, Panel (A) shows that firm-by-firm proximity appears to be stronger in terms of number of boards' connections, the more similar the connecting firms are. For example, firms in the same industry, state, or in the same half of the B/M, size, and age cross-sectional distribution, show more links among their board members.

Table 4 Panel (B), column 1-5, reports features of the resulting network of firms. On average, each firm is connected to about 67 firms in the sample. Yet, the number of connecting firms varies widely in the cross-section, in some cases reaching more than 97 firms. The data also seem to suggest that firms connect to other firms with similar *fundamentals* as the number of connecting firms tend to increase among firms in the same half of the B/M, size and age cross-sectional distribution.

The literature has relied on current board interlocks to identify networks of firms (e.g.

Chiu et al. [2013], Brown and Drake [2014], Bizjak et al. [2009]). Our measure of firms' social proximity complements the ones used before because it captures links even in the absence of current boards interlocks. This is material since, as Table 4 Panel (B) column 6-10 show, the number of connecting firms drops by a third when we only consider contemporaneous/current board-to-boards connections.

It is worth mentioning that the firm-level network that results from the network of boards produces connections that go beyond the links implied by standard grouping methods that rely on industry classification or geographical location. Indeed, Table 4 Panel (B) show that a large fraction of a firm's connecting firms do not belong to the same industry and their headquarters reside in a state different to the firm's headquarters location.

To illustrate the distinct features of the boards-induced social proximity among firms, Figure 2 plots the closest set of firms to Apple Inc. based on its boards-induced social proximity score for two years in our sample. As shown by Figure 2, the boards-induced social proximity index captures information beyond the one implicit in any geographic-based proximity measure. Moreover, the proximity measures implied by boards' social links varies importantly over time. For example, for Apple Inc., while Chevron Corp. and Northrop Grumman correspond to its closest and second closest "neighbours" in 2011, respectively; none of these firms are part of Apple Inc.'s 2017 top-5 social-based closest neighbours. This time-series dimension is very useful to identify the impact of these links on misconduct, while at the same time controlling for time-invariant firm characteristics.

Figure 3 illustrates other salient features of the firms' social network. Figure 3 (A) shows an important cross-firm variation in the network concentration: a small share of firms appear highly concentrated (high levels of node degree). Figure 3 (B) shows a negative relation between a firm's degree and local clustering, which suggests that high level of local clustering may facilitate firms interaction even among less concentrated firms.[15] Moreover, Figure 3 (C) shows that, on average, firms also tend to be more connected with other firms which are similar to them in terms of their relevance (captured by the degree) in the boards-induced network. Figure 3 (D)-(E) suggest that the boards-induced con-

[15]Local clustering of a network's node measures the extent of control of the node over flows between its immediate neighbors/vertex.

nections among firms, although related, are not just a manifestation of their geographic closeness. This is consistent with Figure 2. Figure 3 panels (D) and (E) illustrate that a relevant fraction of a firm's board-induced links corresponds to geographically distant firms. For example, for the median firm, about 50% of its socially-connected neighbours reside more 800 miles away from the firm's current headquarters' location —roughly the length of Texas from north to south.

2.4.2 Physical Proximity

We use geographical coordinates and the Haversine distance (Sinnott [1984], Boeh and Beamish [2012]) to compute the geographic distance between two firms' headquarters. Next, we define the physical proximity matrix between firms i and j, $(\{C_{ij}^{\text{Geo}}\}_{i,j=1}^{N})$, as the inverse of the geographic distance. In this case, contrary to the social proximity matrix, the physical proximity matrix does not vary over time.

2.4.3 Exposure to Misconduct

Using both proximity matrices previously described, each year t, we proceed to construct firm-level measures of exposure to misconduct. In particular, each year t, a firm i's boards-induced (geographic) exposure to misconduct is computed by value-weighting —using C_{ijt}^{Brd} (C_{ij}^{Geo}) as weights —the connecting firms' past misconduct measures, $\mathbf{M}_{jt}$. Where neighbouring firms' misconduct $\mathbf{M}_{jt}$, $j \neq i \in \{1, ..., N\}$, is defined based on their misconduct measures observed over the time-window $[t-3, t-1]$.[16]

In the case of CM events described in Section 2.1.1, $\mathbf{M}_{jt}$ will be an indicator taking the value of one if the neighboring firm j has a case of misconduct over the time-window, and zero otherwise. In the case of the EM measure described in Section 2.1.2, $\mathbf{M}_{jt}$ will be the average EM measure that the neighboring firm j exhibit over the time-window.

Then, at time t, we compute firm i's exposure to misconduct M_Exp_{it}^{ℓ} implied by the boards' social network ($\ell =$"Brd") and physical network ($\ell =$"Geo") as,

[16]The inclusion of multiple past years allows us to reduce the potential problem of endogeneity in our main results.

$$\begin{aligned}
\text{M_Exp}_{it}^{\text{Brd}} &= \Big[\sum_{j\neq i}^{N} \mathbf{M}_{jt} \times C_{ijt}^{\text{Brd}}\Big] \Big/ \sum_{j\neq i}^{N} C_{ijt}^{\text{Brd}} \\
\text{M_Exp}_{it}^{\text{Geo}} &= \Big[\sum_{j\neq i}^{N} \mathbf{M}_{jt} \times C_{ij}^{\text{Geo}}\Big] \Big/ \sum_{j\neq i}^{N} C_{ij}^{\text{Geo}}
\end{aligned} \tag{1}$$

Table 5 contains time-series descriptive statistics for both measures of exposure to misconduct. Table 5 Panel (A) shows that the average social and physical misconduct exposure M_Exp_{it}^{ℓ} for CM have a positive trend. On the other hand, 5 Panel (B) shows that the average social and physical misconduct exposure M_Exp_{it}^{ℓ} for EM have been relatively stable. Comparing these time-patterns with those of Sections 2.1.1 and 2.1.2, it is established that there is a positive correlation over time between the misconduct measures and their exposure measure counterparts, social and physical ones. Table 6 shows cross-section descriptive statistics for each misconduct exposure measure. Table 6 Panel (A) shows a sizable cross-sectional variation of the misconduct exposures M_Exp_{it}^{ℓ} when they are compared across the CM events described in Section 2.1.1. As a preview of the main results, it can already be seen that the CM-based misconduct exposure measure appears to be larger among those firms currently committing CM (i.e. those exhibiting $\text{M\_Event(CM)}_{it} = 1$ according to Section 2.1.1). Similarly, Table 6 Panel (B) shows that M_Exp_{it}^{ℓ}—when they are based on the EM measure (see Section 2.1.2) —also tend to be larger among those firms exhibiting an EM index above the median. In all cases, the differences are large and statistically significant.

This preliminary evidence motivates our multivariate analysis on the study of misconduct spillover along the firms' social and physical network.

2.4.4 Industry Exposure and Local Norms

Following Parsons et al. [2018], for completeness, we would like to control and assess the role industry exposure to misconduct in explaining misconduct. We additionally construct a measure to assess the role of industry peer effects,

$$\text{M\_Exp}_{it}^{\text{Ind}} = \Big[\sum_{j\neq i}^{N} \mathbf{M}_{jt} \times \mathbf{1}_{ijt}\Big] \Big/ \sum_{j\neq i}^{N} \mathbf{1}_{ijt} \tag{2}$$

where $\mathbf{1}_{ij}$ is an indicator function taking the value of one if the firm $j \neq i$ operates is in the industry of firm i, and zero otherwise.

Initially, our baseline results consider as the local area (or geographic unit) the state where the firm's headquarter is located. As long as these norms are persistent in time, then using fixed effects by state should capture their influence.

Later, in section 4.2.6, we inquire more deeply into the effects of considering the state as the local area. Our baseline results are robust to other geographic unit definitions as metropolitan statistical areas (MSAs) and to the distance to its centroid.

Notice that Parsons et al. [2018] use as geographic units the "economic areas" (EAs), as defined by the U.S. Bureau of Labour Statistics. They also mention that EAs are typically larger than MSAs and are designed to capture regions within which workers commute. Some examples of EAs given by them are Washington DC-Columbia-Baltimore, Fort Worth-Arlington-Dallas, and San Francisco-Oakland-San Jose.

3 Methodology

This section describes the analysis undertaken to study misconduct spillovers along the firms' physical and boards-induced social network. Our goal is to exploit the cross-firms variation of our measures of exposure to misconduct, M_Exp_{it}^{ℓ}, to see whether these exposures are related to the two firm-level misconduct variables: that is, CM and EM.

Our panel-data sample starts with the universe of firm-year observations in the Compustat Annual file from 2005-2018. We exclude firms for which we cannot compute the full set of control variables included in the multivariate analysis described below. We consider two measures of misconduct to test our hypothesis of misconduct spillovers. CM has the advantage that an illegal action was committed, as far as the courts and regulators are concerned. However, it includes only the actions in which the company was prosecuted and fined. EM does not require any legal action to be conducted but reflects one particular misbehavior -the management of accounts- and is probably measured with more noise.

The two measures are complementary, yet they to capture distinct misconduct phenomena. Indeed, at the aggregate level, Table 2 Panel (C) shows that while the aggregate CM rate has persistently increased since 2005, the EM measure has remained stable since the last financial crisis. Moreover, in the cross-section, Table 6 shows not all firm characteristics are related to each measure in the same way.

Interestingly and despite their alleged distinct nature, both CM and EM variablesare positively related to our main measures of misconduct exposure M_Exp_{it}^{ℓ}, with $\ell \in \{\text{Geo}, \text{Brd}\}$ as it is showed in Table 6. This result suggests that the boards-induced and physical network can serve as a potential channel through which corporate misbehavior could be spreading.

As seen in Table 6, other characteristics of the firm are also correlated with misconduct. Thus, these univariate results are only indicative and must be taken with caution. For this reason, in Table 7, we study the misconduct spillover hypothesis through the lens of several multivariate regression models. Table 7 reports estimates of the following model across several specifications,

$$\begin{aligned}\text{M\_Measure}_{it} = \alpha + \text{Fixed\_Effects} + \gamma \times \text{Firm\_Characteristics}_{i,t-1} \\ + \underbrace{\beta_{\text{Brd}} \times \text{M\_Exp}_{it}^{\text{Brd}}}_{\text{Social Peer Effects}} + \underbrace{\beta_{\text{Geo}} \times \text{M\_Exp}_{it}^{\text{Geo}}}_{\text{Physical Peer Effects}} + \underbrace{\beta_{\text{Ind}} \times \text{M\_Exp}_{it}^{\text{Ind}}}_{\text{Industry Peer Effects}} + \varepsilon_{it}\end{aligned} \tag{3}$$

where the dependent variable M_Measure_{it} is an indicator variable in the case of the CM measure taking the value of one if the firm i is involved in a CM event at year t (according to Section 2.1.1), and 0 otherwise. In the case of EM, the dependent variable, M_Measure_{it} will denote the earnings management measure computed as explained in Section 2.1.2. The independent variables $\text{M\_Exp}_{it}^{\text{Brd}}$ and $\text{M\_Exp}_{it}^{\text{Geo}}$ correspond to our main exposure to misconduct variables described in Section 2.4.3. The vector $\text{Firm\_Characteristics}_{i,t-1}$ includes the firm i's size, age, ROA, cash holdings, market leverage, B/M, among other controls (including information about the characteristics of the board) as of the fiscal year-end before the misconduct variable's record. We also account for a battery of fixed

effects (at the firm-, industry-, and state-level) to reduce the potential problem of omitted variables and endogeneity. Importantly, since local social norms and corporate culture change slowly in time, the empirical strategy using location and firm-fixed effects can absorb part of these confounding influences.

The model is estimated with a panel conditional logit model in the case of CM. We first rely on the within firm variation of the data and therefore ask, among the firms that have misbehaved, when they did so. We also estimate pooled-data coefficients. In the case of EM we estimate a panel linear fixed effects model that also relies on the within firm variation of the data. Standard errors are robust to heteroskedasticity.

To further investigate the boards-induced network's ability to diffuse misbehavior among firms, and using model (3), we also explore the effect of several refinements to the definition of the social network. In particular, we construct our primary misconduct exposure variable $\text{M\_Exp}_{it}^{\text{Brd}}$ by concentrating on those board-to-board links generated by the allegedly more influencing board members. This is inspired by the preliminary results in Table 3 which show that board-to-board links appear to be more prominent among boards exhibiting above-median age, level of achievements, involvement in other activities as well as graduate education. Our objective is to pin down the channel through which board members' connections have an impact on the firms' choices to engage in misconduct.

3.1 Selection Model

Our battery of controls and fixed effects, and documenting ancillary implications of the hypothesis ease the concerns on the relation being the result of other processes not being considered. Yet, there is a particular source of endogeneity that stems from a potential multidimensional matching problem. We consider it formally to make sure that our effect is not explained away by matching. It also allows us to quantify the extent of selection and compare it to that of social relations. Quantifying the role of social and geographical networks in affecting firms misbehavior requires understanding the mechanism through which board members and firms endogenously match based on their observable and unobservable characteristics. For instance, in the same way board members may result appealing to certain firms due to (observable) characteristics such as education, age, gen-

der; firms may also prefer some (unobservable) board members' traits such as honesty. Similarly, board members sort into firms (company boards) conditional on geographical features and other firms' unobservable characteristics that might result highly attractive to potential board members. Consequently, board members might induce misbehavior in their firms because they are already dishonest, independent of the level of misbehavior occurring at their surrounding environment. In this context, if more dishonest board members sort into specific types of firms, then disentangling the effects of sorting and firms' networks influence becomes a challenging task: that is, sorting may create an endogeneity problem. In our analysis, we address this concern through the lens of a structural model based on a two-sided matching model (Sørensen [2007]) that exploits directors' characteristics in the market to separately identify and estimate the influence of firm characteristics, and sorting.

Our two-sided matching model can exploit characteristics of other directors in the market to separately identify and estimate the influence of firm characteristics, and sorting.[17]

The model has two parts. The first part consists of an outcome equation, which specifies the (average) corporate a director would incur when it chooses to take on a job as a board member on a given company. Given sorting, if we estimate this equation alone, we would have an endogeneity problem. Thus the second part of the model controls for sorting. This model is a generalization of the discrete choice models, allowing for interactions among the choices made by different directors. The matching model controls the sorting and selection of the observed job decisions and eliminates the bias in the estimation of the outcome equation. Appendix B describes the main characteristics of the model implemented.

[17]The decision of where to work also depends on where other directors decided to work. However, directors' misbehavior is independent of the other directors' characteristics (this is an identifying assumption). Thus other board member's features present a source of exogenous variation. This exogenous variation is similar to an instrumental variable, and the model uses it to identify influence and sorting.

4 Results

In this section, we use the empirical methodology described in Section 3 to show that both the physical and social networks have an effect on individual firms' future tendency to misbehave. In our analysis, we document a pervasive positive effect of firms' misconduct on their connecting neighbors' future misconduct rates. This result remains economically and statistically significant along two type of misconduct definitions (see Section 2.1.1 and 2.1.2) and after several robustness tests. In what follows, we start motivating our analysis by describing key features of the board-induced social network that later we link to firms' misconduct rates. We use this link to inspire the construction of our measure of exposure to misconduct; which we exploit extensively in a multivariate panel regression analysis.

4.1 Boards' Social Network Description

In this section we explore to what extent our firm-level board-induced social network exhibit properties that can facilitate the diffusion of information. First, we start analyzing the distribution of the firms' connections in the board-induced social graph. In fact, Figure 3 (A) shows the firms' degree distribution for different years in our sample; where a firm's degree captures the number of nodes in the graph (other firms) linked to it. To make the analysis clearer, Figure 3 (A) plots the log of a node's degree against the log of the frequency of nodes with that degree in the firms' boards-induced social graph. The resulting degree distribution exhibits thicker tails and larger dispersion compared to the Poisson degree distribution coming out of a randomly generated graph with a similar average degree that tends to drop more sharply. As is the case in other economic networks that have been studied (e.g. Bailey et al. [2018]), the majority of nodes of the firm-level board-induced social network have low degree; yet, a small number of nodes exhibits sizable degree.

To explore the connectivity structure along firms' neighborhood in the boards-induced social network, Figure 3 (B) plots firms' local clustering versus firms' degree. The local clustering coefficient of firm i measures, across all its connecting/neighboring firms, the proportion of firm pairs connected to each other. To some extent this feature is important

to understand since high local clustering may help to sustain social interaction and the diffusion of (mis-)behavior. Figure 3 (B) shows that less extensive networks (exhibiting lower degree) tend to be more clustered on average. This suggests that even if a firm connects to few other nodes in the network (i.e. low degree), its social neighborhood can still play an important role in diffusing information given the high connectivity among its connecting firms.

To complement the analysis presented in Table 4 Panel (B), Figure 3 (C) explores further similarities along connected firms in the network. Figure 3 (C) shows that firms tend to be connected, on average, to other firms similar to them in terms of their network degree. In particular, Figure 3 (C) illustrates a "degree correlation" feature that captures the tendency of high-degree nodes to be connected to other high-degree nodes. In our sample, the correlation of a firm's degree and the average degree of its connecting firms is above 70 percent. Also, the data show that until firms have substantially more than 3 times the average degree, their average connecting firm has more connecting firms than they do.

Lastly, Figure 3 (D) extends the analysis in Table 4 Panel (B) by addressing a potential concern regarding the geographic concentration of the board-induced social network links. The Figure shows percentiles of the cumulative distribution of connecting firms with headquarters ranging up to 1000 miles. Interestingly, Figure 3 (D) illustrates that a large fraction of the board-induced links corresponds to connections to geographically distant firms.

Thus, physical and social proximity are not the same. This pattern of the data allows us to exploit the information contained in the firm-level board-induced network to explore its role on misconduct diffusion as a channel independent to that of a network based on physical links which, by its nature, will weigh heavily on firms that are geographically close.

4.2 Firms' Networks and Misconduct Tendency

Parsons et al. [2018] document that firms' misconduct tends to cluster geographically, with most of its cross-sectional heterogeneity explained by a local factor, which they

argue corresponds to social norms. In this section, we add to this previous understanding by showing that an economically significant part of firms' misconduct tendency can also be attributed to firms' characteristics beyond geographical features. In particular, we highlight the importance of other ties playing a crucial role spreading out mispractices among linked firms. We hypothesize that one important channel of misconduct diffusion is related to the linkages created by the interaction of board members with directors at other firms. In particular, we propose and analyze the implications of a firm-level measure that captures this "social" proximity to misbehaving neighbors.

4.2.1 Univariate Analysis

Table 6 contains the summary statistics of our main misconduct exposure variables by distinct levels of misconduct. Higher levels of misconduct are related to several other firms' characteristics. Panel (A) shows that CM rates increase as firms become older, larger, more operationally efficient, and prone to exhibit higher levels of ESG disclosure, as well as analyst coverage. In terms of the board features, CM rates increases as board members are more involved in other activities, have greater achievements, and participate in multiple boards. Board members' average age, education, expertise, and female participation are also positively related to CM.

Panel (B) shows that the EM measure tends to decrease as firms become older, larger, and prone to exhibit higher levels of ESG disclosure and analyst coverage. In terms of the board features, the EM measure decreases as board members appear to involve in other activities, achievements, and multiple boards. Board members' average age, expertise, and female participation also reduce the EM level.

It is worth noting that even though several firms' characteristics appear to have an opposite effect on firms' misconduct depending on its source (CM and EM), the proposed measures of exposure to misconduct have an unequivocal reinforcing effect on firms' misconduct independent of its origin. Yet, given the significance differences across misconduct groups of several firms' characteristic, in the next section we undertake a multivariate panel data analysis that controls for these differences.

4.2.2 Multivariate Analysis: Baseline Results

Table 7 presents the main results of the paper; it provides the estimated coefficients of equation (3). In general, we find that both social peer effects and geographical distance matter for explaining corporate misbehavior. As can be seen, both measures of misbehavior exposure proposed in (1) have a positive and generally statistically significant relation to the future tendency to committing misconduct. These relations are robust to the addition of several time-varying firm and board-specific controls. As can be seen, the effects of social and geographical factors are largely independent of one another.

Industry peer effect measure defined in (2) have a positive and significant relation to the future tendency of committing EM, which is consistent with Parsons et al. [2018] who find that local culture matters for financial misconduct. This is not generally the case for CM, which covers a broader set of misconduct types beyond just misrepresentation of financial figures, where we find positive but not significant effects[18]. The inclusion of the industry exposure to misconduct does not change materially the magnitude of the effects of the geographical and social proximity measures.

Table 7, columns (1)-(8), reports the results obtained for explaining CM. In particular, both measures of misconduct exposure appear to have an unequivocal positive effect on predicting future CM rates. The marginal effect reported in Table 7 column (7) indicates that a 1 SD increase in a firm's geographical exposure to misconduct,[19] is associated to an increase in the firm's probability of committing misconduct of 13.25%.[20] Similarly, the marginal effectin column (7) shows that a 1 SD increase in a firm's social exposure to misconduct,[21] is associated to an increase in the firm's probability of committing misconduct of 3.67%.[22]

These effects are comparable to the estimates previously documented by the literature.

[18] Parsons et al. [2018] focus on financial misconduct only.

[19] According to Table 6, Panel (A) column (4); the cross-firm SD of $\text{M\_Exp}^{\text{Geo}}$ is 0.201 for those firms not committing CM. To interpret the marginal effect of $\text{M\_Exp}^{\text{Geo}}$ in Table 7, we equal the SD of the variable to 0.201.

[20] Table 2, Panel (A), All firms, column (3); shows that the average CM rate for the entire sample is about 0.135. Then, we have that $0.089 \times 0.201/0.135 \approx 13.25\%$.

[21] According to Table 6, Panel (A), column (4); the cross-firm SD of $\text{M\_Exp}^{\text{Brd}}$ is 0.099 for those firms not committing CM. To interpret the marginal effect of $\text{M\_Exp}^{\text{Brd}}$ in Table 7, we equal the SD of the variable to 0.099.

[22] This result comes from $0.05 \times 0.099/0.135 \approx 3.67\%$.

Particularly, Parsons et al. [2018] show that a 1% increase in the (contemporaneous) financial misconduct rates of a firm's local non-industry peers leads to an increase, on average, in the firm-level financial misconduct of about 10% of its mean.[23]

Below we provide a few examples to convey the economic magnitude of these effects. For instance, a reduction of 44 miles in the distance to other firms committing misconduct (1 SD, intensive margin)[24] —which increases $\text{M\_Exp}^{\text{Geo}}$ by 0.01 units —would result in a 0.66% higher probability of committing misconduct.[25] That is, being located 450 miles closer to other firms that commit misconduct (roughly the distance between Boston and Washington, and slightly more that that between Los Angeles and San Francisco) is associated with an almost 0.9 percentage point ($0.089 \times 0.01 \times 10$) increase in the probability of misconduct. A 1 SD increase in the average number of firms committing misconduct (extensive margin)[26] —which increases $\text{M\_Exp}^{\text{Geo}}$ by 0.012 units —[27] is associated to an increase in the probability of committing misconduct of 7.9%.[28]

Similarly, for CM, one can think of the effect of moving one connecting director of a firm to a misconducting company (intensive margin). Such a move —which is associated to an increase of $\text{M\_Exp}^{\text{Brd}}$ by 0.0625 units —[29] would result in a 2.31% higher

[23]Parsons et al. [2018] report an estimated coefficient for the main explanatory variable (Table 10) of ≈ 9.8, which implies that after a 1% increase in this main variable, the odds ratio of an average firm committing financial misconduct will increase by $e^{0.098} - 1 \approx 10.3\%$. Since the baseline average firm-level financial misconduct rate is 1.46%, this increase in the odds ratio will translate to an average firm-level financial misconduct rate of about 1.61% (= 1.46% + 15bps.). That is, an increase in the firm probability of misconduct of $\approx 10\%$ of its mean.

[24]Intensive margin: this equivalence is motivated by expressing the change in the exposure variable $(\overline{\text{M\_Exp}^{\star}} - \overline{\text{M\_Exp}})$ as a function of a perturbation ($\Delta > 1$) to the misbehaving firms' connecting distance C_{ij}. Omitting the time subscript,

$$\overline{\text{M\_Exp}^{\star}} = \frac{1}{N} \sum_{i}^{N} \frac{\sum_j^N C_{ij} M_j \mathbf{1}_{\{M_j > \widehat{M}\}} \Delta + \sum_j^N C_{ij} M_j \left(1 - \mathbf{1}_{\{M_j > \widehat{M}\}}\right)}{\sum_j^N C_{ij} \mathbf{1}_{\{M_j > \widehat{M}\}} \Delta + \sum_j^N C_{ij} \left(1 - \mathbf{1}_{\{M_j > \widehat{M}\}}\right)}$$

where $\widehat{M}$ is set to 0 and to the highest cross-sectional decile for the economic interpretation of the coefficient estimates of the CM and EM the regression, respectively.

[25]Equally, this result comes from $0.089 \times 0.01/0.135 \approx 0.66\%$.

[26]Extensive margin: this equivalence is motivated by expressing the change in the exposure variable $(\overline{\text{M\_Exp}^{\star}} - \overline{\text{M\_Exp}})$ as a function of an increase in the number of connecting firms committing corporate misconduct ($H > 0$). Omitting the time subscript,

$$\overline{\text{M\_Exp}^{\star}} = \frac{1}{N} \sum_{i}^{N} \frac{\sum_j^N C_{ij} M_j \mathbf{1}_{\{M_j > \widehat{M}\}} \Delta + \sum_j^N C_{ij} M_j (1 - \mathbf{1}_{\{M_j > \widehat{M}\}})}{\sum_j^N C_{ij} \mathbf{1}_{\{M_j > \widehat{M}\}} \Delta + \sum_j^N C_{ij} (1 - \mathbf{1}_{\{M_j > \widehat{M}\}})}$$

[27]Table 7, a 1 SD of the average number of misconducting firms equals about 61 firms (we compute the SD of the time series resulted from multiplying the second and the third column of Table 7).

[28]This marginal effect is computed as $0.089 \times 0.12/0.135 \approx 7.9\%$.

[29]Table 4 Panel (B) shows that on average, two "socially-connected" firms feature about 2.5 "board-

probability of committing misconduct.[30] Also, a 1 SD increase in the average number of socially-connecting companies committing misconduct (extensive margin) —which augments M_Exp^{Brd} by 0.205 units —,[31] results in an increase in the probability of committing misconduct of 7.59%.[32]

Table 7, columns (9)-(14), reports the results obtained for the case of EM. Analogous to our results for CM, the measures of geographical and social exposure exhibit a positive effect on predicting the degree of future EM. Column (14) indicates that, on average, a 1 SD increase in a firm's geographical exposure to misconduct,[33] is related to a 5.4% higher degree of earnings management.[34] Similarly, the marginal effect of the board-induced exposure to misconduct reported shows that a 1 SD increase in a firm's social exposure to misconduct,[35] is associated a 4.42% higher measure of EM.[36]

Again, a reduction of 44 miles in the distance to other firms committing misconduct (intensive margin) will increase M_Exp^{Geo} by 0.033 units; which is associated to an increase in the EM measure of 3.3%.[37] From the extensive margin, a 1 SD increase in the average number of firms exhibiting an EM measure in the highest percentile (0.004 units higher M_Exp^{Geo}) relates to an increase in the EM measure by 0.44%.[38]

The economic significance of the M_Exp^{Brd} implied by its elasticity on the EM measure indicates that moving one connecting director of a firm to a misconducting company (intensive margin)[39] —which will augment the firm's M_Exp^{Brd} by 0.087 units —results in an increase of firm's EM measure of 9.62%.[40] Likewise, a 1 SD increase in the average number of socially-connecting companies committing misconduct (extensive margin) results in an increase of firm's EM measure of 12.93%.[41]

board social" links which involve board members overlapping during about 4.4 years in the past.

[30] This estimate is derived as $0.05 \times 0.0625/0.135 \approx 2.31\%$.

[31] A 1 SD of average # of socially-connecting misconducting firms equals about 10 firms in our sample.

[32] Similarly to our previous calculations, this effect comes from $0.05 \times 0.205/0.135 \approx 7.59\%$.

[33] According to Table **??**, Panel (B), column (4); the cross-firm SD of M_Exp^{Geo} is about 0.054.

[34] Table 2, Panel (B), column (2); shows that average EM measure for the entire sample is about 0.057. Then, we have that $0.057 \times 0.054/0.057 \approx 5.4\%$.

[35] According to Table 6, Panel (B), column (4); the cross-firm SD of M_Exp^{Brd} is about 0.04.

[36] Analogous to the others results, we have that $0.063 \times 0.04/0.057 \approx 4.42\%$.

[37] Consequently, we obtain this effect as $0.057 \times 0.033/0.057 \approx 3.3\%$.

[38] Where this percentage is calculated as $0.063 \times 0.004/0.057 \approx 0.44\%$.

[39] That is, to a firm showing an EM at the highest EM-percentile.

[40] Given the 0.087 increase of the social exposure measure, we obtain this result as $0.063 \times 0.087/0.057 \approx 9.62$.

[41] As the previous results showed in this section, this calculation comes from $0.063 \times 0.117/0.057 \approx$

4.2.3 Multivariate Analysis: Heterogeneity in Social Connections

We extend our analysis by studying further the idea of social proximity to misconduct by asking whether different kinds of social board features have heterogeneous effect on the diffusion of misconduct. To this end, we regress new models including interactions of our social misconduct exposure with distinct board features (i.e. expertise, achievements, experience (age), and cross-board participation).

Table 8, columns (1)-(4), show the output of our multivariate analysis for CM. The estimated coefficients show that interaction terms amplifies the role of a firm's social network in explaining its tendency to misbehave. Firm's social exposure on misconduct tendency is boosted when boards have greater expertise (experience in the industry), business achievements, higher experience (age), more cross-boards participation leads to a significant increase of the marginal effects of the socially-induced exposure to misconduct (although not always significantly so).

Table 8, columns (5) and (8), show that for EM interaction terms focusing on those boards exhibiting a greater expertise and cross-board participation, can also amplify the ability of our exposure-to-misconduct measure to explain firms' future degree of the EM measure.

4.2.4 Multivariate Analysis: Heterogeneity in Firms' Features

In Table 9 we investigate whether the extent of diffusion of misconduct occurring along the social network differs across firms depending on differences in their fundamental characteristics. To do this, we interact the exposure variables with a number of firm characteristics to see how the elasticity to the exposure of misconduct changes with each one.

For CM, Table 9 shows that the effect of social-proximity to misconduct on firms' future misbehavior tendency increases more (relative to our baseline results in Table 7) for those featuring *below*-median levels of total assets (column (1)), ESG disclosure (column (2)), and analyst coverage (column (4)), as well as for those exhibiting an *above*-median fraction of board members participating in multiple boards (column (5)). A similar pattern arises

12.93%.

for EM for those firms featuring *below*-median levels of total assets (column (6)) and *above*-median fraction of board members participating in multiple boards (column (10)) These results altogether suggest that spillovers related to misbehavior appear to be stronger when the actions are less likely to be detected, such as when the firms are small, they provide little information, and when are not thoroughly followed by analysts. Of course, these results have to be interpreted with caution since these characteristics may capture other attributes of the firm. For instance, board members of smaller firms should bear a major stake of wealth effects of their decisions as pointed out by Jensen and Meckling [1976]; and therefore, board members could be more cautious when undertaking these practices.

4.2.5 Multivariate Analysis: Selection Bias

Following previous literature on economic networks, we interpret our baseline estimates with caution as our boards-induced social network and physical network can be endogenously co-determined.

To address this specification challenge, we use our rich data of boards' features to estimate a structural model à la Sørensen [2007] that controls for the potential endogenous matching between firms and boards. Indeed, a structural model based on a two-sided matching model can exploit characteristics of other boards in the market to separately identify and estimate, the influence of firms' induced-networks and the extent of the sorting on the firms' tendency to commit misconduct.

Yet, as the estimation of the structural model implemented is numerically intensive, we modify our baseline specification to make it more parsimonious and numerically tractable by the estimation procedure.[42] In particular, following Sørensen [2007], we estimate our specification through the lens of a panel-conditional Poisson model where we also replace the year fixed-effects with a linear time variable to make the specification more tractable to the procedure used.

For CM, Table 10 columns (1)-(2) show the estimates of the panel Poisson model which does not correct for the potential sample selection bias from unobserved outcomes in the

[42]The numerical estimation of the model is performed using the R-package "matchingMarkets" (Klein [2015]), available at *https://cran.r-project.org/web/packages/matchingMarkets/matchingMarkets.pdf*

firms-boards matching markets. In accordance with our previous analysis, both measures of misconduct exposure appear to have a strong positive effect on predicting future misconduct tendency. However, if firms and boards match non-randomly on unobserved characteristics correlated with both control variables and misconduct measures, our regression estimates will in general be biased.

For CM, Table 10 columns (3)-(4) report the output from estimating the structural model proposed by Sørensen [2007] and Klein [2015]. The sign and significance of the exposure coefficients are still very significant, showing that our effect is not explained away by the sort of matching we describe. Nevertheless, their magnitudes get reduced. Based on the estimated parameter $\kappa > 0$ of the model which captures a positive covariance between the error terms in the structural model's valuation and outcome equations (Klein [2015]), we interpret the reduction of the marginal effects of main variables of interest as a manifestation of the existence of unobserved characteristics preferred by firms and boards, on average; and which, tend to affect the firms' misconduct tendency in a positive way.

Notwithstanding the potential bias introduced by unobserved variables not included in our analysis, the estimates of the structural model show that even if our baseline analysis had the ability to control for these unobserved variables, the link between our measures of exposure to misconduct and the firms' tendency to misbehave would still prevail. Indeed, Table 10 columns (5)-(6) confirm the relevance of our proposed variables to explain the degree of EM as well, even in the presence of some degree of selection bias.

4.2.6 Multivariate Analysis: Heterogeneity in Local Norms

Hitherto, we have used the state where the firm's headquarters is located as the geographic unit to set the location fixed effects to control for geographic time-invariant characteristics, including local norms. Now, we turn to alternative definitions of the local area to set fixed effects, which are geographically more granular, in order to test the robustness of our exposure to misconduct measures against local norms' effects.

Table 11 presents the results of our benchmark model but using alternative geographic units to compute location fixed effects. The first column in each panel is equivalent to that

of our benchmark specification because our baseline geographic unit definition is a state. In column (2), the geographical unit still being the state but the estimation considers just firm-year observations that could be matched with a metropolitan statistical area (MSA), therefore, the differences between column (1) and (2) are due just for sample reduction. Column (3) considers as local area the metropolitan statistical area (MSA) where the firm's head office is situated. In the following columns, we partition each MSA into two complementary areas delimiting an inner part given by a closed ball of radius $r = \{50 \text{ Km}, 35 \text{ Km}, 20 \text{ Km}\}$ depicted from the MSA's centroid, and an outer part given by the complement of the closed ball with respect to the MSA polygon. For example, column (4) considers that firms, inside a certain MSA but located at a distance equal or less than 50 Km from the MSA's centroid and those located at a distance greater than 50 Km, are part of different geographic entities and consequently subject to different social local norms.

The estimated coefficients show that our baseline results are robust to other geographic units selected to set the area fixed effects which are intended to control local norms. Then, if local norms are intended to be time-invariante

4.2.7 Multivariate Analysis: Further Results

In this section we discuss some additional results on the role of peer effects and norms on the diffusion of misconduct.

- Complements or Substitutes

  There is evidence that EM contagion is exacerbated when the exposed firm is closer to the one committing misconduct (and when they share a common auditor) (Chiu et al. [2013]). Consequently, we explore the potential degree of complementarity of social exposure in explaining misconduct. We do this by adding to the specification the interaction of the main explanatory variables with board-induced exposure to misconduct. The results are presented in table 12. We find no clear indication that the three measures of peer effects reinforce each other. If anything, in the case of CM, social and geographical exposure to misconduct could be substitutes. Also, the board-induced exposure effect does not vary with industry exposure to misconduct.

- Decay

  In Table 13 we add to the baseline model lags of both the social and the physical exposure to misconduct measures to have a sense of whether the effects are maintained or decay as time passes. The inclusion of the lagged physical exposure to misconduct exhibits a positive but not significant effect. On the contrary, when looking at CM, the lagged social exposure to misconduct is statistically significant and its effect is negative. This means that, while the effect of geographical exposure to misconduct is permanent, that of the social exposure washes away with time since the cumulative effect of the misconduct exposure -that is, the cumulative sum of the coefficients- converges to zero in two periods, on average. The direction of the effect is the same in the case of EM, although the coefficients are not estimated as precisely.

- Types of Corporate Misconduct

  Table 14 shows results derived from restricting the sample according to different disjoint types of corporate misconduct. We define 4 big types of corporate misconduct incurred by firms the most: Competition Consumer-related offenses in column (1), Employment-related offenses in column (2), Environment-related offenses in column (3), and Safety-related offenses in column (4). Besides, Table 14 column (5) presents the composite of the entire corporate misconduct sample. The results indicate that Board-induced exposure to misconduct has a positive effect over all types of corporate misconduct, but not always significant due to sample size reduction. Then, there would not exist opposing effects interacting over different types of corporate misconduct. Additionally, industry peer effects seems to have a stronger effect in employment-related offenses.

- CEO Duality

  From Table 15 we observe that the firms in which the CEO has a dual role are no more affected by the misconduct of firms that are closer or more related to them. For CM, there would be a negative impact over firm's misconducting behavior if the CEO serves as a board member as well. On the contrary, this same phenomenon

looks to be positive for EM. Notwithstanding, in both cases, CEO Duality is not statistically significant.

- Neighbors' Degree Centrality

  Table 16 inspects potential effects of being connected with high degree centrality firms (i.e. influencers). To do this, we add to the benchmark specification the interaction betwee the board exposure index and a dummy variable that takes the value of one if the firm is connected with at least one high degree centrality firm. We define a high degree centrality firm as one situated at the percentile 99th of the C_{ijt} distribution. We found that the effect of being connected with at least one influencer is always positive. Although the coefficients are not statistically significant, there is some indication of the existence of some firms being more relevant in the process of expansion of misconduct.

- Neighbors' Penalty Level

  In Table 17 we inquire into the effects of being connected with high-penalty firms. To this end, for each firm we calculate the weighted-average of neighbors' penalty and then we add a dummy variable taking the value of one if the weighted-average neighbors' penalty of the firm is in the 99th percentile of the distribution. We observe a negative effect and statistically significant at the 10% for CM. This suggests that firms learn about the expected costs of committing misconduct by looking at neighboring firms.

- Firm's Misconduct Culture

  Table 18 shows the results obtained from a sample splitting between those firms with a low misbehaving culture and those with a high misbehaving culture. We proxy firm's misconducting culture according to the number of violations incurred historically over the 14-year span (2005-2018). Columns (1) to (6) show a bigger and significant effect of board exposure to misconduct relative to columns (7) to (12). This suggests that once firms adopt a misconducting culture, they maintain this behavior regardless of what connected firms are doing. Conversely, geographical

exposure to misconduct seems to be stronger for firms with a high misconducting culture relative to those firms with a low-misconducting culture. It seems to be the case that culture disseminates more quickly when firms are geographically closer.

5 Concluding Remarks

This paper argues that both norms and social interactions matter for the decisions of the firm. In particular, associating local norms with physical closeness and shared (past) professional experience of board members with the degree of interaction, we document that a firm's tendency to engage in future corporate misconduct and earnings management increases with its social proximity to firms exhibiting similar past behavior. This is specially the case when the links between firms involves directors likely to be more influential, and for firms where these conducts are likely to be less detectable.

Investors and the public alike are paying increasing attention to the way corporations conduct business. Many conducts that were acceptable before are no longer today. Business leaders have had a prominent role in trying to extend the idea of firms being good citizens. Our results help in assessing the likely impact of these changing attitudes on the behavior of firms. Knowing how norms affect behavior helps predicting what will be the effect of these new standards. Underscoring how the interaction between top officers and the behavior of influential leaders affects, tells something about the dynamics of the process. That is, on how and when the new way of thinking about the firm will actually materialize into a different way of behaving. From the policy standpoint, going after a few influential officers may be easier than changing long standing norms.

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Table 1: Violation Tracker Sample - Corporate Misconduct (CM)

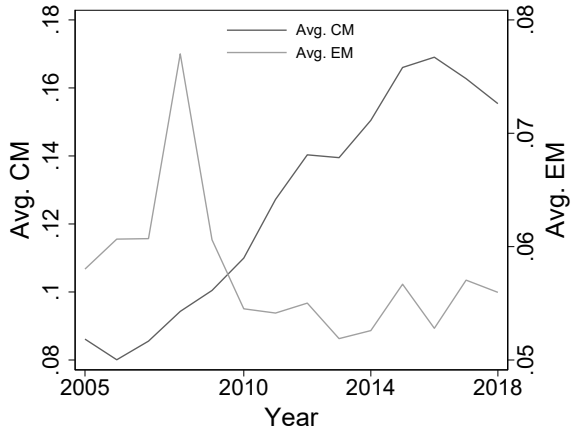
Primary Offense	Freq.	US bil.	Primary Offense	Freq.	US bil.
workplace safety or health vio	13376	0.3181	drug or medical equipment safe	34	2.7013
railroad safety violation	8804	0.1001	anti-money-laundering deficien	30	4.4083
environmental violation	8282	75.6253	interest rate benchmark manipu	30	7.4636
wage and hour violation	2394	7.3781	discriminatory practices	26	0.3933
aviation safety violation	2211	0.1684	financial institution supervis	26	0.1242
labor relations violation	1403	0.4401	pipeline safety violation	23	0.0015
employment discrimination	611	2.2088	hhs civil monetary penalties	23	0.0279
false claims act and related	588	25.5617	federal leasing royalty violat	23	0.1124
consumer protection violation	516	11.9569	excise tax violation	22	0.0101
investor protection violation	329	56.9724	energy market manipulation	21	4.2739
benefit plan administrator vio	265	5.2293	fraud	21	0.9856
motor vehicle safety violation	199	2.5131	energy conservation violation	18	0.0006
offshore drilling violation	180	0.0086	workplace whistleblower retali	16	0.0101
export control violation	164	0.4104	americans with disabilities ac	12	0.0285
banking violation	163	17.3611	tobacco litigation	10	0.0081
family and medical leave act	151	0.0024	servicemembers civil relief ac	7	0.0522
foreign corrupt practices act	151	5.4943	food safety violation	6	0.0179
securities issuance or trading	124	5.7205	foreign exchange market manipu	5	2.7001
price-fixing or anti-competiti	112	6.7488	premerger notification violati	4	0.0031
aviation consumer protection v	110	0.2481	bankruptcy professional violat	4	0.1391
economic sanction violation	109	2.4931	work visa violations	4	0.0355
telecommunications violation	107	1.4677	civil contempt	4	0.0051
accounting fraud or deficienci	100	4.3554	agribusiness violation	3	0001
toxic securities abuses	98	100.0652	child labor or youth employmen	3	0.0004
off-label or unapproved promot	81	20.8568	uniformed services employment	3	0.0002
nursing home violation	72	0.0045	maritime violation	3	0.0003
mortgage abuses	68	61.2373	fair credit reporting act viol	3	0.0121
nuclear safety violation	57	0.0413	service contract act	2	0.0013
privacy violation	52	0.1442	illicit political contribution	2	0.0241
energy market violation	51	0.2803	campaign finance violation	2	0.0005
kickbacks and bribery	51	2.2143	student loan abuses	2	0.0641
employment screening violation	46	0.1265	medicare coverage gap discount	1	0.0001
product safety violation	44	0.0779	sexual harassment	1	0001
tax violations	40	4.0129	payday lending violation	1	0.0191
medicare parts c and d enforce	40	0.0186	obstruction of justice	1	0.0002
controlled substances act viol	39	0.5701	illegal gambling business	1	0.0.0001
data submission deficiencies	36	0.3032	insider trading	1	0.0.0109
Total	41224	394.9633		398	20.6418

Table 1 reports details of the primary offenses included in the Violation Tracker firm-year file from 2005 to 2018. Observations considered are linked to a parent firm with available financial information at the time of the agency's report.

Table 2: Misconduct over Time

	Panel (A)						Panel (B)					
	x = Corporate Misconduct						x = Earnings Management (EM)					
	All firms			Firms with CM variation								
Year	Obs.	Mean	Std	Obs.	Mean	Std	Obs.	Mean	Std	p25	p75	p75
2005	3171	0.096	0.295	741	0.325	0.469	2638	0.057	0.065	0.016	0.037	0.072
2006	3315	0.088	0.283	753	0.303	0.460	2508	0.060	0.068	0.016	0.039	0.075
2007	3246	0.096	0.295	779	0.317	0.466	2418	0.060	0.070	0.016	0.037	0.077
2008	3141	0.105	0.307	805	0.324	0.468	2314	0.076	0.081	0.023	0.049	0.096
2009	3014	0.113	0.317	813	0.337	0.473	2276	0.060	0.064	0.018	0.040	0.076
2010	2977	0.124	0.330	827	0.360	0.480	2241	0.054	0.064	0.015	0.034	0.068
2011	2828	0.141	0.349	843	0.390	0.488	2141	0.053	0.061	0.016	0.033	0.068
2012	2699	0.157	0.364	857	0.414	0.493	2024	0.054	0.064	0.015	0.034	0.068
2013	2613	0.156	0.363	867	0.389	0.488	1972	0.050	0.059	0.014	0.032	0.063
2014	2556	0.169	0.374	886	0.403	0.491	1956	0.052	0.061	0.015	0.032	0.063
2015	2573	0.182	0.386	896	0.436	0.496	1865	0.055	0.061	0.016	0.035	0.068
2016	2625	0.178	0.382	904	0.431	0.496	1882	0.052	0.060	0.015	0.033	0.066
2017	2646	0.171	0.376	914	0.404	0.491	1933	0.057	0.065	0.017	0.038	0.072
2018	2581	0.162	0.369	905	0.365	0.482	1875	0.056	0.065	0.016	0.036	0.065
All	39985	0.135	0.342	11790	0.374	0.484	30043	0.057	0.066	0.016	0.036	0.072

Panel (C)



Panel (D)

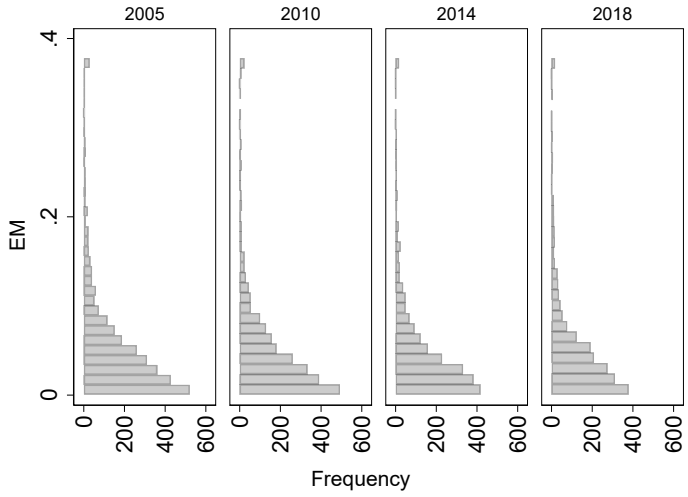


Table 2 (A) reports CM and EM measures over time by showing number of firm-year observations, and descriptive statistics of distribution. **Table 2** (B) illustrates the average CM and EM over time. **Table 2** (C) shows the evolution of the EM distribution over time.

Table 3: Boards-induced Social Network at the Board-Level

		Panel(A)							Panel(B)						
		# Brd-to-Brd connections, by Board							Δt Brd-to-Brd connections, by Board						
		Mean	Std	p5	p25	p50	p75	p95	Mean	Std	p5	p25	p50	p75	p95
All		15.8	23.5	1.0	4.0	9.0	18.0	55.0	4.3	3.1	1.0	2.0	3.5	5.5	10.1
Age	Low	14.1	23.4	1.0	3.0	7.0	15.0	50.0	3.6	2.7	1.0	2.0	3.0	4.5	8.6
	High	18.8	23.2	2.0	6.0	12.0	22.0	61.0	5.5	3.4	1.5	3.2	4.8	7.0	12.0
Achievement	Low	15.6	23.1	1.0	4.0	9.0	18.0	54.0	4.3	3.1	1.0	2.1	3.5	5.5	10.1
	High	21.9	31.6	1.0	5.0	11.0	26.0	78.0	4.0	2.9	1.0	2.0	3.3	5.1	9.2
Other Activities	Low	15.1	22.3	1.0	4.0	9.0	17.0	52.0	4.3	3.1	1.0	2.1	3.6	5.5	10.3
	High	23.8	33.4	1.0	5.0	12.0	30.0	84.0	3.7	2.6	1.0	2.0	3.1	4.8	8.3
Grad. Education	No	14.9	23.4	1.0	4.0	8.0	17.0	50.0	4.5	3.3	1.0	2.0	3.6	5.8	11.0
	Yes	16.8	23.5	1.0	4.0	9.0	20.0	60.0	4.1	2.7	1.0	2.1	3.5	5.2	9.0
Foreign	No	16.1	24.0	1.0	4.0	9.0	18.0	55.0	4.3	3.1	1.0	2.0	3.5	5.6	10.3
	Yes	13.4	18.6	1.0	3.0	7.0	16.0	50.0	4.0	2.5	1.0	2.3	3.5	5.0	8.4
Women	No	15.5	23.2	1.0	4.0	9.0	18.0	53.0	4.4	3.1	1.0	2.2	3.6	5.6	10.3
	Yes	17.6	25.3	1.0	4.0	9.0	20.0	65.0	3.6	2.8	1.0	1.9	2.9	4.6	9.0

Table 3 reports details, at the board-level, of the boards-induced social network described in Section 2.2 for a representative year in our sample (year 2017). "Low" ("High") row labels represent the below- (above-) median board group according to the variable indicated in the first column.

Table 4: Boards-induced Social Network at the Pairing Firms- and Firm- Level

Panel (A): At the Pairing Firms-Level

		# of connected board members, by Firm					# of Brd-to-Brd connections, by Firm					Δt Brd-to-Brd connections, by Firm				
		Mean	Std	p25	p50	p75	Mean	Std	p25	p50	p75	Mean	Std	p25	p75	p50
All		1.6	1.9	1.0	1.0	1.0	2.5	5.8	1.0	1.0	2.0	4.4	3.3	2.0	6.0	3.5
Same Industry	No	1.6	1.9	1.0	1.0	1.0	2.3	4.4	1.0	1.0	1.0	4.4	3.4	2.0	6.0	3.5
	Yes	1.9	2.1	1.0	1.0	2.0	3.9	10.5	1.0	1.0	2.0	4.2	3.1	2.0	5.9	3.3
Same State	No	1.5	1.8	1.0	1.0	1.0	2.1	3.7	1.0	1.0	1.0	4.3	3.3	2.0	6.0	3.1
	Yes	2.2	2.6	1.0	1.0	2.0	5.0	12.1	1.0	1.0	3.0	4.7	3.3	2.0	6.1	4.0
Similar levels of:																
B/M	No	1.6	1.8	1.0	1.0	1.0	2.3	4.6	1.0	1.0	1.0	4.4	3.4	2.0	6.0	3.5
	Yes	1.7	2.0	1.0	1.0	1.0	2.7	6.5	1.0	1.0	2.0	4.4	3.3	2.0	6.0	3.5
Ln(Total assets)	No	1.5	1.6	1.0	1.0	1.0	1.9	3.1	1.0	1.0	1.0	4.3	3.4	2.0	6.0	3.0
	Yes	1.7	2.0	1.0	1.0	1.0	2.7	6.5	1.0	1.0	2.0	4.4	3.3	2.0	6.0	3.6
Age	No	1.5	1.7	1.0	1.0	1.0	2.0	3.4	1.0	1.0	1.0	4.3	3.3	2.0	6.0	3.1
	Yes	1.7	2.1	1.0	1.0	1.0	2.8	7.0	1.0	1.0	2.0	4.4	3.3	2.0	6.0	3.5

Panel (B): At the Firm-Level

		# of connected firms, by Firm									
		implied by Brd-to-Brd *historical* links					implied by Brd-to-Brd *current* links				
		Mean	Std	p25	p50	p75	Mean	Std	p25	p50	p75
All		66.8	101.6	15.0	47.0	97.0	26.4	41.3	6.0	17.0	38.0
Same Industry	No	57.2	92.6	12.0	35.0	80.0	21.9	33.7	5.0	13.0	31.0
	Yes	9.7	19.7	1.0	3.0	9.0	4.5	12.1	0.0	1.0	4.0
Same State	No	57.4	89.1	11.5	37.0	79.5	22.0	30.6	4.0	14.0	31.0
	Yes	9.5	17.0	1.0	4.0	12.0	4.4	13.6	0.0	2.0	5.0
Similar levels of:											
B/M	No	29.7	51.2	6.0	18.0	41.0	11.4	19.0	2.0	7.0	14.0
	Yes	37.2	53.4	8.0	24.0	55.5	15.0	24.0	3.0	9.0	22.0
Ln(Total assets)	No	18.9	20.9	5.0	14.0	26.0	6.7	8.1	2.0	5.0	9.0
	Yes	48.0	88.6	7.0	22.0	71.0	19.7	37.2	3.0	9.0	29.0
Age	No	29.0	52.6	6.0	19.0	40.0	10.8	15.6	2.0	7.0	15.0
	Yes	37.8	53.0	8.0	23.0	54.0	15.6	27.8	3.0	9.0	21.0

Table 4 Panel (A) [Panel (B)] reports details, at the pairing firms- [firm-] level, of the boards-induced social network described in Section 2.2 for a representative year in our sample (year 2017). "No" ("Yes") row labels indicate that the pairing firms belong to a different (the same) half of the data sample according to the variable in the first column. Table 4 Panel (B) contrasts the firms' proximity statistics implied by the boards' *historical* as well as *current* connections to other board members.

Figure 2: Apple Inc.'s Top-10 Social-based Closest Firms

Panel (A): Year 2011

Panel (B): Year 2017

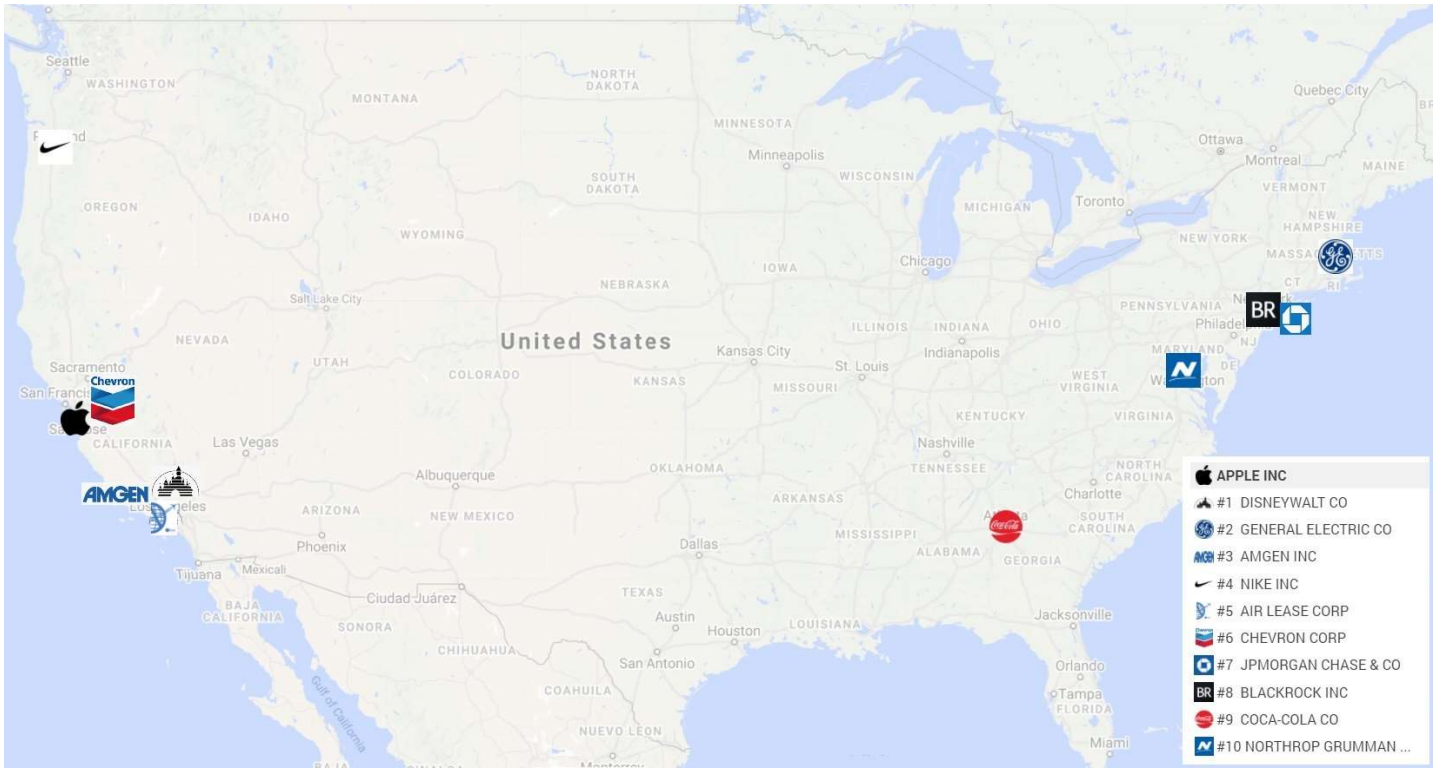


Figure 2 illustrates in the U.S. map the top-10 social-based closest firms for Apple Inc. in 2011 and 2017. Firms in plots' legends are sorted based on the social-proximity measure to Apple Inc.

Figure 3: Boards' Social Network Description

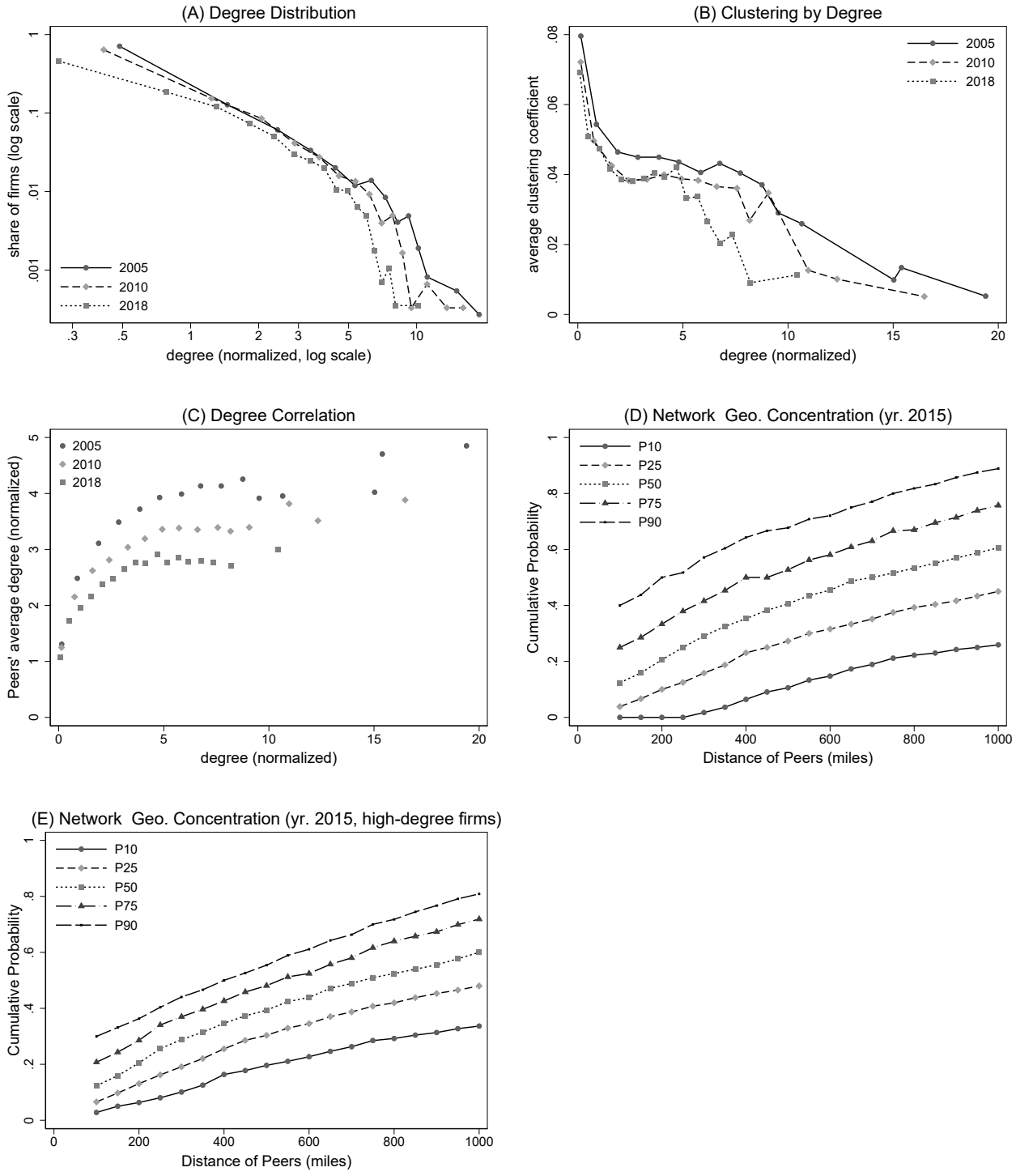


Figure 3 shows summary statistics on the boards graph among US-based corporations for different years. Panel A shows the correlation between a firm's (normalized) degree centrality and the probability of observing a node with that (normalized) degree centrality. Panel B shows the average clustering coefficient for firms of varying normalized degrees. Panel C shows the average normalized degree centrality of a firm's peers by the normalized degree centrality of the own firm. Panel D describes the geographic concentration of board-based company networks. It shows, for various distances, percentiles of the cumulative distribution of a firm's # of peers living within the respective geographic distance.

Table 5: Exposure to Misconduct over Time

Panel (A)

x = Corporarte Misconduct (CM)

	M_Exp^{Geo}(x)						M_Exp^{Brd}(x)					
Year	Obs.	Mean	Std	p25	p50	p75	Obs.	Mean	Std	p25	p50	p75
2005	741	0.094	0.074	0.051	0.079	0.115	741	0.248	0.168	0.100	0.249	0.376
2006	753	0.103	0.081	0.057	0.085	0.123	753	0.268	0.166	0.135	0.275	0.392
2007	779	0.104	0.080	0.057	0.091	0.126	779	0.282	0.179	0.138	0.288	0.413
2008	805	0.106	0.082	0.062	0.092	0.121	805	0.298	0.177	0.168	0.302	0.437
2009	813	0.113	0.085	0.065	0.097	0.130	813	0.323	0.183	0.186	0.330	0.454
2010	827	0.118	0.089	0.068	0.100	0.140	827	0.344	0.187	0.216	0.344	0.473
2011	843	0.124	0.099	0.070	0.104	0.150	843	0.363	0.193	0.235	0.367	0.489
2012	857	0.137	0.111	0.076	0.114	0.164	857	0.385	0.191	0.252	0.394	0.512
2013	867	0.145	0.114	0.082	0.119	0.172	867	0.399	0.194	0.273	0.419	0.538
2014	886	0.151	0.114	0.087	0.125	0.181	886	0.406	0.194	0.281	0.429	0.539
2015	896	0.153	0.105	0.090	0.133	0.185	896	0.426	0.197	0.305	0.451	0.567
2016	904	0.164	0.122	0.092	0.140	0.197	904	0.450	0.201	0.334	0.478	0.596
2017	914	0.166	0.120	0.095	0.144	0.197	914	0.443	0.194	0.330	0.470	0.584
2018	905	0.167	0.121	0.100	0.142	0.197	905	0.426	0.195	0.307	0.447	0.566
All	11790	0.133	0.105	0.073	0.110	0.163	11790	0.366	0.199	0.222	0.376	0.507

Panel (B)

x = Earnings Management (EM)

	M_Exp^{Geo}(x)						M_Exp^{Brd}(x)					
Year	Obs.	Mean	Std	p25	p50	p75	Obs.	Mean	Std	p25	p50	p75
2005	2638	0.170	0.038	0.153	0.170	0.184	2638	0.098	0.067	0.064	0.088	0.123
2006	2508	0.168	0.036	0.151	0.168	0.181	2508	0.100	0.066	0.069	0.091	0.125
2007	2418	0.163	0.035	0.145	0.163	0.176	2418	0.099	0.064	0.068	0.091	0.125
2008	2314	0.175	0.040	0.158	0.173	0.188	2314	0.110	0.066	0.077	0.103	0.136
2009	2276	0.179	0.039	0.162	0.178	0.194	2276	0.112	0.066	0.079	0.104	0.138
2010	2241	0.178	0.038	0.161	0.176	0.193	2241	0.110	0.063	0.077	0.101	0.138
2011	2141	0.154	0.039	0.135	0.151	0.169	2141	0.094	0.055	0.064	0.087	0.120
2012	2024	0.149	0.037	0.130	0.145	0.163	2024	0.090	0.057	0.059	0.081	0.112
2013	1972	0.149	0.039	0.128	0.145	0.164	1972	0.084	0.050	0.057	0.075	0.105
2014	1956	0.148	0.038	0.126	0.145	0.165	1956	0.081	0.046	0.056	0.074	0.101
2015	1865	0.148	0.038	0.129	0.145	0.163	1865	0.080	0.045	0.055	0.075	0.099
2016	1882	0.147	0.041	0.127	0.144	0.162	1882	0.082	0.052	0.057	0.076	0.103
2017	1933	0.152	0.041	0.130	0.148	0.167	1933	0.084	0.053	0.057	0.078	0.106
2018	1875	0.155	0.045	0.129	0.150	0.173	1875	0.076	0.052	0.048	0.070	0.101
All	30043	0.161	0.040	0.138	0.159	0.179	30043	0.094	0.060	0.062	0.086	0.119

Panel 5 (A) shows time-series descriptive statistic of the firms' exposure to **corporate misconduct** M_Exp^{ℓ}_{it}(CM) implied by both the physical network and the boards-induced social network. Analogously, **Panel 5 (B)** shows time-series descriptive statistic of the firms' exposure to **earnings management** M_Exp^{ℓ}_{it}(EM) implied by both the physical network and the boards-induced network.

Table 6: Firm-level Characteristics across Firms' Misconduct Tendency

Panel (A)

x = Corporate Misconduct (CM)

	M_Event(x) = 0						M_Event(x) = 1							
	Obs.	Mean	Std	p25	p50	p75	Obs.	Mean	Std	p25	p50	p75	Diff.	p-value
M_Exp^{Geo}(x)	7383	0.339	0.201	0.181	0.344	0.485	4407	0.411	0.186	0.291	0.427	0.540	0.072	0.000
M_Exp^{Brd}(x)	7383	0.127	0.099	0.069	0.106	0.157	4407	0.144	0.114	0.079	0.118	0.172	0.017	0.000
Ln(Total Assets)	7383	7.696	1.709	6.516	7.541	8.782	4407	8.421	1.779	7.158	8.250	9.630	0.725	0.000
Age	7383	26.887	16.376	14.000	22.000	39.000	4407	32.846	18.619	17.000	29.000	50.000	5.959	0.000
ROA	7383	0.126	0.110	0.073	0.122	0.177	4407	0.137	0.088	0.086	0.131	0.181	0.011	0.000
Cash Holdings	7383	0.137	0.146	0.031	0.084	0.195	4407	0.105	0.110	0.027	0.069	0.148	-0.031	0.000
Leverage	7383	0.215	0.202	0.049	0.162	0.330	4407	0.245	0.199	0.096	0.195	0.362	0.030	0.000
B/M	7383	0.671	0.639	0.314	0.518	0.821	4407	0.647	0.699	0.307	0.503	0.799	-0.024	0.066
Tobin's Q	7383	1.829	1.194	1.099	1.460	2.114	4407	1.735	0.987	1.107	1.444	2.004	-0.094	0.000
Annual Return	7383	0.169	0.538	-0.085	0.118	0.340	4407	0.163	0.441	-0.065	0.128	0.326	-0.006	0.527
Ret. Volatility	7383	0.102	0.057	0.066	0.090	0.123	4407	0.094	0.055	0.059	0.081	0.113	-0.008	0.000
ESG Disclosure	7383	0.142	0.143	0.000	0.150	0.214	4407	0.203	0.162	0.000	0.192	0.290	0.061	0.000
Analyst Coverage	7383	8.667	7.917	3.000	6.000	13.000	4407	11.452	8.096	5.000	10.000	17.000	2.785	0.000
Dir. Expertise	7383	0.936	0.193	1.000	1.000	1.000	4407	0.958	0.140	1.000	1.000	1.000	0.022	0.000
Dir. Other Act.	7383	0.158	0.155	0.000	0.143	0.250	4407	0.195	0.171	0.000	0.167	0.300	0.037	0.000
Dir. Grad. Educ.	7383	0.517	0.247	0.333	0.545	0.700	4407	0.553	0.220	0.400	0.571	0.714	0.036	0.000
Dir. Achievers	7383	0.108	0.134	0.000	0.091	0.182	4407	0.129	0.147	0.000	0.100	0.200	0.021	0.000
Dir. Age	7383	0.754	0.219	0.667	0.800	0.889	4407	0.782	0.183	0.692	0.800	0.900	0.028	0.000
Dir. Women	7383	0.127	0.117	0.000	0.125	0.200	4407	0.150	0.115	0.083	0.143	0.222	0.023	0.000
Dir. Multi-Boards	7383	0.458	0.283	0.250	0.444	0.667	4407	0.518	0.263	0.333	0.500	0.700	0.061	0.000
Dir. Independency	7383	0.782	0.188	0.714	0.833	0.889	4407	0.817	0.146	0.750	0.857	0.900	0.035	0.000

Panel (B)

x = Earnings Management (EM)

	M_Event(x) below the median						M_Event(x) above the median							
	Obs.	Mean	Std	p25	p50	p75	Obs.	Mean	Std	p25	p50	p75	Diff.	p-value
M_Exp^{Geo}(x)	15024	0.090	0.054	0.061	0.083	0.112	15019	0.098	0.064	0.063	0.090	0.126	0.008	0.000
M_Exp^{Brd}(x)	15024	0.159	0.040	0.136	0.158	0.177	15019	0.163	0.041	0.140	0.160	0.180	0.004	0.000
Ln(Total Assets)	15024	7.075	2.041	5.662	7.032	8.411	15019	6.073	2.025	4.588	5.979	7.401	-1.002	0.000
Age	15024	25.517	17.214	12.000	20.000	37.000	15019	20.915	14.676	10.000	17.000	27.000	-4.602	0.000
ROA	15024	0.107	0.140	0.070	0.117	0.171	15019	0.057	0.222	0.023	0.098	0.159	-0.050	0.000
Cash Holdings	15024	0.172	0.193	0.033	0.100	0.240	15019	0.239	0.233	0.054	0.161	0.359	0.066	0.000
Leverage	15024	0.202	0.204	0.023	0.148	0.317	15019	0.162	0.201	0.000	0.087	0.248	-0.040	0.000
B/M	15024	0.689	0.895	0.314	0.525	0.831	15019	0.649	0.736	0.273	0.490	0.814	-0.040	0.000
Tobin's Q	15024	1.856	1.242	1.119	1.470	2.138	15019	2.112	1.812	1.134	1.562	2.393	0.256	0.000
Annual Return	15024	0.150	0.552	-0.126	0.096	0.326	15019	0.153	0.717	-0.212	0.061	0.357	0.004	0.602
Ret. Volatility	15024	0.112	0.068	0.068	0.097	0.137	15019	0.138	0.090	0.086	0.120	0.166	0.026	0.000
ESG Disclosure	15024	0.117	0.150	0.000	0.000	0.201	15019	0.072	0.122	0.000	0.000	0.148	-0.045	0.000
Analyst Coverage	15024	7.567	7.566	1.000	5.000	12.000	15019	5.921	7.123	0.000	3.000	9.000	-1.646	0.000
Dir. Expertise	15024	0.895	0.255	1.000	1.000	1.000	15019	0.878	0.278	1.000	1.000	1.000	-0.017	0.000
Dir. Other Act.	15024	0.149	0.161	0.000	0.125	0.250	15019	0.123	0.150	0.000	0.100	0.200	-0.026	0.000
Dir. Grad. Educ.	15024	0.524	0.258	0.364	0.556	0.714	15019	0.514	0.273	0.333	0.500	0.714	-0.009	0.002
Dir. Achievers	15024	0.106	0.138	0.000	0.000	0.167	15019	0.086	0.129	0.000	0.000	0.167	-0.020	0.000
Dir. Age	15024	0.723	0.252	0.600	0.778	0.889	15019	0.688	0.277	0.571	0.750	0.875	-0.035	0.000
Dir. Women	15024	0.113	0.120	0.000	0.111	0.200	15019	0.092	0.118	0.000	0.000	0.167	-0.021	0.000
Dir. Multi-Boards	15024	0.439	0.293	0.200	0.429	0.636	15019	0.400	0.305	0.167	0.375	0.600	-0.039	0.000
Dir. Independency	15024	0.761	0.219	0.667	0.818	0.889	15019	0.739	0.235	0.667	0.800	0.875	-0.023	0.000

Table 6 (A) reports descriptive statistics of main firm-level variables used in the regression analysis across firm-year observations which do not show corporate misconduct (M_Event(CM) = 0) and those exhibiting corporate misconduct (M_Event(CM) = 1). **Table 6 (B)** reports descriptive statistics of main firm-level variables used in the regression analysis across firm-year observations with below-median EM measure and those exhibiting above-median EM. "Geo" and "Brd" variable construction follows (1) and misconduct definitions follows Sections 2.1.1 and 2.1.2. The columns "Diff." report the differences between means and the p-values correspond to those estimated from a two-tailed t-test of the difference between means.

Table 7: Multivariate Analysis - Misconduct and Exposure to Misconduct

	Panel Conditional Logit Models								Panel Linear Fixed Effects Models					
	x = Corporate Misconduct (CM)								x = Earnings Management (EM)					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Within	Within	Within	Within	Within	Within	Mg. Effects	Pooled						
M_Exp^{Geo}(x)	1.002**		0.925**	0.926**	0.930**	0.967**	0.089	1.246***	0.078***		0.075***	0.072***	0.057**	0.057*
	(0.406)		(0.406)	(0.406)	(0.411)	(0.412)		(0.340)	(0.009)		(0.009)	(0.009)	(0.009)	(0.010)
M_Exp^{Brd}(x)		0.761***	0.737***	0.737***	0.697***	0.549***	0.050	1.383***		0.066**	0.066**	0.063**	0.057**	0.063**
		(0.202)	(0.202)	(0.202)	(0.203)	(0.207)		(0.181)		(0.009)	(0.009)	(0.009)	(0.008)	(0.008)
M_Exp^{Ind}(x)				0.148	0.198	0.0591	0.005	3.962***				0.198***	0.195***	0.195***
				(0.397)	(0.400)	(0.403)		(0.279)				(0.022)	(0.022)	(0.022)
Ln(Total Assets)					0.423***	0.321***	0.029	0.678***					-0.009***	-0.009***
					(0.0756)	(0.0781)		(0.0377)					(0.003)	(0.003)
Age					-1.522***	-1.466***	-0.134*	0.0217***					-0.011	-0.010
					(0.486)	(0.492)		(0.00335)					(0.008)	(0.008)
ROA					1.231***	1.193***	0.109	2.855***					-0.022***	-0.022***
					(0.462)	(0.462)		(0.384)					(0.006)	(0.006)
Cash Holdings					-0.269	-0.262	-0.024	-1.441***					-0.038***	-0.038***
					(0.381)	(0.383)		(0.299)					(0.006)	(0.006)
Leverage					-0.535*	-0.370	-0.034	-0.889***					-0.012*	-0.012*
					(0.278)	(0.281)		(0.220)					(0.006)	(0.007)
B/M					0.0674	0.0772	0.007	0.00621					0.001	0.001
					(0.0591)	(0.0595)		(0.0444)					(0.001)	(0.001)
Tobin's Q					0.0214	0.00686	0.001	-0.00608					0.003***	0.003***
					(0.0456)	(0.0460)		(0.0392)					(0.001)	(0.001)
Annual Return					-0.0944*	-0.0744	-0.007	-0.0479					-0.001	-0.001
					(0.0535)	(0.0534)		(0.0501)					(0.001)	(0.001)
Ret. Volatility					1.325**	1.535**	0.141	1.698***					0.002	0.002
					(0.673)	(0.677)		(0.548)					(0.012)	(0.012)
ESG Disclosure						-0.161	-0.015	0.991***						0.003
						(0.346)		(0.304)						(0.005)
Analyst Coverage						0.0339***	0.003	0.0275***						0.000
						(0.00696)		(0.00581)						(0.000)
Dir. Expertise						0.0997	0.009	1.372***						-0.005
						(0.286)		(0.211)						(0.006)
Dir. Other Act.						-0.0358	-0.003	0.0274						0.004
						(0.198)		(0.188)						(0.004)
Dir. Grad. Educ.						0.265	0.024	0.145						-0.001
						(0.227)		(0.173)						(0.005)
Dir. Achievers						0.0693	0.006	0.0899						-0.006
						(0.238)		(0.223)						(0.004)
Dir. Age						0.567***	0.052	0.628***						-0.006
						(0.213)		(0.177)						(0.005)
Dir. Women						0.0660	0.006	0.0834						-0.003
						(0.368)		(0.314)						(0.008)
Dir. Multi-Boards						-0.0545	-0.005	0.218						-0.002
						(0.181)		(0.142)						(0.003)
Dir. Independency						0.521*	0.048	0.262						0.002
						(0.270)		(0.225)						(0.005)
lnsig2u								1.502***						
								(0.0580)						
Observations	11,790	11,790	11,790	11,790	11,790	11,790		39,985	29,503	29,503	29,503	29,503	29,503	29,503
# Groups	967	967	967	967	967	967		5,501						
Year FE	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-Ind-Firm FE	-	-	-	-	-	-		-	Yes	Yes	Yes	Yes	Yes	Yes
LR Chi-Squared	140.3	148.4	153.6	153.8	217.6	262.4		1842						
Adjusted R-squared									0.288	0.288	0.288	0.288	0.297	0.297

Table 7 follows variable definitions described in Appendix A. All regressions reported use robust standard errors which are reported in the parentheses. Superscripts *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 8: Multivariate Analysis - Misconduct and Specialized Exposure to Misconduct

	Panel Conditional Logit Models				Panel Linear Fixed Effects Models			
	x = Corporate Misconduct (CM)				x = Earnings Management (EM)			
	(1) Within	(2) Within	(3) Within	(4) Within	(5)	(6)	(7)	(8)
M_Exp^{Geo}(x)	0.955**	0.967**	0.962**	0.932**	0.018*	0.019*	0.019*	0.019*
	(0.412)	(0.412)	(0.412)	(0.413)	(0.010)	(0.010)	(0.010)	(0.010)
M_Exp^{Brd}(x)	-1.113	0.547**	0.0351	-0.341	-0.084*	0.027**	0.052*	0.001
	(0.995)	(0.228)	(0.636)	(0.298)	(0.042)	(0.010)	(0.027)	(0.011)
M_Exp^{Brd}(x)×Dir. Expertise	1.763*				0.115**			
	(1.029)				(0.047)			
M_Exp^{Brd}(x)×Dir. Achievers		0.0163				-0.102		
		(1.205)				(0.080)		
M_Exp^{Brd}(x)×Dir. Age			0.671				-0.044	
			(0.787)				(0.038)	
M_Exp^{Brd}(x)×Dir. Multi-Boards				2.291***				0.076*
				(0.557)				(0.042)
M_Exp^{Ind}(x)	0.0559	0.0592	0.0527	0.0283	0.065***	0.065***	0.066***	0.064***
	(0.403)	(0.403)	(0.403)	(0.403)	(0.023)	(0.022)	(0.022)	(0.022)
Ln(Total Assets)	0.332***	0.321***	0.323***	0.334***	-0.009***	-0.009***	-0.009***	-0.009***
	(0.0785)	(0.0782)	(0.0781)	(0.0781)	(0.003)	(0.003)	(0.003)	(0.003)
Age	-1.458***	-1.466***	-1.465***	-1.474***	-0.010	-0.010	-0.010	-0.010
	(0.492)	(0.492)	(0.492)	(0.491)	(0.008)	(0.008)	(0.008)	(0.008)
ROA	1.180**	1.193***	1.199***	1.232***	-0.022***	-0.022***	-0.022***	-0.022***
	(0.462)	(0.462)	(0.462)	(0.464)	(0.007)	(0.006)	(0.006)	(0.006)
Cash Holdings	-0.252	-0.262	-0.260	-0.223	-0.038***	-0.038***	-0.038***	-0.038***
	(0.383)	(0.383)	(0.383)	(0.382)	(0.007)	(0.006)	(0.006)	(0.006)
Leverage	-0.376	-0.370	-0.370	-0.404	-0.012*	-0.012*	-0.012*	-0.012*
	(0.281)	(0.281)	(0.281)	(0.281)	(0.007)	(0.007)	(0.007)	(0.007)
B/M	0.0755	0.0772	0.0763	0.0774	0.001	0.001	0.001	0.001
	(0.0594)	(0.0595)	(0.0594)	(0.0593)	(0.001)	(0.001)	(0.001)	(0.001)
Tobin's Q	0.00643	0.00687	0.00667	0.00149	0.003***	0.003***	0.003***	0.003***
	(0.0460)	(0.0460)	(0.0460)	(0.0461)	(0.001)	(0.001)	(0.001)	(0.001)
Annual Return	-0.0732	-0.0744	-0.0744	-0.0725	-0.001	-0.001	-0.001	-0.001
	(0.0534)	(0.0534)	(0.0533)	(0.0532)	(0.001)	(0.001)	(0.001)	(0.001)
Ret. Volatility	1.524**	1.535**	1.546**	1.553**	0.002	0.002	0.002	0.002
	(0.677)	(0.677)	(0.677)	(0.677)	(0.012)	(0.012)	(0.012)	(0.012)
ESG Disclosure	-0.194	-0.161	-0.155	-0.247	0.003	0.003	0.003	0.003
	(0.346)	(0.347)	(0.346)	(0.347)	(0.005)	(0.005)	(0.005)	(0.005)
Analyst Coverage	0.0338***	0.0339***	0.0340***	0.0322***	0.000	0.000	0.000	0.000
	(0.00696)	(0.00697)	(0.00696)	(0.00697)	(0.000)	(0.000)	(0.000)	(0.000)
Dir. Expertise	-0.325	0.0999	0.150	0.174	-0.014**	-0.005	-0.006	-0.005
	(0.375)	(0.286)	(0.292)	(0.286)	(0.007)	(0.006)	(0.006)	(0.006)
Dir. Other Act.	-0.0253	-0.0358	-0.0330	-0.0324	0.004	0.004	0.004	0.004
	(0.198)	(0.198)	(0.198)	(0.198)	(0.005)	(0.004)	(0.004)	(0.004)
Dir. Grad. Educ.	0.316	0.265	0.279	0.274	-0.000	-0.001	-0.001	-0.001
	(0.229)	(0.227)	(0.227)	(0.227)	(0.005)	(0.005)	(0.005)	(0.005)
Dir. Achievers	0.0903	0.0632	0.0730	0.114	-0.006	0.004	-0.006	-0.006
	(0.238)	(0.512)	(0.238)	(0.238)	(0.004)	(0.008)	(0.004)	(0.004)
Dir. Age	0.621***	0.567***	0.331	0.600***	-0.005	-0.006	-0.002	-0.006
	(0.215)	(0.213)	(0.349)	(0.213)	(0.005)	(0.005)	(0.004)	(0.005)
Dir. Women	0.0773	0.0659	0.0765	0.0680	-0.003	-0.003	-0.003	-0.003
	(0.368)	(0.368)	(0.368)	(0.369)	(0.008)	(0.008)	(0.008)	(0.008)
Dir. Multi-Boards	-0.0329	-0.0545	-0.0489	-0.904***	-0.002	-0.002	-0.002	-0.010**
	(0.182)	(0.181)	(0.181)	(0.275)	(0.003)	(0.003)	(0.003)	(0.005)
Dir. Independency	0.601**	0.521*	0.553**	0.594**	0.004	0.002	0.001	0.002
	(0.274)	(0.271)	(0.273)	(0.271)	(0.005)	(0.005)	(0.005)	(0.005)
Observations	11,790	11,790	11,790	11,790	29,503	29,503	29,503	29,503
# Groups	967	967	967	967				
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-Ind-Firm FE	-	-	-	-	Yes	Yes	Yes	Yes
LR Chi-Squared	265.5	262.4	263.2	279.7				
Adjusted R-squared					0.297	0.297	0.297	0.297

Table 8 follows variable definitions described in Appendix A. All regressions reported use robust standard errors which are reported in the parentheses. Superscripts *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 9: Misconduct Exposure through Geographic and Board-induced Networks

	Panel Conditioal Logit Models					Panel Linear Fixed Effects Models				
	x = Corporate Misconduct (CM)					x = Earnings Management (EM)				
	$D(v) = 1$ if v above the median, where v denotes:									
	(1) v=Ln(Total Assets)	(2) v=ESG Disclosure	(3) v=Analyst Coverage	(4) v=Dir. Women	(5) v=Dir. Multi-Boards	(6) v=Ln(Total Assets)	(7) v=ESG Disclosure	(8) v=Analyst Coverage	(9) v=Dir. Women	(10) v=Dir. Multi-Boards
$D(v)$	0.313	0.358**	0.350**	0.141	-0.437***	0.010*	0.003	-0.002	0.001	-0.005
	(0.200)	(0.166)	(0.167)	(0.158)	(0.168)	(0.005)	(0.003)	(0.004)	(0.005)	(0.004)
M_Exp^{Geo}(x)	0.690	1.226**	0.598	0.981**	1.148**	0.035**	0.029*	0.016	0.025*	0.014
	(0.584)	(0.519)	(0.507)	(0.467)	(0.521)	(0.017)	(0.014)	(0.017)	(0.014)	(0.014)
M_Exp^{Geo}(x)×$D(v)$	0.410	-0.461	0.781	-0.061	-0.309	-0.032	-0.027	0.007	-0.011	0.009
	(0.729)	(0.559)	(0.656)	(0.557)	(0.552)	(0.019)	(0.017)	(0.020)	(0.026)	(0.026)
M_Exp^{Brd}(x)	1.029***	0.784***	0.888***	0.699***	0.336	0.029***	0.020**	0.021**	0.020**	0.011
	(0.241)	(0.227)	(0.236)	(0.242)	(0.232)	(0.010)	(0.009)	(0.010)	(0.009)	(0.008)
M_Exp^{Brd}(x)×$D(v)$	-1.485***	-0.891***	-1.036***	-0.383	0.683**	-0.036**	0.012	0.002	0.004	0.043**
	(0.365)	(0.332)	(0.337)	(0.314)	(0.332)	(0.016)	(0.022)	(0.028)	(0.020)	(0.018)
M_Exp^{Ind}(x)	0.004	0.073	0.032	0.057	0.066	0.065***	0.065***	0.065***	0.065***	0.064***
	(0.404)	(0.403)	(0.404)	(0.403)	(0.403)	(0.022)	(0.022)	(0.022)	(0.023)	(0.021)
Ln(Total Sssets)	0.363***	0.314***	0.316***	0.313***	0.322***	-0.009***	-0.009***	-0.009***	-0.009***	-0.009***
	(0.085)	(0.078)	(0.078)	(0.078)	(0.078)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Age	-1.445***	-1.450***	-1.434***	-1.466***	-1.482***	-0.011	-0.010	-0.010	-0.010	-0.010
	(0.496)	(0.493)	(0.492)	(0.491)	(0.493)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
ROA	1.154**	1.167**	1.162**	1.197***	1.215***	-0.021***	-0.022***	-0.022***	-0.022***	-0.022***
	(0.464)	(0.463)	(0.463)	(0.462)	(0.462)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)
Cash Holdings	-0.270	-0.251	-0.276	-0.255	-0.249	-0.038***	-0.038***	-0.038***	-0.038***	-0.038***
	(0.384)	(0.384)	(0.383)	(0.383)	(0.382)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)
Leverage	-0.401	-0.373	-0.363	-0.365	-0.387	-0.012*	-0.012*	-0.012*	-0.012*	-0.012*
	(0.282)	(0.281)	(0.281)	(0.281)	(0.281)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
B/M	0.081	0.078	0.077	0.078	0.078	0.001	0.001	0.001	0.001	0.001
	(0.060)	(0.060)	(0.060)	(0.060)	(0.060)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Tobin's Q	0.008	0.010	0.007	0.006	0.004	0.003***	0.003***	0.003***	0.003***	0.003***
	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Annual Return	-0.072	-0.076	-0.073	-0.074	-0.074	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.054)	(0.053)	(0.054)	(0.053)	(0.053)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Ret. Volatility	1.636**	1.594**	1.576**	1.545**	1.575**	0.002	0.002	0.002	0.002	0.002
	(0.681)	(0.678)	(0.680)	(0.678)	(0.677)	(0.012)	(0.013)	(0.012)	(0.013)	(0.013)
ESG Disclosure	0.050	0.060	-0.071	-0.123	-0.202	0.002	0.005	0.003	0.003	0.003
	(0.351)	(0.428)	(0.349)	(0.348)	(0.347)	(0.005)	(0.007)	(0.005)	(0.005)	(0.005)
Analyst Coverage	0.036***	0.036***	0.032***	0.034***	0.034***	0.000	0.000	0.000	0.000	0.000
	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dir. Expertise	0.168	0.116	0.098	0.094	0.122	-0.005	-0.005	-0.005	-0.005	-0.005
	(0.288)	(0.287)	(0.287)	(0.287)	(0.287)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Dir. Other Act.	-0.010	-0.038	-0.031	-0.033	-0.044	0.004	0.004	0.004	0.004	0.004
	(0.198)	(0.198)	(0.198)	(0.198)	(0.198)	(0.004)	(0.004)	(0.005)	(0.005)	(0.004)
Dir. Grad. Educ.	0.267	0.274	0.265	0.258	0.249	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.228)	(0.227)	(0.227)	(0.227)	(0.227)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Dir. Achievers	0.052	0.041	0.063	0.058	0.096	-0.006	-0.006	-0.006	-0.006	-0.006
	(0.238)	(0.238)	(0.238)	(0.238)	(0.239)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Dir. Age	0.591***	0.548**	0.554***	0.551***	0.569***	-0.006	-0.006	-0.006	-0.006	-0.006
	(0.213)	(0.213)	(0.213)	(0.213)	(0.213)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Dir. Women	0.079	0.077	0.069	0.120	0.058	-0.003	-0.003	-0.003	-0.001	-0.003
	(0.369)	(0.368)	(0.368)	(0.466)	(0.369)	(0.008)	(0.008)	(0.008)	(0.010)	(0.008)
Dir. Multi-Boards	-0.067	-0.054	-0.062	-0.055	0.302	-0.002	-0.002	-0.002	-0.002	-0.004
	(0.182)	(0.181)	(0.181)	(0.181)	(0.238)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Dir. Independency	0.525*	0.527*	0.529*	0.514*	0.517*	0.002	0.002	0.002	0.002	0.002
	(0.271)	(0.271)	(0.271)	(0.271)	(0.271)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Observations	11,790	11,790	11,790	11,790	11,790	29,503	29,503	29,503	29,503	29,503
Number of icusip	967	967	967	967	967					
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-Ind-Firm FE	-	-	-	-	-	Yes	Yes	Yes	Yes	Yes
LR Chi-Squared	281.6	271.3	272.8	264.1	271.6					
Adjusted R-squared						0.297	0.297	0.297	0.297	0.297

Table 10: Misconduct at the Firm-Level, Selection Bias

Dependent variable:	x = Corporate Misconduct (CM)				x = Earning Management (EM)	
M_Event(x) = {0,1}	Panel Cond. Poisson		Matching Model		Panel Linear FE	Matching Model
		Mg. Effs.		Mg. Effs.		
	(1)	(2)	(3)	(4)	(5)	(6)
M_Exp $^{Geo}(x)$	0.467***	0.467	0.489***	0.182	0.042***	0.052***
	(0.175)		(0.122)		(0.011)	(0.009)
M_Exp $^{Brd}(x)$	0.477***	0.477	0.525***	0.195	0.048***	0.037***
	(0.107)		(0.072)		(0.008)	(0.006)
Ln(Total Assets)	0.089***	0.089	0.082***	0.031	-0.010***	-0.007***
	(0.019)		(0.013)		(0.001)	(0.001)
Age	0.003***	0.003	0.005***	0.002	-0.009	-0.001***
	(0.001)		(0.001)		(0.007)	(0.001)
ROA	1.130***	1.130	1.105***	0.411	-0.016***	-0.045***
	(0.223)		(0.157)		(0.004)	(0.002)
Cash holdings	-0.686***	-0.686	-0.702***	-0.261	-0.033***	0.007***
	(0.177)		(0.109)		(0.004)	(0.002)
Leverage	0.391***	0.391	0.446***	0.166	-0.014***	0.001
	(0.123)		(0.079)		(0.004)	(0.002)
B/M	0.018	0.018	0.013	0.005	-0.000	-0.002***
	(0.030)		(0.022)		(0.001)	(0.001)
Annual return	-0.008	-0.008	0.007	0.002	-0.000	-0.001**
	(0.033)		(0.026)		(0.001)	(0.001)
Ret. volatility	0.671*	0.671	0.729***	0.271	-0.012**	0.064***
	(0.356)		(0.264)		(0.006)	(0.005)
ESG Disclosure	0.213	0.213	0.365***	0.136	-0.001	-0.004
	(0.171)		(0.114)		(0.005)	(0.004)
Analyst Coverage	0.010***	0.010	0.01***	0.004	0.000*	0.001***
	(0.003)		(0.002)		(0.000)	(0.001)
ESG Disclosure	0.016	0.016	-0.007	-0.003	-0.001	-0.009***
	(0.145)		(0.095)		(0.003)	(0.002)
Dir. Other Act.	0.029	0.029	0.081	0.03	0.003	0.008**
	(0.117)		(0.093)		(0.003)	(0.003)
Dir. Grad. Edu.	0.014	0.014	-0.049	-0.018	-0.003	-0.001
	(0.094)		(0.061)		(0.003)	(0.002)
Dir. Achievers	0.029	0.029	0.044	0.016	-0.008**	0.001
	(0.143)		(0.106)		(0.004)	(0.003)
Dir. Age	0.249**	0.249	0.261***	0.097	-0.005*	-0.008***
	(0.107)		(0.071)		(0.003)	(0.002)
Dir. Woman	0.076	0.076	0.04	0.015	-0.002	-0.007*
	(0.180)		(0.12)		(0.005)	(0.004)
Dir. Multi-Brd.	-0.007	-0.007	0.012	0.004	-0.002	0.003*
	(0.079)		(0.051)		(0.003)	(0.001)
Dir. Indep.	0.188	0.188	0.114	0.042	-0.000	0.001
	(0.144)		(0.092)		(0.003)	(0.003)
κ			0.275***			0.001
			(0.09)			(0.002)
Observations	11,865	11,865	11,865	11,865	31,669	31,669
LR χ^2	365.2					
# groups	955					
Firm FE					Yes	
Adj R-squared					0.278	

Table 11: Local Norms Heterogeneity

	Panel Linear Fixed Effects Models					
	x = Earnings Management (EM)					
	(1)	(2)	(3)	(4)	(5)	
	State	State	MSA	MSA-50 Km	MSA-35 Km	MSA-20 Km
M_Exp^{Geo}(x)	0.019*	0.018*	0.018	0.018	0.018	0.018
	(0.010)	(0.010)	(0.011)	(0.011)	(0.011)	(0.012)
M_Exp^{Brd}(x)	0.021**	0.024***	0.024***	0.024**	0.024**	0.024***
	(0.008)	(0.007)	(0.008)	(0.010)	(0.009)	(0.008)
M_Exp^{Ind}(x)	0.065***	0.067***	0.067***	0.067***	0.067***	0.067***
	(0.022)	(0.023)	(0.021)	(0.021)	(0.021)	(0.022)
Ln(Total Assets)	-0.009***	-0.009***	-0.009***	-0.009***	-0.009***	-0.009***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Age	-0.010	-0.012	-0.012***	-0.012*	-0.012*	-0.012**
	(0.008)	(0.008)	(0.003)	(0.006)	(0.007)	(0.006)
ROA	-0.022***	-0.022***	-0.022***	-0.022***	-0.022***	-0.022***
	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)	(0.005)
Cash Holdings	-0.038***	-0.037***	-0.037***	-0.037***	-0.037***	-0.037***
	(0.006)	(0.005)	(0.006)	(0.005)	(0.005)	(0.006)
Leverage	-0.012*	-0.012*	-0.012	-0.012*	-0.012*	-0.012
	(0.007)	(0.007)	(0.012)	(0.007)	(0.007)	(0.007)
B/M	0.001	0.001	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
Tobin's Q	0.003***	0.003***	0.003***	0.003***	0.003***	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Annual Return	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
Ret. Volatility	0.002	0.000	0.000	0.000	0.000	0.000
	(0.012)	(0.013)	(0.017)	(0.012)	(0.013)	(0.013)
ESG Disclosure	0.003	0.003	0.003	0.003	0.003	0.003
	(0.005)	(0.006)	(0.007)	(0.005)	(0.006)	(0.006)
Analyst Coverage	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dir. Expertise	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
	(0.006)	(0.006)	(0.009)	(0.007)	(0.006)	(0.006)
Dir. Other Act.	0.004	0.004	0.004	0.004	0.004	0.004
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)
Dir. Grad. Educ.	-0.001	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.005)	(0.005)	(0.004)	(0.003)	(0.004)	(0.004)
Dir. Achievers	-0.006	-0.006	-0.006	-0.006	-0.006	-0.006
	(0.004)	(0.004)	(0.007)	(0.004)	(0.004)	(0.004)
Dir. Age	-0.006	-0.006	-0.006	-0.006	-0.006	-0.006
	(0.005)	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)
Dir. Women	-0.003	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.008)	(0.006)	(0.007)	(0.006)	(0.007)	(0.006)
Dir. Multi-Boards	-0.002	-0.003	-0.003	-0.003	-0.003	-0.003
	(0.003)	(0.003)	(0.007)	(0.004)	(0.004)	(0.004)
Dir. Independency	0.002	0.001	0.001	0.001	0.001	0.001
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Observations	29,503	28,332	28,332	28,332	28,332	28,332
Adjusted R-squared	0.297	0.297	0.292	0.292	0.291	0.290
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Ind-Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Area FE	State	State	MSA	MSA-50 Km	MSA-35 Km	MSA-20 Km

Table 12: Social Exposure to Misconduct Complementarity and Substitutability

	Panel Conditional Logit Models				Panel Linear Fixed Effects Models			
	x = Corporate Misconduct (CM)				x = Earnings Management (EM)			
	(1) Within	(2) Within	(3) Within	(4) Within	(5)	(6)	(7)	(8)
$M\_Exp^{Geo}(x)$	0.967**	3.169***	3.098***	2.967***	0.019*	0.001	0.004	0.008
	(0.412)	(0.774)	(0.781)	(0.782)	(0.010)	(0.015)	(0.015)	(0.016)
$M\_Exp^{Geo}(x) \times M\_Exp^{Brd}(x)$		-5.224***	-5.049***	-4.718***		0.178	0.157	0.111
		(1.522)	(1.541)	(1.550)		(0.158)	(0.162)	(0.167)
$M\_Exp^{Brd}(x)$	0.549***	1.263***	1.642***	1.874***	0.021**	-0.009	-0.030	-0.065
	(0.207)	(0.294)	(0.619)	(0.633)	(0.008)	(0.027)	(0.036)	(0.040)
$M\_Exp^{Brd}(x) \times M\_Exp^{Brd}(x)$			-0.505	-0.223			0.069	0.063
			(0.725)	(0.742)			(0.049)	(0.046)
$M\_Exp^{Ind}(x)$	0.0591	0.0557	0.0560	0.899	0.065***	0.065***	0.065***	0.037
	(0.403)	(0.403)	(0.403)	(0.618)	(0.022)	(0.022)	(0.023)	(0.029)
$M\_Exp^{Ind}(x) \times M\_Exp^{Brd}(x)$				-1.777*				0.298
				(0.988)				(0.192)
Ln(Total Assets)	0.321***	0.303***	0.298***	0.296***	-0.009***	-0.009***	-0.009***	-0.009***
	(0.0781)	(0.0783)	(0.0785)	(0.0784)	(0.003)	(0.003)	(0.003)	(0.003)
Age	-1.466***	-1.474***	-1.481***	-1.477***	-0.010	-0.010	-0.010	-0.010
	(0.492)	(0.493)	(0.493)	(0.492)	(0.008)	(0.008)	(0.008)	(0.008)
ROA	1.193***	1.125**	1.124**	1.135**	-0.022***	-0.022***	-0.022***	-0.021***
	(0.462)	(0.463)	(0.463)	(0.463)	(0.006)	(0.007)	(0.007)	(0.007)
Cash Holdings	-0.262	-0.228	-0.227	-0.231	-0.038***	-0.038***	-0.038***	-0.038***
	(0.383)	(0.383)	(0.383)	(0.383)	(0.006)	(0.006)	(0.006)	(0.006)
Leverage	-0.370	-0.367	-0.367	-0.365	-0.012*	-0.012*	-0.012*	-0.012*
	(0.281)	(0.281)	(0.281)	(0.281)	(0.007)	(0.007)	(0.007)	(0.007)
B/M	0.0772	0.0754	0.0761	0.0775	0.001	0.001	0.001	0.001
	(0.0595)	(0.0599)	(0.0599)	(0.0600)	(0.001)	(0.001)	(0.001)	(0.001)
Tobin's Q	0.00686	0.0110	0.0115	0.0125	0.003***	0.003***	0.003***	0.003***
	(0.0460)	(0.0461)	(0.0460)	(0.0461)	(0.001)	(0.001)	(0.001)	(0.001)
Annual Return	-0.0744	-0.0797	-0.0798	-0.0812	-0.001	-0.001	-0.001	-0.001
	(0.0534)	(0.0535)	(0.0535)	(0.0534)	(0.001)	(0.001)	(0.001)	(0.001)
Ret. Volatility	1.535**	1.533**	1.532**	1.572**	0.002	0.002	0.002	0.002
	(0.677)	(0.678)	(0.678)	(0.678)	(0.012)	(0.012)	(0.012)	(0.012)
ESG Disclosure	-0.161	-0.119	-0.111	-0.103	0.003	0.003	0.003	0.002
	(0.346)	(0.347)	(0.347)	(0.347)	(0.005)	(0.005)	(0.005)	(0.005)
Analyst Coverage	0.0339***	0.0344***	0.0345***	0.0350***	0.000	0.000	0.000	0.000
	(0.00696)	(0.00698)	(0.00698)	(0.00698)	(0.000)	(0.000)	(0.000)	(0.000)
Dir. Expertise	0.0997	0.104	0.0940	0.121	-0.005	-0.005	-0.005	-0.005
	(0.286)	(0.287)	(0.288)	(0.288)	(0.006)	(0.006)	(0.006)	(0.006)
Dir. Other Act.	-0.0358	-0.0265	-0.0284	-0.0319	0.004	0.004	0.004	0.004
	(0.198)	(0.198)	(0.198)	(0.198)	(0.004)	(0.004)	(0.004)	(0.004)
Dir. Grad. Educ.	0.265	0.278	0.273	0.282	-0.001	-0.001	-0.001	-0.001
	(0.227)	(0.227)	(0.227)	(0.227)	(0.005)	(0.005)	(0.005)	(0.005)
Dir. Achievers	0.0693	0.0625	0.0557	0.0618	-0.006	-0.006	-0.006	-0.006
	(0.238)	(0.238)	(0.239)	(0.239)	(0.004)	(0.004)	(0.004)	(0.004)
Dir. Age	0.567***	0.587***	0.577***	0.570***	-0.006	-0.006	-0.006	-0.006
	(0.213)	(0.213)	(0.214)	(0.214)	(0.005)	(0.005)	(0.005)	(0.005)
Dir. Women	0.0660	0.0539	0.0507	0.0492	-0.003	-0.003	-0.003	-0.003
	(0.368)	(0.369)	(0.369)	(0.369)	(0.008)	(0.008)	(0.008)	(0.008)
Dir. Multi-Boards	-0.0545	-0.0569	-0.0634	-0.0493	-0.002	-0.002	-0.002	-0.002
	(0.181)	(0.181)	(0.182)	(0.182)	(0.003)	(0.003)	(0.003)	(0.003)
Dir. Independency	0.521*	0.525*	0.511*	0.521*	0.002	0.002	0.002	0.002
	(0.270)	(0.271)	(0.272)	(0.272)	(0.005)	(0.005)	(0.005)	(0.005)
Observations	11,790	11,790	11,790	11,790	29,503	29,503	29,503	29,503
# Groups	967	967	967	967				
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-Ind-Firm FE	-	-	-	-	Yes	Yes	Yes	Yes
LR Chi-Squared	262.4	274.5	274.9	278.2				
Adjusted R-squared					0.297	0.297	0.297	0.297

Table 12 follows variable definitions described in Appendix A. All regressions reported use robust standard errors which are reported in the parentheses. Superscripts *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 13: Lagged Exposure to Misconduct

	Panel Conditional Logit Models								Panel Linear Fixed Effects Models					
	x = Corporate Misconduct (CM)								x = Earnings Management (EM)					
	(1) Within	(2) Within	(3) Within	(4) Within	(5) Within	(6) Within	(7) Mg. Effects	(8) Pooled	(9)	(10)	(11)	(12)	(13)	(14)
M_Exp^{Geo}(x)	0.633		0.515	0.515	0.498	0.537	0.034	0.682	0.021		0.020	0.018	0.015	0.015
	(0.524)		(0.528)	(0.528)	(0.534)	(0.533)		(0.505)	(0.012)		(0.013)	(0.013)	(0.020)	(0.022)
Lagged M_Exp^{Geo}(x)	0.512		0.580	0.580	0.621	0.600		0.663	0.004		0.004	0.003	0.000	0.000
	(0.528)		(0.530)	(0.530)	(0.536)	(0.537)		(0.513)	(0.023)		(0.023)	(0.023)	(0.026)	(0.027)
M_Exp^{Brd}(x)		1.217***	1.202***	1.202***	1.187***	1.013***	0.065	1.651***		0.025**	0.025**	0.024**	0.023*	0.027**
		(0.252)	(0.252)	(0.252)	(0.253)	(0.259)		(0.242)		(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Lagged M_Exp^{Brd}(x)		-0.795***	-0.811***	-0.811***	-0.839***	-0.785***		-0.252		-0.007	-0.007	-0.007	-0.009	-0.011
		(0.251)	(0.251)	(0.251)	(0.252)	(0.254)		(0.240)		(0.013)	(0.013)	(0.013)	(0.014)	(0.015)
M_Exp^{Ind}(x)				-0.0556	-0.0172	-0.0965	-0.006	4.005***				0.084***	0.084***	0.084***
				(0.422)	(0.425)	(0.427)		(0.283)				(0.018)	(0.018)	(0.018)
Ln(Total Assets)					0.400***	0.311***	0.020	0.667***					-0.007**	-0.007**
					(0.0818)	(0.0843)		(0.0390)					(0.003)	(0.003)
Age					-1.309***	-1.259**	-0.080	0.0208***					-0.007	-0.007
					(0.507)	(0.513)		(0.00337)					(0.007)	(0.007)
ROA					1.037**	1.012**	0.065	2.830***					-0.026***	-0.025***
					(0.489)	(0.490)		(0.379)					(0.004)	(0.005)
Cash Holdings					-0.288	-0.302	-0.019	-1.506***					-0.039***	-0.039***
					(0.411)	(0.413)		(0.308)					(0.008)	(0.008)
Leverage					-0.500*	-0.361	-0.023	-0.898***					-0.015**	-0.015**
					(0.297)	(0.300)		(0.227)					(0.007)	(0.007)
B/M					0.0982	0.106*	0.007	0.0139					0.001*	0.001*
					(0.0630)	(0.0635)		(0.0478)					(0.001)	(0.001)
Tobin's Q					0.0413	0.0297	0.002	0.000842					0.003***	0.003***
					(0.0492)	(0.0495)		(0.00654)					(0.001)	(0.001)
Annual Return					-0.102*	-0.0852	-0.005	-0.0609					-0.001	-0.001
					(0.0560)	(0.0556)		(0.0524)					(0.001)	(0.001)
Ret. Volatility					0.999	1.195*	0.076	1.598***					0.009	0.009
					(0.711)	(0.715)		(0.581)					(0.013)	(0.014)
ESG Disclosure						-0.180	-0.011	1.327***						0.003
						(0.388)		(0.329)						(0.005)
Analyst Coverage						0.0305***	0.002	0.0253***						0.000
						(0.00729)		(0.00596)						(0.000)
Dir. Expertise						0.388	0.025	1.580***						-0.007
						(0.353)		(0.244)						(0.007)
Dir. Other Act.						-0.104	-0.007	-0.0255						0.006
						(0.209)		(0.197)						(0.004)
Dir. Grad. Educ.						0.219	0.014	0.130						0.001
						(0.244)		(0.180)						(0.005)
Dir. Achievers						-0.0612	-0.004	-0.0274						-0.006
						(0.254)		(0.236)						(0.004)
Dir. Age						0.631***	0.040	0.680***						-0.005
						(0.226)		(0.185)						(0.006)
Dir. Women						0.252	0.016	0.212						-0.002
						(0.386)		(0.324)						(0.009)
Dir. Multi-Boards						-0.116	-0.007	0.187						-0.003
						(0.192)		(0.147)						(0.003)
Dir. Independency						0.285	0.018	0.0924						0.001
						(0.290)		(0.238)						(0.006)
Panel Var. Comp.								1.461***						
								(0.0592)						
Observations	10,812	10,769	10,769	10,769	10,769	10,769		35,889	26,619	26,392	26,392	26,392	26,392	26,392
# Groups	943	941	941	941	941	941		5,341						
Year FE	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-Ind-Firm FE	-	-	-	-	-	-		-	Yes	Yes	Yes	Yes	Yes	Yes
LR Chi-Squared	127.6	145.2	150.4	150.4	200	235.3		1757						
Adjusted R-squared									0.292	0.292	0.292	0.292	0.300	0.300

Table 13 follows variable definitions described in Appendix A. All regressions reported use robust standard errors which are reported in the parentheses. Superscripts *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 14: Types of Corporate Misconduct

	Panel Conditional Logit Models				
	x = Corporate Misconduct (CM)				
	(1)	(2)	(3)	(4)	(5)
	Competition & Consumer	Employment	Environment	Safety	Overall
M_Exp^{Geo}(x)	-0.318	1.332**	1.296*	1.261**	0.967**
	(2.061)	(0.639)	(0.693)	(0.560)	(0.412)
M_Exp^{Brd}(x)	0.337	0.684*	0.524	0.544*	0.549***
	(1.075)	(0.400)	(0.488)	(0.291)	(0.207)
M_Exp^{Ind}(x)	1.295	2.748***	0.707	-0.320	0.0591
	(2.263)	(0.696)	(0.642)	(0.451)	(0.403)
Ln(Total Assets)	0.456**	0.170	0.376***	0.404***	0.321***
	(0.187)	(0.106)	(0.121)	(0.0989)	(0.0781)
Age	-0.0227	-0.662	-1.299	-0.849	-1.466***
	(0.0360)	(0.783)	(0.983)	(0.563)	(0.492)
ROA	2.742**	2.340***	0.307	0.695	1.193***
	(1.386)	(0.792)	(0.678)	(0.590)	(0.462)
Cash Holdings	0.838	-0.339	0.261	-0.700	-0.262
	(0.946)	(0.571)	(0.659)	(0.503)	(0.383)
Leverage	0.181	0.595	-0.931*	-0.690*	-0.370
	(0.681)	(0.410)	(0.478)	(0.358)	(0.281)
B/M	0.225**	0.0976	0.101	-0.0449	0.0772
	(0.101)	(0.0852)	(0.103)	(0.0755)	(0.0595)
Tobin's Q	-0.118	-0.0984	-0.0928	0.149**	0.00686
	(0.135)	(0.0711)	(0.0872)	(0.0644)	(0.0460)
Annual Return	0.0380	-0.0121	0.0946	-0.116*	-0.0744
	(0.125)	(0.0764)	(0.0833)	(0.0666)	(0.0534)
Ret. Volatility	-0.465	0.330	0.233	1.730**	1.535**
	(1.744)	(0.953)	(1.219)	(0.836)	(0.677)
ESG Disclosure	-0.816	-0.214	-0.0660	-0.0116	-0.161
	(0.703)	(0.435)	(0.467)	(0.406)	(0.346)
Analyst Coverage	0.0227	0.0231**	0.0187*	0.0219**	0.0339***
	(0.0142)	(0.00903)	(0.0104)	(0.00880)	(0.00696)
Dir. Expertise	0.392	-0.0983	-0.435	0.562	0.0997
	(0.675)	(0.378)	(0.436)	(0.369)	(0.286)
Dir. Other Act.	0.421	0.152	0.211	-0.357	-0.0358
	(0.403)	(0.262)	(0.287)	(0.238)	(0.198)
Dir. Grad. Educ.	-0.565	0.0578	0.384	0.498*	0.265
	(0.522)	(0.311)	(0.354)	(0.274)	(0.227)
Dir. Achievers	0.264	-0.0265	0.582*	-0.147	0.0693
	(0.467)	(0.293)	(0.341)	(0.290)	(0.238)
Dir. Age	1.241**	0.246	0.862**	0.241	0.567***
	(0.502)	(0.296)	(0.340)	(0.259)	(0.213)
Dir. Women	-0.377	0.718	-0.343	0.0587	0.0660
	(0.793)	(0.493)	(0.562)	(0.437)	(0.368)
Dir. Multi-Boards	0.0199	0.320	-0.110	-0.0901	-0.0545
	(0.424)	(0.245)	(0.285)	(0.220)	(0.181)
Dir. Independency	1.761***	0.478	0.459	0.119	0.521*
	(0.676)	(0.375)	(0.431)	(0.334)	(0.270)
Observations	3,863	7,802	5,650	8,938	11,790
# Groups	293	610	444	715	967
Year FE	Yes	Yes	Yes	Yes	Yes
State-Ind-Firm FE	-	-	-	-	-
LR Chi-Squared	57.55	105.1	86.83	392.4	262.4

Table 14 follows variable definitions described in Appendix A. All regressions reported use robust standard errors which are reported in the parentheses. Superscripts *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 15: CEO Duality

	Panel Conditional Logit Models							Panel Linear Fixed Effects Models						
	x = Corporate Misconduct (CM)							x = Earnings Management (EM)						
	(1) Within	(2) Within	(3) Within	(4) Within	(5) Within	(6) Within	(7) Within	(8)	(9)	(10)	(11)	(12)	(13)	(14)
CEO Duality	0.0114	0.00273	0.00355	0.00403	0.0122	0.126*	0.170	-0.002*	-0.002*	-0.002*	-0.002*	-0.002*	-0.003**	-0.003
	(0.0629)	(0.0629)	(0.0630)	(0.0630)	(0.0631)	(0.0765)	(0.143)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
M_Exp^{Geo}(x)	1.029**		0.964**	0.965**	0.972**	1.025**	1.024**	0.027**		0.027**	0.025**	0.021**	0.021**	0.021*
	(0.410)		(0.410)	(0.410)	(0.415)	(0.416)	(0.416)	(0.011)		(0.011)	(0.011)	(0.010)	(0.010)	(0.011)
M_Exp^{Brd}(x)		0.669***	0.645***	0.645***	0.615***	0.523**	0.617*		0.022**	0.022**	0.021**	0.019**	0.020**	0.015
		(0.206)	(0.206)	(0.206)	(0.207)	(0.209)	(0.334)		(0.009)	(0.009)	(0.009)	(0.008)	(0.009)	(0.016)
M_Exp^{Brd}(x)× CEO Duality							-0.118							0.006
							(0.325)							(0.016)
M_Exp^{Ind}(x)				0.117	0.165	0.0644	0.0656				0.060***	0.061***	0.061***	0.061***
				(0.399)	(0.402)	(0.405)	(0.405)				(0.020)	(0.021)	(0.020)	(0.020)
Ln(Total Assets)					0.412***	0.320***	0.319***					-0.009***	-0.009***	-0.009***
					(0.0763)	(0.0789)	(0.0789)					(0.003)	(0.003)	(0.003)
Age					-1.544***	-1.496***	-1.498***					-0.012	-0.011	-0.011
					(0.486)	(0.491)	(0.491)					(0.008)	(0.007)	(0.007)
ROA					1.256***	1.218***	1.221***					-0.021***	-0.021***	-0.021***
					(0.465)	(0.465)	(0.465)					(0.006)	(0.006)	(0.006)
Cash Holdings					-0.268	-0.262	-0.261					-0.038***	-0.039***	-0.039***
					(0.382)	(0.385)	(0.385)					(0.006)	(0.006)	(0.006)
Leverage					-0.474*	-0.341	-0.341					-0.012**	-0.013*	-0.013*
					(0.281)	(0.283)	(0.283)					(0.006)	(0.007)	(0.007)
B/M					0.0576	0.0660	0.0662					0.001	0.001	0.001
					(0.0600)	(0.0601)	(0.0601)					(0.001)	(0.001)	(0.001)
Tobin's Q					0.0306	0.0156	0.0151					0.004***	0.004***	0.004***
					(0.0459)	(0.0463)	(0.0464)					(0.001)	(0.001)	(0.001)
Annual Return					-0.0979*	-0.0788	-0.0784					-0.001	-0.001	-0.001
					(0.0540)	(0.0540)	(0.0540)					(0.001)	(0.001)	(0.001)
Ret. Volatility					1.280*	1.509**	1.509**					0.002	0.002	0.002
					(0.676)	(0.680)	(0.680)					(0.013)	(0.014)	(0.014)
ESG Disclosure						-0.248	-0.246						0.005	0.005
						(0.348)	(0.348)						(0.005)	(0.005)
Analyst Coverage						0.0336***	0.0336***						0.000	0.000
						(0.00699)	(0.00699)						(0.000)	(0.000)
Dir. Expertise						-0.0926	-0.0991						-0.003	-0.003
						(0.306)	(0.307)						(0.007)	(0.007)
Dir. Other Act.						-0.0880	-0.0873						0.004	0.004
						(0.198)	(0.199)						(0.004)	(0.004)
Dir. Grad. Educ.						0.207	0.203						-0.000	-0.000
						(0.230)	(0.230)						(0.005)	(0.005)
Dir. Achievers						0.0160	0.0146						-0.006	-0.006
						(0.239)	(0.239)						(0.004)	(0.004)
Dir. Age						0.520**	0.518**						-0.007	-0.007
						(0.215)	(0.216)						(0.005)	(0.005)
Dir. Women						0.138	0.137						-0.003	-0.003
						(0.369)	(0.369)						(0.008)	(0.008)
Dir. Multi-Boards						-0.0558	-0.0572						-0.003	-0.003
						(0.183)	(0.183)						(0.003)	(0.003)
Dir. Independency						0.747**	0.746**						-0.004	-0.004
						(0.329)	(0.329)						(0.004)	(0.004)
Observations	11,639	11,639	11,639	11,639	11,639	11,639	11,639	28,583	28,583	28,583	28,583	28,583	28,583	28,583
# Groups	949	949	949	949	949	949	949							
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-Ind-Firm FE	-	-	-	-	-	-	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LR Chi-Squared	141.1	145.3	150.9	151	212.3	252.3	252.4							
Adjusted R-squared								0.288	0.288	0.288	0.288	0.297	0.298	0.298

Table 16: Neighbors' Degree Centrality

	Panel Conditional Logit Models		Panel Linear Fixed Effects Models	
	x = Corporate Misconduct (CM)		x = Earnings Management (EM)	
	$D(v) = 1$ if firm is connected with a high v degree centrality firm:			
	(1) v = Unweighted C_{ijt}	(2) $v = C_{ijt}$	(3) v = Unweighted C_{ijt}	(4) $v = C_{ijt}$
$D(v)$	-0.132	-0.088	-0.001	-0.003
	(0.179)	(0.165)	(0.002)	(0.003)
M_Exp$^{\text{Geo}}$(x)	0.964**	0.968**	0.019*	0.019*
	(0.412)	(0.412)	(0.010)	(0.010)
M_Exp$^{\text{Brd}}$(x)	0.541**	0.504**	0.020**	0.018**
	(0.214)	(0.214)	(0.008)	(0.008)
M_Exp$^{\text{Brd}}$(x)$\times D(v)$	0.087	0.271	0.032	0.044
	(0.375)	(0.352)	(0.024)	(0.027)
M_Exp$^{\text{Ind}}$(x)	0.050	0.066	0.065***	0.065***
	(0.403)	(0.403)	(0.022)	(0.022)
Ln(Total Assets)	0.322***	0.323***	-0.009***	-0.009***
	(0.078)	(0.078)	(0.003)	(0.003)
Age	-1.481***	-1.452***	-0.010	-0.010
	(0.492)	(0.491)	(0.008)	(0.008)
ROA	1.196***	1.196***	-0.022***	-0.022***
	(0.462)	(0.462)	(0.006)	(0.006)
Cash Holdings	-0.258	-0.262	-0.038***	-0.038***
	(0.383)	(0.383)	(0.006)	(0.006)
Leverage	-0.376	-0.369	-0.012*	-0.012*
	(0.281)	(0.281)	(0.007)	(0.007)
B/M	0.078	0.077	0.001	0.001
	(0.059)	(0.060)	(0.001)	(0.001)
Tobin's Q	0.005	0.007	0.003***	0.003***
	(0.046)	(0.046)	(0.001)	(0.001)
Annual Return	-0.074	-0.075	-0.001	-0.001
	(0.053)	(0.053)	(0.001)	(0.001)
Ret. Volatility	1.551**	1.540**	0.002	0.002
	(0.677)	(0.677)	(0.012)	(0.012)
ESG Disclosure	-0.147	-0.170	0.003	0.003
	(0.347)	(0.346)	(0.005)	(0.005)
Analyst Coverage	0.034***	0.034***	0.000	0.000
	(0.007)	(0.007)	(0.000)	(0.000)
Dir. Expertise	0.102	0.102	-0.005	-0.005
	(0.286)	(0.286)	(0.006)	(0.006)
Dir. Other Act.	-0.032	-0.033	0.004	0.004
	(0.198)	(0.198)	(0.004)	(0.004)
Dir. Grad. Educ.	0.263	0.270	-0.001	-0.001
	(0.227)	(0.227)	(0.005)	(0.005)
Dir. Achievers	0.062	0.078	-0.006	-0.006
	(0.238)	(0.238)	(0.004)	(0.004)
Dir. Age	0.572***	0.569***	-0.006	-0.006
	(0.213)	(0.213)	(0.005)	(0.005)
Dir. Women	0.071	0.066	-0.003	-0.003
	(0.368)	(0.368)	(0.008)	(0.008)
Dir. Multi-Boards	-0.043	-0.052	-0.002	-0.002
	(0.181)	(0.181)	(0.003)	(0.003)
Dir. Independency	0.523*	0.517*	0.002	0.002
	(0.270)	(0.270)	(0.005)	(0.005)
Observations	11,790	11,790	29,503	29,503
# Groups	967	967		
Year FE	Yes	Yes	Yes	Yes
State-Ind-Firm FE	-	-	Yes	Yes
LR Chi-Squared	264.1	263.2		
Adjusted R-squared			0.297	0.297

Table 17: Neighbors' Penalty Level

	Panel Conditional Logit Models	
	x = Corporate Misconduct (CM)	
	$D(v) = 1$ if firm is connected with a high v degree centrality firm:	
	(1) v = Unweighted C_{ijt}	(2) $v = C_{ijt}$
$D(v)$	-0.107	0.728
	(0.683)	(0.637)
M_Exp$^{\text{Geo}}$(x)	0.973**	0.967**
	(0.412)	(0.412)
M_Exp$^{\text{Brd}}$(x)	0.564***	0.578***
	(0.208)	(0.208)
M_Exp$^{\text{Brd}}$(x)×$D(v)$	-0.690	-2.305*
	(1.331)	(1.283)
M_Exp$^{\text{Ind}}$(x)	0.051	0.058
	(0.403)	(0.403)
Ln(Total Assets)	0.322***	0.321***
	(0.078)	(0.078)
Age	-1.463***	-1.464***
	(0.492)	(0.492)
ROA	1.200***	1.201***
	(0.462)	(0.462)
Cash Holdings	-0.253	-0.260
	(0.383)	(0.383)
Leverage	-0.365	-0.368
	(0.281)	(0.281)
B/M	0.076	0.075
	(0.059)	(0.059)
Tobin's Q	0.007	0.008
	(0.046)	(0.046)
Annual Return	-0.076	-0.076
	(0.053)	(0.053)
Ret. Volatility	1.567**	1.570**
	(0.677)	(0.677)
ESG Disclosure	-0.148	-0.153
	(0.346)	(0.346)
Analyst Coverage	0.034***	0.034***
	(0.007)	(0.007)
Dir. Expertise	0.095	0.099
	(0.286)	(0.286)
Dir. Other Act.	-0.039	-0.037
	(0.198)	(0.198)
Dir. Grad. Educ.	0.266	0.265
	(0.227)	(0.227)
Dir. Achievers	0.064	0.071
	(0.238)	(0.238)
Dir. Age	0.566***	0.564***
	(0.213)	(0.213)
Dir. Women	0.062	0.069
	(0.368)	(0.368)
Dir. Multi-Boards	-0.060	-0.061
	(0.181)	(0.181)
Dir. Independency	0.521*	0.513*
	(0.270)	(0.271)
Observations	11,790	11,790
# Groups	967	967
Year FE	Yes	Yes
State-Ind-Firm FE	-	-
LR Chi-Squared	266.8	268.2
Adjusted R-squared		

Table 18: Firm's Misconduct Culture

	Panel Conditional Logit Models											
	x = Corporate Misconduct (CM)											
	Less or equal than 3 offenses committed historically						More than 3 offenses committed historically					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
M_Exp^{Geo}(x)	0.276		0.118	0.114	0.0415	0.120	1.467**		1.436**	1.439**	1.329**	1.307**
	(0.634)		(0.640)	(0.642)	(0.646)	(0.649)	(0.627)		(0.627)	(0.627)	(0.632)	(0.636)
M_Exp^{Brd}(x)		1.159***	1.155***	1.157***	1.150***	1.181***		0.443	0.415	0.409	0.395	0.273
		(0.314)	(0.315)	(0.315)	(0.317)	(0.319)		(0.310)	(0.311)	(0.311)	(0.313)	(0.317)
M_Exp^{Ind}(x)				0.563	0.682	0.703				0.476	0.454	0.260
				(0.693)	(0.700)	(0.707)				(0.555)	(0.563)	(0.569)
Ln(Total Assets)					0.264**	0.219*					0.468***	0.346***
					(0.113)	(0.120)					(0.110)	(0.113)
Age					-1.133**	-1.024*					-13.87***	-13.10***
					(0.559)	(0.564)					(0.0186)	(0.0238)
ROA					1.508**	1.467**					1.178*	1.197*
					(0.712)	(0.710)					(0.663)	(0.666)
Cash Holdings					0.208	0.273					-0.984*	-0.810
					(0.541)	(0.545)					(0.582)	(0.589)
Leverage					0.132	0.163					-0.639	-0.476
					(0.433)	(0.437)					(0.434)	(0.438)
B/M					0.0309	0.0268					0.0771	0.116
					(0.0978)	(0.0989)					(0.105)	(0.107)
Tobin's Q					-0.0129	-0.0219					0.116	0.0866
					(0.0602)	(0.0608)					(0.0773)	(0.0784)
Annual Return					-0.0388	-0.0264					-0.180**	-0.139*
					(0.0910)	(0.0913)					(0.0800)	(0.0807)
Ret. Volatility					2.408**	2.525**					1.180	1.466
					(1.037)	(1.041)					(0.997)	(0.999)
ESG Disclosure						-0.0593						-0.111
						(0.623)						(0.471)
Analyst Coverage						0.0196*						0.0492***
						(0.0113)						(0.00972)
Dir. Expertise						-0.0155						-0.435
						(0.508)						(0.410)
Dir. Other Act.						-0.0613						-0.178
						(0.340)						(0.269)
Dir. Grad. Educ.						-0.188						0.239
						(0.362)						(0.330)
Dir. Achievers						-0.175						0.0597
						(0.412)						(0.323)
Dir. Age						0.00390						0.699**
						(0.352)						(0.301)
Dir. Women						-0.727						0.421
						(0.603)						(0.517)
Dir. Multi-Boards						-0.539*						0.213
						(0.303)						(0.252)
Dir. Independency						0.641						-0.0875
						(0.439)						(0.402)
Observations	5,421	5,421	5,421	5,421	5,421	5,421	5,006	5,006	5,006	5,006	5,006	5,006
# Groups	475	475	475	475	475	475	391	391	391	391	391	391
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-Ind-Firm FE	-	-	-	-	-	-	-	-	-	-	-	-
LR Chi-Squared	75.47	88.98	89.01	89.67	110.4	120.4	109.5	105.8	111.2	112	154.4	189.7

A Variable Description

Exposure to Misconduct

Each year t, at the firm level, we construct a measure of social-exposure to misconduct as well as a measure of geo-exposure to misconduct.

Exposure to Misconduct implied by Social Network ($\mathbf{M\_Exp^{Brd}}$): Each year t, a firm i's exposures to misconduct is computed by value-weighting (using $\{C_{ijt}^{\text{Brd}}\}$) connecting firms (j) based on their past misconduct (M_{jt}) defined based on misconduct events occurred during the misconduct window $[t-3, t-1]$. In the case of CM events described in Section 2.1.1, M_{jt} will be an indicator taking the value of one if the neighboring firm j experienced misconduct over the misconduct window and zero otherwise. In the case of the earnings management measure described in Section 2.1.2, M_{jt} will be the aggregate earnings management measure of the neighboring firm j exhibited over the misconduct window. Lastly, we compute the firm i's exposure to misconduct implied by its social network as the first expression in equation (1).

Exposure to Misconduct implied by Physical Network ($\mathbf{M\_Exp^{Geo}}$): Each year t, a firm i's exposures to misconduct is computed by value-weighting (using $\{C_{ijt}^{\text{Geo}}\}$) connecting firms (j) based on their past misconduct (M_{jt}) defined based on misconduct events occurred during the misconduct window $[t-3, t-1]$. In the case of CM events described in Section 2.1.1, M_{jt} will be an indicator taking the value of one if the neighboring firm j experienced misconduct over the misconduct window and zero otherwise. In the case of the earnings management measure described in Section 2.1.2, M_{jt} will be the aggregate earnings management measure of the neighboring firm j exhibited over the misconduct window. Lastly, we compute the firm i's exposure to misconduct implied by its physical network as the second expression in equation (1).

Financial Variables

Total Assets: A firm's total book assets at year t corresponds to its total assets (`at`) observed at the last fiscal-year recorded at year $t-1$. Consequently, firm's size is defined as the natural logarithm of total assets (Ln(Total Assets)).

Age: A firm's age measures the time in years since the firm starts filings with the SEC. Compustat tracks most firms as they first start filing with the SEC, and sometimes the first filing contains information from the prior 2 or 3 years before the filing date. The first date of the firm's total assets data in Compustat Annual set is believed to be a close proxy to the age of that company. Yet, since Compustat Annual data starts in 1950, this proxy makes the estimated age biased downwards for most of the firms that were founded before 1950.

ROA: Previous fiscal-year operating income before depreciation (`oibdp`) scaled by the average of the previous two fiscal-year total assets (`at`). If `oibdp` is missing, we use sales (`sale`) minus operating expenses (`xopr`). If sales are missing we use revenues (`revt`).

Cash Holdings: Previous fiscal-year cash equivalents (`che`) scaled by previous fiscal-year total assets (`at`).

Leverage: The leverage of a firm at year t is computed using information recorded at the last fiscal year-end period in year $t-1$. The leverage is defined as the ratio of total debt (i.e. short-term debt (`dlc`) plus long-term debt (`dltt`)) over total debt plus market value of equity (common shares outstanding (`csho`) times price close at the end of fiscal year (`prcc_c`)).

B/M: The Book-to-Market ratio of firm at year t is computed using information recorded at the last fiscal year-end period in year $t-1$, where the book value of equity is estimated as stockholders equity (`seq`) + deferred taxes (`txdb`) + investment tax credit (`itcb`) - preferred stock (`pref`). The market value of equity is estimated as the number of common shares outstanding (`csho`) times price close at the end of fiscal year (`prcc_c`).

Tobin's Q: The Tobin's Q of a firm at year t is computed using information recorded at the last fiscal year-end period in year $t-1$. Particularly, it corresponds to the ratio of (total assets + market value of equity - book value of equity) and total assets.

Annual Return: The annual return of a firm at year t is computed as its stock return over the 12 months prior the last fiscal period recorded in year $t-1$.

Return Volatility: The annual return volatility of a firm at year t is computed as the standard deviation of its stock return exhibited over the 24 months prior the last fiscal period recorded in year $t-1$.

Board Members Variables

Each year t, we obtain from BoardEx a sample of active directors —i.e. those who started their position before year t (`datestartrole` $< t$) and to year t, still hold them (`dateendrole` $> t$) —to build the following firm-level board variables.

Dir. Expertise: average number of the firm's year-t board members who —according to the BoardEx Individual Profiles data base —held a position prior year t in the same industry (SIC-2) that the firm belongs to.

Dir. Other Activities: average number of "other activities" performed by the firm's year-t board members from year $t-3$ to year $t-1$ according to the BoardEx Individual Profiles data base (i.e. clubs, memberships, non-profit activities, among others).

Dir. Graduate Education: average number of the firm's year-t board members who received a graduate degree before year t according to the BoardEx Individual Profiles data base.

Dir. Achievers: average number of academic and professional "achievements" accomplished by the firm's year-t board members from year $t-3$ to year $t-1$ according to the BoardEx Individual Profiles data base.

Dir. Age: average age of the firm's year-t board members according to the BoardEx Individual Profiles data base.

Dir. Women: average number of women on the firm's year-t board according to the BoardEx Individual Profiles data base.

Dir. Multi-Boards: average number of the firm's year-t board members who participate in more than one board in year t according to the BoardEx Individual Profiles data base.

Dir. Independency: average number of the firm's year-t board members who are classified as "independent" in year t according to the BoardEx Individual Profiles data base (i.e. their `ROLENAME` field contains the word "independent" on it).

Additional Variables

ESG Disclosure: logarithm of one plus the ESG disclosure score issued by Bloomberg for the firm at the current fiscal year t.

Analyst Coverage: logarithm of one plus the number of analysts that have issued an earnings forecast for the firm for the current fiscal year t, in the last month; according to IBES data set.

B Selection Model

B.1 The Model

The model has two different sets of agents. There are firms I and directors J. Each director can match to a single firm board, and each firm has a limited capacity of board members; it can employ q_i. $M = IxJ$ represents the set of all potential matches. A match consists of a director j working on firm i. Firms have preferences over board members' characteristics, and directors have preferences over firms' characteristics (like location and social distance). The equilibrium concept employed here is stability, from the perspective of cooperative game theory (meaning a match is a situation where no director nor firm wants to deviate from).

A valuation represents agents' preferences. They are unobserved in the data, and in the empirical model, they are latent variables. Thus, the valuation of any given match of $ij \in M$ is given by:

$$V_{ij} = W_{ij}\alpha + \nu_{ij} \tag{4}$$

where W_{ij} is a vector of observed characteristics, α is a parameter to be estimated, and the error term ν_{ij} contains factors that are unobserved in the data.

The second part of the structural model is the outcome equation. For each $i, j \in M$ let:

$$Y_{ij} = X_{ij}\beta + \epsilon_{ij} \tag{5}$$

where X_{ij} contains observed characteristics, β is the parameter to be estimated, and Y_{ij} is the outcome variable of interest. In our case, directors misconduct. The error terms are assumed to be independent of X and W, and this assumption identifies the parameters of the model.

The estimated parameters estimate the outcomes of all potential matches, not just the observed ones. The estimated coefficient associated with physical and social proximity reflects the predicted change in the misbehavior of a given board member worker following an increase in physical or social proximity, after controlling for the sorting in the market, representing the effects of proximity on directors' misbehavior.