CEO Networks and Shareholder Litigation

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Abstract

We find that firms led by powerfully networked CEOs are exposed to greater securities litigation risk. Suits are more likely to be led by institutional investors when firms are led by more connected CEOs. While more connected CEOs are better able to secure favorable legal outcomes for firms, including a greater probability of dismissal and lower monetary settlements, shareholder lawsuits result in significant corporate governance reforms and reduce future CEO opportunities: (1) Defendant firms with highly central CEOs are more likely to replace their CEOs and enhance the independence of their board of directors, and (2) Well-connected CEOs experience a decline in their network power after the lawsuits. Our findings suggest that CEO network power weakens corporate governance, but shareholder litigation serves as an effective governance mechanism for disciplining CEOs.

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A vast literature documents the importance of institutional investors in monitoring management on behalf of investors and their role in providing greater investor protection (e.g. Shliefer and Vishny, 1997). Long-term institutional investors have greater incentives to promote better firm governance, as they reap long-term benefits by doing so, and have been shown to be more active and successful in promoting governance reform (Coffee, 1991; Black and Coffee, 1994; Gillan and Starks, 2000). When management is particularly resistant to governance reform, or, when managerial misconduct and/or damages are revealed, securities class action (SCA) lawsuits and derivative suits have been shown to be an effective means by which shareholders monitor defendant firm management and improve governance (Romano, 1991; Ferris et al., 2007; Cheng et al., 2010). According to a recent study provided by Cornerstone Research, the number of settled securities class action lawsuits surged to its highest level in 15 years in 2022, and was accompanied by the highest average settlement amount ($36.2 million) on record.[1] However, the cost-benefit tradeoff of shareholder securities litigation remains ambiguous (e.g., Arena and Julio, 2015; Chu and Zhao, 2021; Deng et al., 2014; Nguyen et al.,2018; Chung, et al., 2020).

A growing body of evidence suggests that communication between institutional shareholders and firm executives are an important governance mechanism, and that communication between institutional shareholders and management is a common occurrence.[2] For example, in 2015, RDG Capital announced a constructive dialogue with the CEO and board of TravelCenters concerning the potential monetization of company-owned real estate in order to "reduce the significant gap between the Company's current share price and its fair market

[1] Available at https://www.cornerstone.com/wp-content/uploads/2023/03/Securities-Class-Action-Settlements-2022-Review-and-Analysis.pdf
[2] See, for example, Becht et al. (2015), Deloitte (2015), McCahery et al. (2016), and Levit (2019), among others.

value…"[3] Executive connections could potentially decrease the cost of communications and/or improve the likelihood and effectiveness of shareholder-manager communications. However, empirical studies necessarily focus on outcomes, e.g. hostile takeover attempts, proxy fights, or shareholder class action suits, and these events reflect a failure to resolve issues via private communications (Levit, 2016).

Extant literature identifies many contributing factors that amplify litigation risk, such as merger and acquisition activity, poor financial performance, regulatory violations or investigations, whistleblower complains, and fraud, but little attention has been paid to managerial characteristics that may increase or mitigate litigation risk.[4] In this paper, we attempt to fill the gap by investigating an unexplored dimension of managerial attributes on shareholder litigation risk: CEO network power.

Powerful CEOs have a greater ability to engage in opportunistic behavior, as they have been shown to be resilient to board monitoring and discipline. For example, more powerful CEOs may have more influence over the compensation committee of the board and may have more input over reported firm performance. CEO compensation usually consists of large equity holdings and options that are closely associated with stock market performance. Self-interested CEOs may take advantage of price fluctuations in the equity market through earnings manipulation or the release of false information to shareholders, which trigger security class action lawsuits (Dechow et al., 1996).

[3] https://www.thestreet.com/story/13142853/1/at-travelcenters-former-icahn-executive-pushes-for-400m-sale-leaseback-deal.html

[4] Current research provides little evidence on how managerial traits affect shareholder litigation. Executive overconfidence is associated with higher securities litigation risk (Banerjee et al., 2016), whereas female executives reduce the incidence of shareholder litigation (Adhikari et al., 2016).

We develop two competing hypotheses based on contemporary social network theory to investigate the impact of CEO networks on shareholder litigation risk. On one hand, well-connected CEOs reduce a firm's exposure to securities litigation risk as they are able to more efficiently gather and disseminate information through the network, lowering information asymmetries between firms, institutional investors, and market participants. Further, as networks both reward trustworthy actions and punish suboptimal behaviors (Burt, 2005), networks enable transactions that rely on soft information and/or trust. Previous studies show that executives' personal connections reduce their firms' cost of borrowing, relaxes covenant restrictions (Engelberg et al, 2012; and Karolyi, 2018), lowers the cost of equity (Ferris et al., 2017) and enhances stock liquidity and price discovery (Egginton and McCumber, 2019; Egginton et al., 2022). In addition, well-connected CEOs also incur reputational loss from corporate misconduct as social networks penalize dishonest and unethical behaviors (McMillan and Woodruff, 2000). Such concerns can discourage CEOs from reaping private benefits from companies, thereby deterring their involvement in corporate fraud. In this scenario, CEO social networks serve as a quasi corporate governance mechanism and thus mitigate litigation risk. Therefore, if executive connections improve the information environment around firms and reduce monitoring costs, we expect a negative relation between CEO connections and securities litigation risk.

On the other hand, more CEO connections may increase a firm's exposure to shareholder litigation risk for two reasons. First, if the presence of well-connected CEOs simply enhances firms' visibility and attracts greater investor attention, we expect that firms are more likely to be the target of frivolous security lawsuits. Frivolous shareholder lawsuits can be detrimental to shareholder value because it imposes substantial financial and non-pecuniary costs on firms, such as legal fees, settlements, managerial distraction from value-enhancing activities, and firm

reputational damage (e.g., Gande and Lewis, 2009; Romano,1991). Second, CEOs can exploit their social networks to entrench themselves and to mitigate the effectiveness of internal and external governance. Executive connections have been shown to entrench management, lowering the probability of executive turnover following poor firm performance or fraudulent activity (El-Khatib et al., 2015; Khanna et al., 2015). Greater connections are also associated with higher firm leverage, greater risk taking, poor firm performance, greater likelihood of bailouts, higher probability of earnings management activity, and an increased propensity to commit fraud (Faccio, 2006; Faccio et al., 2007; Faccio, 2010; Khanna et al., 2015; Jandik et al., 2019). Executive connections may also embolden managers to resist institutional shareholder demands if networks insulate firm management from pressure or discipline. Therefore, if CEO social connectedness deteriorates corporate governance, we expect that firms led by CEOs with greater network power are more likely to be subject to shareholder class action lawsuits.

To investigate how CEO network power affects shareholder litigation risk, we follow previous literature (e.g., El-Khatib et al., 2015) to construct six measures of CEO social connectedness from raw appointments data in the BoardEx databases: *Degree, Betweenness, Eigenvector, Closeness, Centrality, Cumulative Degree,* and *Cumulative Eigenvector* centralities. We obtain data on securities class action lawsuits from the Stanford Securities Class Action Clearing House (SCAC) to capture firms' litigation risk. Using a panel of 31,282 firm-year observations from 1,587 unique U.S. public firms for the period 1996-2019, we find that firms with well-connected CEOs are more likely to be the target of shareholder-initiated securities lawsuits; a one-standard deviation increase in CEO betweenness centrality increases the likelihood of a class action lawsuit by 47%, whereas a one standard deviation increase in CEO degree centrality almost doubles the likelihood of a suit being filed.

Next, to distinguish the primary mechanism driving the positive relation between CEO network centrality and shareholder litigation, we investigate the role of institutional investors as lead plaintiff in shareholder-initiated lawsuits. Institutional lead plaintiffs have a larger stake in firms, better access to insider information, and more litigation resources and expertise than individual lead plaintiffs (Weiss and Beckerman,1995). As a result, they are more likely to achieve litigation success and are less likely to launch frivolous lawsuits (Cheng et al., 2010). Following this line of argument, if high-centrality CEOs simply attract frivolous lawsuits to firms, we expect no relation between high-centrality CEOs and institutional investor-led lawsuits. If CEO social connectedness weakens corporate governance, we expect that CEOs with greater network power are positively related to the likelihood that institutional investors serve as lead plaintiffs in the lawsuits. We find a positive relationship between CEO centrality and institution-led lawsuits, suggesting that such suits are resultant of less effective corporate governance when CEOs are more connected.

We further investigate the value implications of CEO connections on shareholder litigation risk by exploring its impact on two immediate litigation outcomes: monetary settlements and the probability of dismissal. We find that high-centrality CEOs are more likely to be associated with dismissed lawsuits (instead of settled) and lawsuits with lower settlement amounts. On the surface, our empirical results appear contrary to the findings of Cheng et al. (2010) that institutional investor-led lawsuits are less likely to be dismissed and more likely to receive greater settlement amounts. However, if the primary objective of shareholder lawsuits is to improve corporate governance following the lawsuits, regardless of immediate litigation outcomes and costs, then the lawsuits appear to be successful; better corporate governance improves firm performance in the long run. Our analysis finds that following shareholder-initiated securities lawsuits, defendant

firms with highly central CEOs are more likely to replace their CEOs and enhance the independence of their boards of directors. Well-connected CEOs experience a decline in their network power after the lawsuit, consistent with arguments that shareholder litigation is an effective governance mechanism that disciplines managers via reputational loss, a decline in future job opportunities, and a lower value in the labor market (Romano, 1991). Taken together, our empirical results show that suits discipline CEOs and improve corporate governance, consistent with arguments that the long-term benefits to institutional shareholders of improved corporate governance are greater than the costs associated with shareholder litigation (Weiss & Beckerman, 1995; Fisch, 2001; Cheng et al., 2010).

Typically, stock returns around the filing of a shareholder-led lawsuit are negative. We find, however, that the shareholders of firms led by powerful CEOs welcome the filings. Cumulative abnormal stock returns around the announcement are highest for firms led by CEOs with the greatest network power, suggesting that shareholder-initiated lawsuits serve as an alternative governance mechanism meant to discipline entrenched managers. The differences in cumulative abnormal returns between firms led by CEOs in the top quartile of network power and the lowest quartile are statistically and economically significant, between 4.5% and 8.2%, depending upon the network power measure. Further, since our measures of network power are directly derived from employment data, we are able to document that regardless of whether or not the CEO is replaced at the firm subject to an SCA suit, CEOs have fewer board appointments subsequently and suffer a meaningful decrease in network power in the years following the lawsuits. One lost board appointment for a CEO equates to a loss of $307,000 per year on average, or a $1.8 million loss over a typical six-year board term.

Our study contributes to several streams of literature. First, we offer new insights into previous research that explores the determinants of shareholder litigation risk. Current studies show that industry membership (Francis et al.,1994a, b; Johnson et al., 2007), firm characteristics (Kim and Skinner, 2012), political values (Hutton et al., 2015), and CEO gender (Adhikari et al., 2016) have important implications for shareholder litigation risk. We complement this stream of literature by uncovering the importance of CEO network power on litigation risk.

Second, our paper contributes to the ongoing debate over the merits of shareholder litigation on firms. While shareholder litigation can exert governance on firms, recent studies focus on the dark side of shareholder litigation. For example, the threat of litigation risk discourages managers from engaging in corporate innovation (Lin, et al., 2021), lowers corporate takeover efficiency (Chu and Zhao, 2021), and increases precautionary cash holdings while reducing the value of the cash held (Nguyen, et al., 2018). Given the deleterious effects of shareholder-initiated lawsuits, the last decade has witnessed significant regulatory changes, such as the enactment of Private Securities Litigation Reform Act of 1995 (PSLRA) and the introduction of universal demand laws, which aim to impose hurdles for shareholders seeking to initiate lawsuits against firms. Our findings show that shareholder lawsuits improve governance at firms led by well-connected CEOs, shedding light on the long-term benefits of shareholder litigation. These findings should be of interest to regulators and investors.

Third, we add to the literature on economic social networks by providing the first large-scale empirical evidence that network dynamics are disciplinary and sanction sub-optimal behaviors (Boot et al., 1993; Burt, 2005; Brass & Labianca, 2006); highly connected CEOs whose firms are subject to an SCA filing suffer a loss of reputation, job opportunities, and network influence ex-post.

Our study is related to Khanna et al (2015) that finds an increased probability of fraud when CEOs are connected to the directors who are tasked with monitoring firm management. Our paper focuses on CEO connections and network power more broadly, wherein the great majority of the CEOs' connections are outside the firm in question. We find litigation risk is increasing in a CEO's broader network connections and is not limited to internal appointments.

The rest of the paper proceeds as follows: Section 1 describes our sample and data on executive networks and shareholder lawsuits, and the empirical design. Section 2 presents our empirical findings. Section 3 discusses our results and related endogeneity concerns. Section 4 concludes.

1. Data and sample description

1.1 Empirical representation of network power

The empirical representation of network power begins with raw data from BoardEx of executive and non-executive board appointments at North American firms and non-corporate entities. This comprehensive dataset consists of detailed information on executives' personal information, professional appointments, and company details for the period 1996 - 2019. Particularly, professional appointments include managerial positions, e.g. CEO, CFO, senior managers, and non-executive board positions. In network terminology, a *node* is an individual or entity, and an *edge* or *link* is a relationship between nodes. For our purposes, executives are nodes and shared board appointments are edges. From the raw BoardEx appointments data, we calculate five measures of network position and power – commonly known as network centrality measures - using current networks and two measures of network power derived from cumulative networks. Current networks are representations of all current appointments in any given year. For example,

the CEO of ABC Corporation is directly connected to all senior managers and board members of ABC. If the CEO of ABC also is a non-executive director at XYZ Corporation, she is also directly connected to all of the directors of XYZ. If she subsequently leaves the board at XYZ, she is no longer directly connected to XYZ executive and non-executive directors. Cumulative networks on the other hand include all present and past professional relationships; when CEO of ABC leaves the board of XYZ, cumulative measures still count these past relationships as relevant. Current network centrality measures are therefore more dynamic than cumulative measures; current centrality represents time-varying influence and power, while cumulative centrality is typically increasing over time and therefore is a reasonable proxy for the accumulation of one's reputation and influence over the course of a career.

The five measures of current centrality include degree, eigenvector, betweenness, and closeness centralities, and a composite measure of centrality. Degree and eigenvector centralities capture the size and importance of one's immediate network, while closeness and betweenness centralities are spatial representations of the networks surrounding an executive.

Degree centrality is simply the sum of an executive's direct connections; it is the size of one's Rolodex. A computationally and conceptually simple extension of degree centrality is eigenvector centrality, which weighs degree centrality by the degree centralities of the executive's connections. In other words, an executive with a higher eigenvector centrality is directly connected to people who also have many connections.

Spatial representations of the position of an executive in the network are measured by betweenness and closeness centralities. Betweenness centrality is the number of times an executive lies between two otherwise disconnected nodes relative to all possible connections. A node that lies between two disconnected nodes potentially has the power to pass along, alter, or block

information between the disconnected nodes, and is thus akin to the concept of information or influence brokerage. Relatedly, closeness centrality is the inverse of the number of steps it takes for a node to reach all other nodes in the network. Executives with high closeness centralities have networks that are close and dense, as opposed to far and sparse. Both closeness and betweenness centralities are proxies for one's network reach, influence, and the efficiency of information flows around nodes. Finally, as centrality measures are by construction correlated, we also reduce these measures to their first principal component, the common component of all four measures, simply calling this "centrality", as the fifth current centrality measure in our regression analyses.

[Figure 1 about here]

We use current centrality measures given the intuition that in day-to-day affairs it is our contemporaneous network environments that are most relevant to current information sets and represent our immediate influence and power. To further develop intuition, Figures 1 and 2 are visual representations of two CEO networks used in our sample. The visualizations are rendered using an algorithm that maximizes both the density of immediate relationships – making tight "clusters" – and the distance between disconnected nodes, resulting in visual space between clusters. Executives are represented by black dots, the size of which are scaled by degree centrality; larger nodes have larger immediate networks. Colored lines are the relationships between nodes, which are shared board appointments in our study. Blue lines are connections between directors of firms that are not subject to securities class action suits that year, while red lines are connections between executives at a firm subject to a suit. Figure 1 is a representation of the majority of the CEO network in 2010. There are 1,752 CEOs connected to 77,319 other executives by 121,153

shared board appointments. In this zoomed out view, one can easily identify large clusters of close networks around central nodes.

[Figure 2 about here]

Figure 2 is a close-up view in the center of the CEO network in 2004. There are 1,592 CEOs connected to 73,556 other executives via 110,018 shared board appointments. The close-up view allows us to see individual nodes and their relative sizes, and direct connections (lines) to executive and non-executive directors. It is also easier to intuit closeness and betweenness centralities, as some nodes have several close clusters around them and seemingly are situated between otherwise disconnected nodes. We can also see the connections to one's connections. Fittingly, in this area of the network, there is a highly central figure directly connected to three other large clusters of directors. The central figure is a CEO whose firm is subject to a suit that year.

In addition to current (contemporaneous) networks, we measure the social capital, reputational power, and influence that executives build over their careers. Reasonable proxies for these related concepts include cumulative degree and eigenvector centralities, under the assumption that the more reputable the executive the more likely she will be asked to serve multiple entities over her career. Though as argued above, current networks capture day-to-day influence and information environments, past relationships may also be relevant especially regarding reputation, influence, and reach. Cumulative network centrality measures are thus representations

of career-long reputation and power and also serve as alternative measures of potential entrenchment.[5],[6]

In sum, we calculate five measures of current network power: degree, eigenvector, closeness, and betweenness centralities, and "centrality" (the first principal component of the aforementioned). We also calculate two measures of cumulative network power, degree and eigenvector centralities. We do this for all executives in the North American network each year. Although degree centrality is intuitively simple, e.g. presumably 150 connections is "better" than 17 connections, the other measures are less intuitive. We therefore normalize each variable by assigning raw centrality measures to percentiles each year, such that an executive in the 83rd percentile of closeness centrality enjoys a closeness centrality that is higher than 82 percent of all other executives that year.

1.2 Securities class action lawsuits

We obtain the filings on securities class action lawsuits between 1996 and 2019 from the Stanford Securities Class Action Clearing House (SCAC). We collect information about the filing dates of security class lawsuits, defendants, class period, lawsuit filing dates, lawsuit outcomes, settlement amounts, and indicators of lead plaintiffs. To start with, we construct an indicator variable *class action* that equals one if a firm is subject to a securities class action lawsuit in year *t*, and zero otherwise.

[5] We do not calculate betweenness and closeness centralities using cumulative data for two reasons. Firstly, it is conceptually unclear whether and the degree to which spatial representations of network position based upon past relationships inform information flows or reputation effects. Secondly, as we calculate centrality measures for all individuals in a network, and not just CEOs, the time required to calculate these measures is measured in months or years. Betweenness and closeness calculations increase exponentially with a linear increase in an edge list.

[6] Entrenchment is typically estimated using firm-specific information, e.g. the CEO is also the chairman of the board, or the presence of potentially co-opted "grey" independent directors. Cumulative centrality measures, however, proxy not only for the potential resilience of a CEO to internal discipline but also the likelihood that, subsequent to leaving the firm in question, a former CEO will be able to secure a similar position elsewhere, thus cushioning the effects of internal or external disciplinary forces.

We also include an indicator *institutional plaintiff* that equals 1 if the lead plaintiff of the security class action lawsuit is an institutional investor, and 0 otherwise. Cheng et al. (2010) indicate that institutional investors can exert their monitoring power by initiating security class action lawsuits. Compared to individual lead plaintiffs, institutional lead plaintiffs have larger investments in the firm's stock, stronger incentives to exert governance on the firms, and better access to litigation support and expertise. Generally, a security class action lawsuit led by institutional investors are therefore thought to be more likely to be successful and obtain larger settlements. Following this line of reasoning, we further construct two variables to capture the outcomes of lawsuits: *Dismissed* is a binary variable equal to one if the case is dismissed, and zero otherwise, and *log(Settlement)* is the natural logarithm of the settlement amount won in the security class action lawsuit.

1.3 Firm characteristics and market data

We obtain data on stock returns and prices from the Center for Research on Security Prices (CRSP) and firm characteristics from Compustat. We exclude financial, insurance, and real estate firms (SIC code 6000-6900) and regulated utilities (SIC code 4900-4999) because these industries are subject to different regulatory requirements.

We then follow previous literature (e.g., Kim and Skinner, 2012)2012)) to control for firm characteristics and stock return variables that may affect shareholder litigation risk. In particular, we include Altman's (1968) Z score as the proxy for financial stress because Kim and Skinner (2012) indicate that financially distressed firms are more likely to be sued. We define *Lnasset* as the natural logarithm of a firm's total assets. *M/B* ratio is calculated as book value of assets minus book value of common equity plus the market value of equity, scaled by book value of assets.

Dummy variable *NYSE* is an indicator variable that equals one for firms listed on the New York Stock Exchange, and zero otherwise. *ROA*, profitability, is the ratio of net income to book value of assets. *R&D* is the ratio of research and development expenses to book value of the assets, set to zero if missing. *Sales Growth* is the difference between sales in year t and sales in year t-1 scaled by sales in year t. Consistent with Kim et al (2012), we include the following four measures of stock performance to capture potential shareholder wealth losses: (1) *Return* is the market-adjusted annual stock return. (2) *Stock Turnover* is defined as trading volume accumulated over the fiscal year *t* scaled by the number of shares outstanding at the beginning of that year. (3)*Skewness* is the skewness of the firm's daily return in year *t*, and (4) *Returns Std* **is** the standard deviation of the firm's daily return in year *t*. We also control for leverage, equity issuance, and goodwill. Variable definitions are provided in the Appendix. All continuous variables are winsorized at the 1% and 99% levels to mitigate the impact of outliers.

1.4 Summary statistics

Panel A of Table 1 provides the summary statistics for our whole sample. The mean of *class action* is 0.023, indicating that 2.3% of firms in our sample are subject to security class action lawsuits over all years. The mean (median) firm profitability (ROA) is -4.2% (1.3%). On average, firms have sales growth of 4.8% and a market-to-book ratio of 1.89.

To provide insight into the differences in CEO network centralities and other characteristics for firms with and without shareholder lawsuits, we present descriptive statistics for the sued versus non-sued firms and differences in means in Panel B of Table 1. The mean of *betweenness* is 65.91 for the non-sued sample and is 74.62 for the lawsuits sample. The two-sample t-test and Wilcoxon-test both show that CEO network centrality in sued firms is significantly different from that in non-sued firms at the 1% level. In addition, firms experiencing litigation are larger, have more working capital, higher sales growth, greater innovation activities, higher stock

turnover and higher Z-scores. Taken together, our univariate analysis provides preliminary evidence that CEOs with greater network power are more likely to lead firms that are targeted with lawsuits across the different measures of CEO network centrality.

[Table 1 about here]

2. Empirical results

2.1 CEO network power and litigation risk

In this session, we explore whether CEO network power affects shareholder litigation risk. On one hand, if CEOs with more connections are leveraging their networks to lower information asymmetries between firms and shareholders or, relatedly, if shareholders are more efficiently able to attain information from and about CEOs and their firms, the probability of an SCA filing should be lower when CEOs are more connected. Conversely, if more connected CEOs are more likely to obfuscate, engage in earnings manipulation, commit fraud, and/or be less likely to be accountable to internal or external discipline, firms led by CEOs with greater network power and influence may be more likely to be subject to SCA suits. Our null hypothesis is that there is no association between CEO network power and SCA filings. Our baseline regression is a logit specification of the form:

$$\Pr(classaction) = \beta_{i,t-1} networkpower + \gamma_{i,t-1} firmcontrols + \gamma_{i,t-1} marketcontrols + \gamma\, yearFE + \gamma_i industryFE + \varepsilon_i \quad (1)$$

where *networkpower* is one of the following measures of CEO network centrality: (1) *Betweenness,* calculated as the number of times an executive lies between two otherwise disconnected nodes relative to all possible connections*;* (2) *Closeness,* defined as the inverse of the number of steps it takes for a node to reach all other nodes in the network*;* (3*) Centrality (PCA),* The principal eigenvalue of four centrality measures: degree, eigenvector, betweenness, and

closeness centralities*;* (4) *Cum Degree*, measured as the total of an executive's present and past direct connections*;* (5) *Cum Eigenvector*, wherein *Cum Degree* is weighted by the *Cum Degree* of one's connections*;* (6) *Degree*, the number of an executive's current direct connections*;* and (7) *Eigenvector*, which is *Degree* weighted by the current *Degree* of one's connections. *Firmcontrols* is a vector of firm characteristics for firm *i*, which includes *Altman's Z, Debt, Equity, Goodwill, Lnasset, M/B, NYSE, ROA, R&D, Sales Growth,* and *WC*. *Marketcontrols* is a vector of firm *i* stock characteristics including *Return, Return Std, Skewness, and Stock Turnover*. Variable definitions are provided in the Appendix. The specification includes year and industry fixed effects, and robust errors are clustered by firm (Petersen, 2009).[7]

Panel A of Table 2 reports results of the logit regression without controls. The coefficients on the network measures are all positive and significant at the 1% level across all columns, which provides preliminary evidence that firms with greater CEO network power are more likely to be sued. The economic effects are significant as well. For example, using the coefficient estimates in Column (2) to estimate the economic impact of CEO network power on shareholder litigation, we find that a one-standard deviation increase in CEO network centrality (*Betweenness*) increases the likelihood of an SCA filing by 47.8% (increasing SCA probability by 1.1% compared to the unconditional probability of 2.3%). Similarly, a one standard deviation in degree centrality doubles the unconditional probability of a suit, from 2.3% to 5%.

To ensure that our results are not subject to omitted variable bias, we rerun the logit model controlling for firm characteristics identified in prior studies (e.g., Kim and Skinner, 2012; Banerjee et al., 2018) that may affect shareholder litigation risk. Panel B of Table 2 reports OLS

[7] Fixed effects estimators for binary outcome models may suffer from the "incidental parameter problem" that potentially biases estimates, especially when the empirical data utilized are "moderately" large. We therefore calculate estimates corrected for potential biases per Fernandez-Val and Weidner (2016) and Cruz-Gonzales et al. (2017).

regression results. The coefficient estimates of the seven CEO centrality measures are all positive and statistically significant across all specifications, suggesting that greater CEO network power is associated with higher shareholder litigation risk. The economic magnitude is significant. Based on the coefficient estimates of *Eigenvector* in Column (3), holding all other covariates at the sample means, the probability of litigation increases by 26% for a one standard deviation increase in CEO centrality. Overall, we find a positive relation between CEO network power and shareholder litigation risk.

[Table 2 about here]

2.2 Lead plaintiffs

In the previous session, our results show that firms with greater CEO network power are more likely to be sued by shareholders. We posit two possible reasons for the increased probability of SCA filings when CEOs are more connected. On one hand, if more connected CEOs are more visible or "famous", it may be that individual and/or small shareholders are targeting firms led by celebrity CEOs with the expectation of a quick settlement (Weiss and Beckerman, 1995). If this is the case, we expect that the likelihood that the lead plaintiff is an institutional shareholder should be lower, and that such filings are more likely to be frivolous and dismissed. On the other hand, if the suits are resultant of CEO centrality enabling sub-optimal behaviors (e.g. poor decisions, obfuscation) and/or more powerful CEOs are able to resist efforts by institutional shareholders to properly monitor their firms, we expect that greater CEO network power is associated with a greater likelihood that the suits are led by institutional investors.

Lead plaintiffs incur significant costs ranging from the distraction of management from their primary responsibilities to selecting and monitoring class counsel to the possible disclosure of proprietary information during the discovery process (Weiss and Beckerman, 1995; Fisch,

1997). Further, should the plaintiffs lose the case, all costs incurred by the lead plaintiff are non-reimbursable. Thus, the decision to serve as lead plaintiff must be subject to a thorough cost benefit analysis such that the expected settlement amounts and/or the longer-term improvement in firm performance resultant of changes to firm governance outweigh the costs of litigation (Gillan and Starks, 2000; Cheng et al., 2010).

To investigate whether CEOs with more network power are more likely to be targeted by individual shareholders, and therefore more likely to be frivolous, or SCAs are led by institutional investors, and therefore more likely to be disciplinary in nature, we rerun our baseline regression (1).The dependent variable *Inst_Dummy* is an indicator that equals 1 if the lead plaintiff is an institutional investor in the shareholder litigation in year t, and 0 otherwise.

Table 3 reports results of OLS regressions. We find that the coefficients of CEO network measures are positive and significant across all specifications, indicating that greater CEO network power is positively related to the possibility of the SCA is led by an institutional investor. Our findings are consistent with Chen et al (2010) that institutional lead plaintiffs have strong financial incentives to pursue governance reform. Our findings suggest that firms led by CEOs with greater network power are more likely to be subject to governance-related class action lawsuits led by institutional investors.

[Table 3 about here]

2.3 Market reaction to SCA filings

In this section we explore the wealth effect of shareholder litigation risk by investigating the announcement returns around the filing. Shareholder reactions to SCA filing announcements should inform whether the market positively values the filing, under a presumption of future

improved firm performance, or an expectation the filing will be value-destroying, if the direct costs of defending against the suit and the indirect costs of manager distraction erode shareholder value.

Table 4 reports cumulative abnormal returns in a -5/+5 window around time 0, the day of the filing announcement. CARs are measured utilizing a value-weighted market adjusted model.[8] Column 1 of Table 4 reports the difference between cumulative abnormal returns for the highest quartile and the lowest quartile in each centrality measure for firms subject to a suit announcement. For all but one measure (cumulative eigenvector), differences in CARs are statistically significant and economically large. SAC firms with CEOs in the highest quartile of centrality have announcement returns that are between 4.5% and 7.8% higher than firms whose CEOs are in the bottom quartile of centrality measures. The remaining columns of Table 4 report that higher CEO centrality is associated with higher cumulative abnormal returns when filings are announced. To conclude, the results in Table 4 indicate that shareholders value SCA filings when CEOs have more network power, supporting the argument that the market anticipates improvements in firm performance and value, potentially resultant of changes in firm governance and CEO accountability.

[Table 4 about here]

2.4 Securities class action outcomes

Cheng et al. (2010) present evidence that suits led by institutional investors are less likely to be dismissed and are more likely to have larger settlement amounts. We investigate whether CEO network power is a mitigating factor in the likelihood of dismissal by revisiting equation (1) wherein the dependent variable is an indicator equal to one if the suit is dismissed. Table 5 reports

[8] Results are qualitatively and quantitatively similar using a Fama-French three factor and a Fama-French-Carhart four-factor model.

results. The coefficient estimates of CEO centrality measures are positive and statistically significant, suggesting that higher CEO network power is associated with a greater probability of case dismissal. Under the assumption that the courts are not swayed by the network power or celebrity of the CEO in question, biasing the process in favor of dismissal, cases brought against highly networked CEO firms appear to have less legal merit. Our findings suggest that these suits, under a general assumption of institutional investor sophistication, are potentially an avenue by which shareholders seek governance improvements regardless of the immediate outcomes of the suits.

[Table 5 about here]

For suits that survive the motion to dismiss we investigate whether network power is a mitigating factor in settlement amounts. We revisit equation (1) such that the dependent variable is the natural log of the settlement of the suit. In our sample, settlement amounts range from $0 to $3 billion. The mean settlement amount is $43.89 million. Table 6 reports results. The coefficients of centrality measures are negative and statistically significant. Consistent with our findings with regard to dismissal, but again in contrast to what one would expect given the findings of Cheng et al. (2010), cases brought against firms with more powerful CEOs have lower settlement amounts. The economic magnitude is non-trivial. We use the coefficient estimates of *Betweenness* to estimate the economic effect. Holding covariates at their means, a one standard deviation increase in network centrality (*Betweenness)* lowers settlement amounts by $1.58 million. As with the propensity for case dismissal, the evidence suggests that plaintiffs suing more powerful CEO firms have a more difficult time demonstrating to the court that shareholders have suffered higher damages.

[Table 6 about here]

Our findings suggest that these suits, under a general assumption of institutional investor sophistication, are potentially an avenue by which shareholders seek governance improvements, and therefore longer-term benefit from subsequent firm performance, regardless of the immediate outcomes of the suits.

2.5 Ex-post Change in CEO Turnover, Board Independence, and Network Effects

2.5.1 Changes in firm governance

If institutional investors are using the courts to force governmental reform on firms led by entrenched managers, it is a reasonable conjecture that firms led by more entrenched managers would experience greater executive turnover and increased board independence after shareholder class action suits. We investigate whether firms led by CEOs with greater network influence at the time of the SCA subsequently are more likely to replace the CEO and/or increase the independence of the board. We consider a two-year period after the filing for two reasons. Firstly, lawsuits – even dismissed suits – take some time to be resolved. Secondly, board elections are typically staggered such that a proportion of the board is elected every two years; any changes to the board in the nearest window to a lawsuit is more likely to be at least partially attributable to the suit. We investigate CEO turnover and board changes from time 0, the filing, to time $t+2$, two calendar years after the SCA filing.

[Table 7 about here]

[Table 8 about here]

Tables 7 and 8 report results of our tests in changes in firm governance after SCA filings. Table 7 reports that firms led by CEOs with greater network power are more likely to be dismissed or otherwise leave the firm targeted by the SCA filing within two years of the suit. Table 8 reports that the proportion of the board comprised of independent directors also increases most for firms led by CEOs with greater network power within two years of a suit. Coefficients on CEO centrality measures are all positive and significant in all cases, strongly suggesting that SCA filings are means to enact corporate governance reform when managerial networks shield executives from internal or external discipline. SCAs led by institutional investors are a form of "shock treatment" for governance even when suits are dismissed or result in poor settlement amounts.

2.5.2 Ex-post network effects

Cheng et al. (2010) find that suits led by institutional investors are less likely to be dismissed and win larger settlement amounts. While we find that SCAs filed against firms led by CEOs with considerable network power are more likely to be dismissed and have lower settlement amounts, the potential long-term governance reforms and disciplining effects on managers resistant to more traditional governance mechanisms and institutional monitoring may still outweigh the costs of litigation to institutional shareholders (Gillan and Starks, 2000). Romano (1991) argues that even if settlement amounts are insured, lawsuits can still be a disciplining mechanism if managerial reputations are damaged as a result of the suits. Generalizing this argument to include suits that are dismissed or have lower settlement amounts, SCA filings may be disciplinary if managers suffer a decrease in employment opportunities ex post.

As our measures of network power are derived directly from employment data we are able to follow CEO careers in the years following an SCA filing at the firms they serve. To our

knowledge, this is the first empirical representation of observable reputational effects following an SCA filing. We examine whether SCA filings affect CEO career opportunities by examining all current appointments for six years after the filing of an SCA suit. Regardless of whether or not the CEO still serves the firm subject to the suit, we find that previously powerful CEOs have fewer executive and non-executive appointments subsequently. Table 9 reports mean and median percentiles of CEO centrality annually for six years from the filing year. There is almost a monotonic decrease in centrality measures over the six-year period in all cases. Further, reputational damages appear to be statistically significant and economically large. Tests for decreases in centrality from time *t* are statistically significant at greater than the 1% level. Economically, a loss of 13.12% in degree centrality over the six year period, for example, is equivalent to a loss of 9 direct connections at the means. According the *2021-2022 Director Compensation Report* published by the National Association of Corporate Directors, the average board size of 11.3 is in line with a loss of 9 direct connections. If a CEO of a firm targeted by an SCA suit loses one board appointment subsequently, she would lose the opportunity to earn an average of $307,000 per annum, or $1,842,000 over a single 6-year board appointment.[10]

[Table 9 about here]

3.Robustness Checks

3.1.1 Reverse causality

Studies of social networks in economics and finance assume that network structure is exogenous to the topic under consideration as the networks are formed ex-ante, sometimes years prior to the subject of the investigation (see, for example, Cohen et al. (2008)). It is difficult to

[10] The NACD 2021-2022 report may be found here: https://www.nacdonline.org/insights/publications.cfm?ItemNumber=73431.

argue that our results are driven by reverse causality, as it is counterintuitive that improvements in firm governance increase the likelihood of shareholder litigation. It is also unlikely that SCA filings improve CEO network power, especially as we present evidence to the contrary in table 9.

3.1.2 Omitted variables, endogeneity

We make a case in previous sections that network power allows executives to resist efforts by directors and shareholders to effectively hold more powerful executives to account, and therefore, litigation is an extra-governmental means by which executives may be disciplined. However, omitted variables may account for some or all of these effects. After all, a common intuition is that more "famous" or "visible" executives are more likely to be targets. It may also be that the longer an executive is active the more likely that at some point he led a firm subject to a suit. It also follows that executive experience and age increases network power, both intuitively, as more experienced executives may be invited to sit on more boards, and by construction, since cumulative centrality measures include all past professional appointments and relationships. Other manager characteristics may also affect litigation risk. For example, Banerjee et al. (2018) find that firms led by "overconfident" CEOs are more likely to face shareholder litigation.

To minimize omitted variables bias we control for identifiable and verifiable manager and firm characteristics that are likely correlated with our network power measures. We do this in two stages. In the first stage we regress our measure of current centrality against a number of potential omitted variables, and in the second stage, regress litigation risk against the transformed centrality measures from the first stage while retaining all control variables from equation (1).

We first construct variables capturing CEO personal characteristics, inclusive of manager age, executive experience, educational background, e.g. whether the CEO attended an elite

institution and/or has earned terminal degrees, and visibility.[11] Visibility considers whether and how many times an executive is recognized with a meaningful award, e.g. *Institutional Investor* magazine's "America's Best CFO" or similar. Under the assumption that more powerful managers are more likely to work for large, profitable firms and be compensated handsomely, we also include firm size, profitability, and executive compensation. Finally, we calculate overconfidence per Banerjee et al. (2018) and Malmendier and Tate (2008). The dependent variable in the first stage is *Centrality* from previous tables, the first principal component of the four raw current centrality measures. We regress *Centrality* on the vector of personal and firm characteristics above. We predict *Reputation* from the first stage as that portion of centrality explained by individual reputational measures and firm characteristics – the observable potential omitted variables. An added benefit of this construction is that we also are able to partially mitigate endogeneity.

Although we control for firm and market characteristics that are shown to partially determine litigation risk in previous tests, it is conceivable that firms with greater litigation risk seek out and hire CEOs with strong reputations and greater experience. Tables 5 and 6 report that cases brought against firms with more powerful CEOs are more likely to have cases dismissed, or, contingent upon the suits surviving defendants' motion to dismiss, have lower settlement amounts. The predicted *Reputation* from the first stage is meant to capture observable omitted variables that are collinear with our centrality measures while also mitigating the concern that firms subject to higher litigation risk hire more experienced and reputable executives.

The residuals from the first stage are used to create *Network Power*, that which remains in centrality partially shorn of collinear omitted variables. That is, *Network Power* is meant to capture

[11] Educational background not only accounts for degrees and certifications earned, e.g. MBA and/or CPA, but also whether or not the executive earned a degree (undergraduate or graduate) from one of the top 50 institutions globally, e.g. Harvard, PENN, Stanford, New York University, and the London School of Economics.

centrality effects not explained by firm and personal characteristics such as firm size, compensation, and CEO fame and experience. *Network Power* may entrench executives, shielding them from internal or external discipline. We revisit our baseline regression reported in table 3 in the second stage, replacing our previous centrality measures with *Network Power* and *Reputation* variables resultant of the first stage regressions.

[Table 10 about here]

Table 10 reports results of regressions of *Network Power* and *Reputation* on litigation risk, inclusive of all previous controls. Model 1 regresses *Network Power* against the probability of a suit and is found to be positive and statistically significant at better than the 1% level. Interestingly, the *Network power* coefficient is of a magnitude larger than any of the current centrality coefficients in table 2 and has greater statistical significance. Model 2 regresses *Reputation* against litigation risk, and is found to be statistically insignificant. Taken together, these findings suggest suggesting that the entrenching effects of powerfully networked CEOs, rather than a CEO's reputation, is the driver behind increased litigation risk. While we cannot wholly account for potential omitted variables or endogenous determination, we conclude that our results are not primarily driven by omitted variables, reverse causality, or endogeneity.

3.2 Managerial Entrenchment

We argue that executives with greater network power are insulated from internal discipline and the market for corporate control and thus institutional investors pursue litigation in part in order to improve firm governance. In order to control for extant proxies for managerial entrenchment we calculate the *Entrenchment Index* of Bebchuck, Cohen, and Ferrell (2009). The index ranges from one to six, with one point awarded for each variable found by Bebchuck et al. to be most important with regard to firm governance: staggered boards, executive golden parachute

provisions, poison pill provisions, and restrictions to shareholders' ability to amend bylaws, corporate charters, and approve merger agreements. We calculate the index for all firms for which *Institutional Shareholder Services* has data; the index for firms in our sample with available governance data ranges from zero to four. We rerun our base regression on the probability of an SCA filing inclusive of the *Entrenchment Index*. We find that the index itself is insignificant, but that network centrality variables remain positive and highly statistically significant in partially determining the probability of a suit. Because the index is available for less than 20% of our firm-year observations, we do not include results here (though they are available upon request). These results suggest the personal entrenchment of the CEO is an important consideration when studying firm governance, and that network centrality is a reasonable proxy for entrenchment.

4. Conclusions

This paper provides evidence that more connected CEOs are resilient to traditional internal and external firm governance. As a result, institutional shareholders are more likely to initiate shareholder class action lawsuits against firms led by powerfully networked CEOs. While these suits are more likely to be dismissed or, surviving the motion to dismiss, are more likely to result in lower settlement amounts, the suits do appear to have significant disciplinary effects. Subsequent to the SCA, board independence increases and the CEO is more likely to be replaced in the two years following the suit, especially for firms led by the most powerful CEOs at the time of the filing. We also provide evidence that, following a filing, CEO have fewer future executive opportunities subsequently, lending empirical support to theoretical arguments that networks are dynamic and are able to meaningfully discipline members for sub-optimal behaviors. This paper adds to our understanding of shareholder litigation as an effective corporate governance mechanism.

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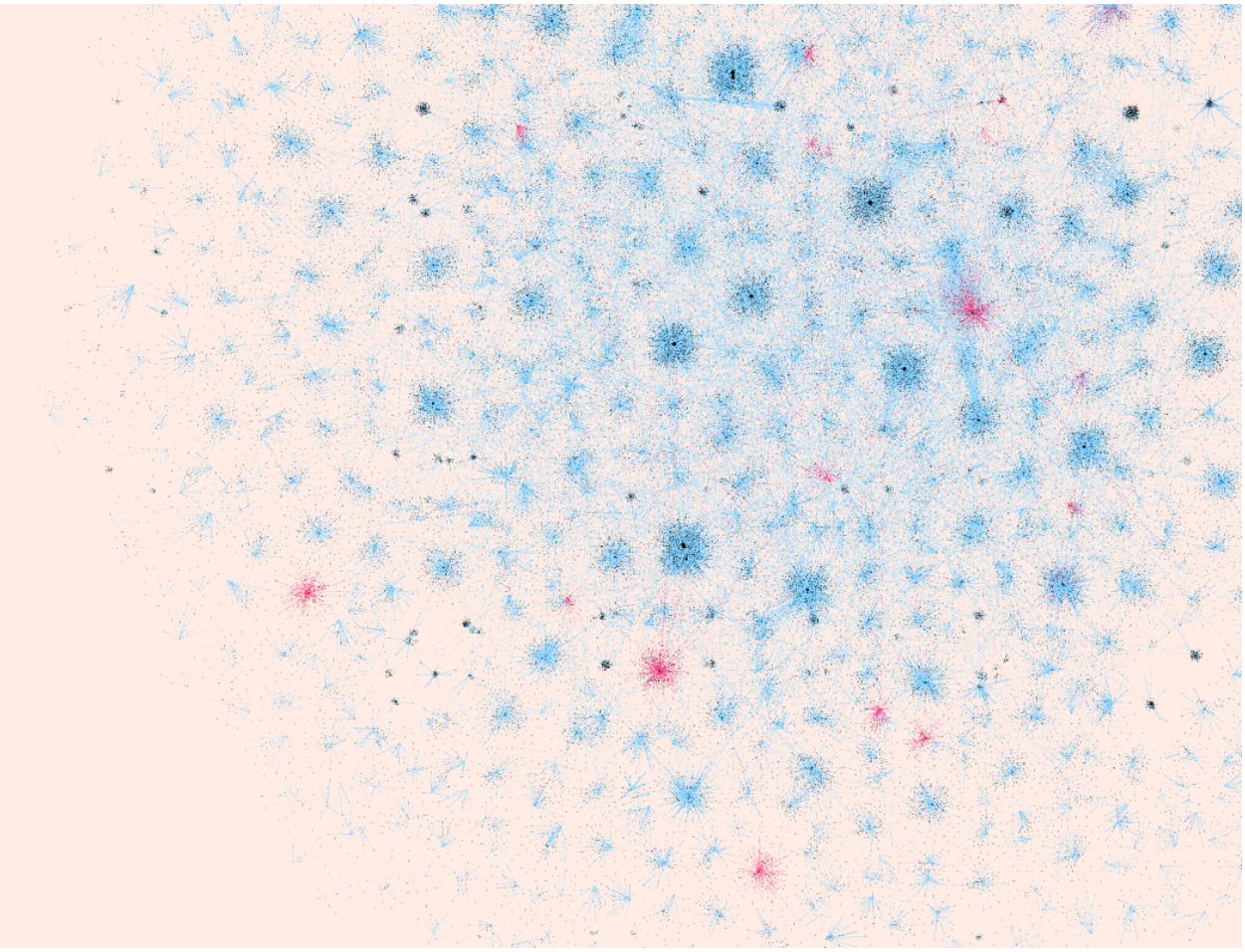
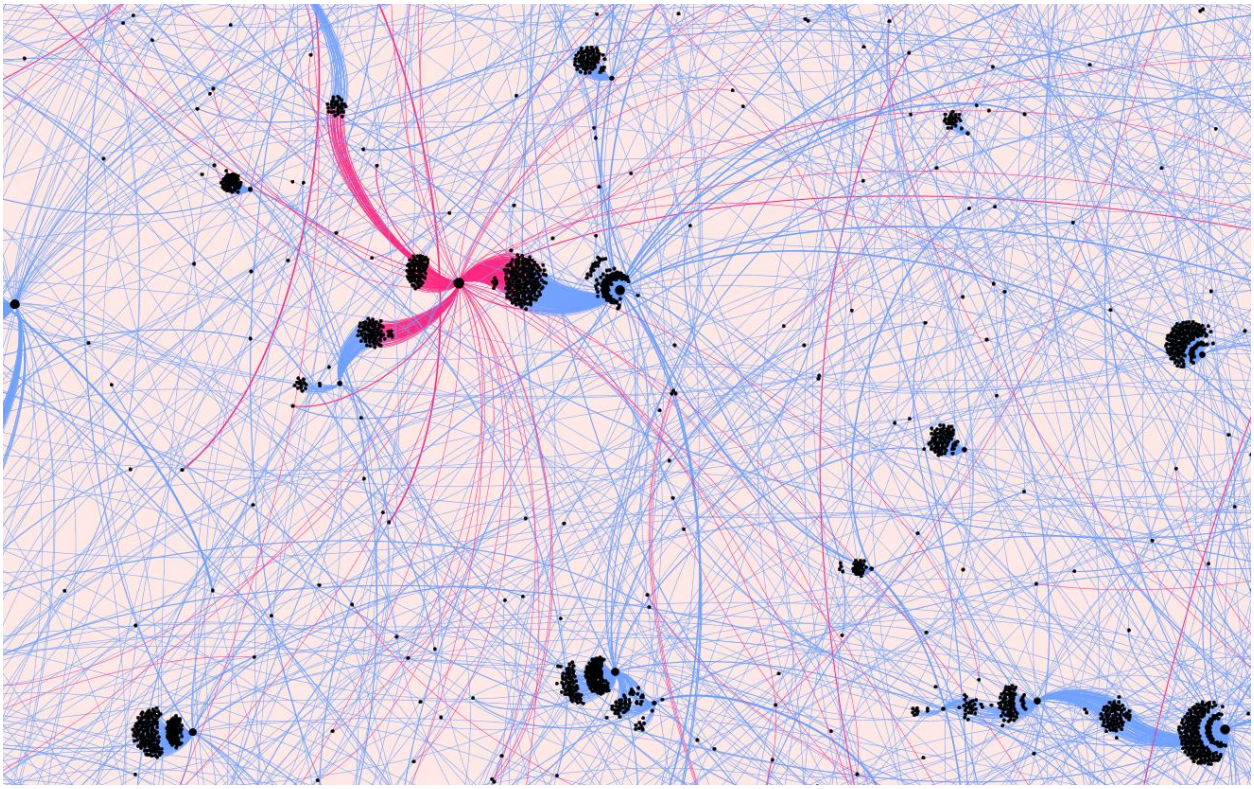
Figure 1: 2010 CEO network



This figure illustrates the CEO network in 2010. Dots (nodes) are executives. The size of the node is scaled by degree centrality; larger nodes are more connected. Lines (edges) are connections between executives. There are 1,752 CEOs, 77,319 other executives, and 121,153 connections among them. Blue lines are non-litigant firms. Red lines are connections between executives to a firm that is subject to a suit. 33 firms face class-action filings.

Figure 2: Close up of the 2004 CEO network



This figure is a close up of the CEO network in 2004. Dots (nodes) are executives. The size of the node is scaled by degree centrality; larger nodes are more connected. Lines (edges) are connections between executives. There are 1,592 CEOs, 73,556 other executives, and 110,018 connections among them. Blue lines connect non-litigant firms. Red lines are connections between executives to a firm that is subject to a suit. 46 firms face class-action suits.

Appendix: Variable Definitions

CEO Centrality Measures

Variable	Definition
Betweenness	The number of times an executive lies between two otherwise disconnected nodes relative to all possible connections
Closeness	The inverse of the number of steps it takes for a node to reach all other nodes in the network
Centrality (PCA)	The principal eigenvalue of four centrality measures: degree, eigenvector, betweenness, and closeness centralities
Cum Degree	Sum of an executive's present and past direct connections
Cum Eigenvector	Weigh degree centrality by the degree centralities of the executive's present and past connections
Degree	Sum of an executive's direct connections
Eigenvector	Weigh degree centrality by the degree centralities of the executive's connections

Firm Characteristics

Variable	Definition
Altman's Z	Altman (1968) Z score
Class Action	An indicator variable that equals 1 if a firm is subject to a securities class action lawsuits, and 0 otherwise
Return	Market-adjusted annual stock return
Debt	Ratio of long-term debt issuance to total assets
Equity	Ratio of sale of common and preferred stock to total assets
Goodwill	Goodwill scaled by total assets
Lnasset	Natural logarithm of a firm's total assets
M/B	Market-to-book ratio, calculated as book assets minus book value of common equity plus the market value of equity, scaled by book value of assets
NYSE	An indicator variable that equals to one for firm listed on the New York Stock Exchange, and 0 otherwise

ROA	Ratio of net income to total assets
Returns Std	Standard deviation of the firm's daily return in year t
R&D	Ratio of research and development expenses to total assets, set to zero if missing
Sales Growth	The difference between sales in year t and sales in year t-1 scaled by sales in year t
Skewness	The skewness of the firm's daily return in year t
Stock Turnover	Trading volume accumulated over the fiscal year t scaled by the number of shares outstanding at the beginning of that year
WC	Working Capital, calculated as current assets minus current liabilities, all divided by total assets

Table 1: Summary Statistics

This table reports summary statistics of our sample. *Class Action*, is an indicator equal to one if the firm is subject to a securities class action lawsuit, and zero otherwise. The sample consists of 1,587 unique firms over the period 1996-2019. Panel A reports the summary statistics for total sample. *Betweenness* is measured as the number of times an executive lies between two otherwise disconnected nodes relative to all possible connections. *Closeness* is measured as the inverse of the number of steps it takes for a node to reach all other nodes in the network. *Centrality (PCA)* is calculated as the principal eigenvalue of the following four centrality measures: degree, eigenvector, betweenness, and closeness centralities. *Cum Degree* is calculated as the sum of an executive's present and past direct connections. *Cum Eigenvecto*r is measured as weigh degree centrality by the degree centralities of the executive's present and past connections. *Degree* is calculated as sum of an executive's direct connections. *Eigenvector* is measured as weigh degree centrality by the degree centralities of the executive's connections. The definitions of other variables are provided in the Appendix. Panel B reports means of summary statistics for sued firms and non-sued firms respectively. Wilcoxon tests for differences in means are reported in the last column in Panel B, with ***, **, and * notating statistical significance at the 1%, 5%, and 10% levels, respectively. Variables are winsorized at the top and bottom 1% to reduce the impact of outliers.

Panel A: Summary Statistics for Total Sample

	N	Mean	Median	25th Pct	75th Pct	Standard deviation
Class Action	31,282	0.023	0	0	0	0.149
Degree	31,282	66.11	65	54	78	15.97
Betweenness	31,282	66.11	76	43	91	28.39
Eigenvector	31,282	59.23	62	43	78	22.25
Closeness	31,282	56.76	57	39	75	24.07
Centrality (PCA)	31,282	65.93	65	51	82	19.5
Cum Degree	31,282	70.94	74	56	88	19.91
Cum Eigenvector	31,282	69.87	74	53	90	22.84
Lnasset	31,282	6.326	6.363	4.909	7.644	2.019
ROA	31,282	-0.042	0.013	-0.028	0.057	0.234
Sales Growth	31,282	0.048	0.018	-0.027	0.151	2.866
R&D	31,282	0.054	0	0	0.036	0.139
PPE	31,282	0.189	0.094	0.022	0.267	0.226
NYSE	31,282	0.354	0	0	1	0.478
M/B	31,282	1.893	1.332	1.041	2.065	1.522
Return	31,282	0.01	-0.052	-0.285	0.193	0.507
Skewness	31,282	0.378	0.285	-0.13	0.778	1.3
Returns Std	31,282	0.336	0.28	0.192	0.418	0.203
Stock Turnover	31,282	1.244	0.812	0.297	1.687	1.347

Equity	31,282	0.06	0.003	0	0.02	0.172
Debt	31,282	0.1	0.002	0	0.103	0.21
Altman's Z	31,282	4.712	2.321	0.458	5.018	10.24
Goodwill	31,282	0.089	0.013	0	0.134	0.136
WC	31,282	0.205	0.13	0	0.364	0.25

Panel B: Summary Statistics for Litigants versus Non-litigants

	Litigants	Non-litigants	Diff in Means
Degree	72.94	65.95	6.992***
Betweenness	74.62	65.91	8.709***
Eigenvector	68.05	59.02	9.026***
Closeness	68.28	56.49	11.798***
Centrality (PCA)	73.41	65.76	7.649***
Cum Degree	80.42	70.72	9.701***
Cum Eigenvector	78.76	69.66	9.101***
Lnasset	7.08	6.31	0.772***
ROA	-0.06	-0.04	-0.022**
Sales Growth	0.88	0.47	0.407***
R&D	0.1	0.05	0.044***
PPE	0.16	0.19	-0.027***
NYSE	0.46	0.45	0.113***
MB	2.34	1.88	0.460***
Return	-0.01	0.01	-0.019
Skewness	0.07	0.39	-0.317***
Returns Std	0.36	0.34	0.025***
Stock Turnover	2	1.23	0.772***
Equity	0.1	0.06	0.042***
Debt	0.1	0.1	0
Altman's Z	6.96	4.66	2.297***
Goodwill	0.11	0.09	0.023***
WC	0.27	0.2	0.063***
Degree	72.94	65.95	6.992***

Table 2: CEO Network Centrality and the Probability of a Lawsuit

The dependent variable *Class Action* is an indicator equal to one if the firm is subject to a class-action lawsuit. The variables of interest are seven measures of CEO network centrality. *Betweenness* is measured as the number of times an executive lies between two otherwise disconnected nodes relative to all possible connections. *Closeness* is measured as the inverse of the number of steps it takes for a node to reach all other nodes in the network. *Centrality (PCA)* is calculated as the principal eigenvalue of the following four centrality measures: degree, eigenvector, betweenness, and closeness centralities. *Cum Degree* is calculated as the sum of an executive's present and past direct connections. *Cum Eigenvecto*r is measured as weigh degree centrality by the degree centralities of the executive's present and past connections. *Degree* is calculated as sum of an executive's direct connections. *Eigenvector* is measured as weigh degree centrality by the degree centralities of the executive's connections. The definitions of other variables are provided in the Appendix. Panel A reports baseline regression results without controls. Panel B reports results with controls and industry and year fixed effects. Robust errors are clustered by firm. Statistical significance is designated by ***, **, and * at the 1%, 5%, and 10% levels, respectively. Variables are winsorized at the top and bottom 1% to reduce the impact of outliers.

Panel A: Baseline regressions

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Degree $_{t-1}$	0.027***						
	(9.762)						
Betweenness $_{t-1}$		0.011***					
		(6.916)					
Eigenvector $_{t-1}$			0.019***				
			(8.624)				
Closeness $_{t-1}$				0.019***			
				(9.899)			
Centrality (PCA) $_{t-1}$					0.020***		
					(8.835)		
Cum Degree $_{t-1}$						0.023***	
						(8.114)	
Cum Eigenvector $_{t-1}$							0.016***
							(7.126)
Constant	-6.278***	-5.108***	-5.553***	-5.609***	-5.824***	-5.981***	-5.484***
	(-15.978)	(-14.664)	(-15.380)	(-15.679)	(-15.475)	(-15.021)	(-14.717)
Industry fixed effects	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES
Number of observations	31,282	31,282	31,282	31,282	31,282	31,282	31,282
Adjusted R-squared	0.058	0.049	0.054	0.059	0.055	0.056	0.050

Panel B: Baseline regressions controlling for firm characteristics

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Degree $_{t-1}$	0.008***						
	(2.645)						
Betweenness $_{t-1}$		0.003*					
		(1.916)					
Eigenvector $_{t-1}$			0.006***				
			(2.870)				
Closeness $_{t-1}$				0.007***			
				(3.180)			
Centrality (PCA) $_{t-1}$					0.005**		
					(2.102)		
Cum Degree $_{t-1}$						0.010***	

						(3.739)	
Cum Eigenvector $_{t-1}$							0.006***
							(2.980)
NYSE $_{t-1}$	-0.028	0.006	-0.023	-0.036	-0.010	-0.027	-0.023
	(-0.277)	(0.064)	(-0.228)	(-0.364)	(-0.096)	(-0.271)	(-0.233)
Lnasset $_{t-1}$	0.313***	0.342***	0.322***	0.308***	0.324***	0.318***	0.332***
	(10.064)	(10.364)	(10.787)	(9.971)	(10.530)	(11.134)	(11.801)
ROA $_{t-1}$	0.032	0.076	0.019	0.050	0.025	0.030	0.015
	(0.159)	(0.381)	(0.093)	(0.249)	(0.125)	(0.150)	(0.075)
Sales Growth $_{t-1}$	0.016	0.015	0.017	0.017	0.015	0.016	0.016
	(1.077)	(1.066)	(1.209)	(1.180)	(1.045)	(1.111)	(1.141)
R&D $_{t-1}$	0.100	0.180	0.096	0.085	0.079	0.089	0.110
	(0.335)	(0.606)	(0.321)	(0.283)	(0.264)	(0.298)	(0.367)
PPE $_{t-1}$	-0.474	-0.544*	-0.469	-0.481	-0.229	-0.444	-0.456
	(-1.596)	(-1.859)	(-1.586)	(-1.621)	(-0.742)	(-1.478)	(-1.524)
MB $_{t-1}$	0.183***	0.179***	0.185***	0.182***	0.173***	0.180***	0.184***
	(6.753)	(6.682)	(6.860)	(6.755)	(6.310)	(6.644)	(6.820)
Return $_{t-1}$	-0.216**	-0.222**	-0.220**	-0.218**	-0.209**	-0.220**	-0.221**
	(-2.296)	(-2.378)	(-2.334)	(-2.314)	(-2.227)	(-2.340)	(-2.353)
Skewness $_{t-1}$	-0.145***	-0.146***	-0.145***	-0.146***	-0.144***	-0.145***	-0.146***
	(-3.991)	(-4.008)	(-3.982)	(-4.001)	(-3.970)	(-3.968)	(-3.989)
Returns Std $_{t-1}$	1.747***	1.679***	1.734***	1.739***	1.696***	1.696***	1.715***
	(6.428)	(6.188)	(6.365)	(6.378)	(6.186)	(6.179)	(6.284)
Stock Turnover $_{t-1}$	0.108***	0.112***	0.107***	0.106***	0.114***	0.110***	0.109***
	(4.124)	(4.258)	(4.090)	(4.053)	(4.361)	(4.171)	(4.178)
Equity $_{t-1}$	0.582**	0.583**	0.580**	0.579**	0.642**	0.580**	0.573**
	(2.254)	(2.250)	(2.249)	(2.250)	(2.463)	(2.240)	(2.208)
Debt $_{t-1}$	-0.006	-0.046	-0.008	0.001	0.015	0.003	-0.001
	(-0.027)	(-0.224)	(-0.039)	(0.007)	(0.073)	(0.014)	(-0.007)
Altman's Z $_{t-1}$	-0.004	-0.004	-0.005	-0.004	-0.004	-0.005	-0.005
	(-0.990)	(-0.931)	(-1.115)	(-1.017)	(-0.881)	(-1.033)	(-1.066)
WC_{t-1}	0.846***	0.804***	0.858***	0.829***	0.813***	0.822***	0.851***
	(3.431)	(3.324)	(3.482)	(3.367)	(3.274)	(3.317)	(3.437)
Goodwill $_{t-1}$	0.161	0.084	0.188	0.149	0.053	0.196	0.197
	(0.515)	(0.270)	(0.604)	(0.476)	(0.165)	(0.629)	(0.631)
Constant	-8.368***	-8.131***	-8.269***	-8.176***	-7.960***	-8.464***	-8.347***
	(-17.655)	(-17.453)	(-17.795)	(-17.710)	(-13.810)	(-17.834)	(-17.669)
Industry fixed effects	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES
Number of observations	31,282	31,282	31,282	31,282	31,282	31,282	31,282
Adjusted R-squared	0.100	0.094	0.100	0.100	0.101	0.101	0.100

Table 3: CEO Network Centrality and Institutional Investor Plaintiffs

The dependent variable *Inst_Dummy* is an indicator that equals 1 if a firm is subject to a class-action lawsuit wherein the lead plaintiff is an institutional investor in year t, and 0 otherwise. The variables of interest are seven measures of CEO network centrality, as described in Appendix. *Betweenness* is measured as the number of times an executive lies between two otherwise disconnected nodes relative to all possible connections. *Closeness* is measured as the inverse of the number of steps it takes for a node to reach all other nodes in the network. *Centrality (PCA)* is calculated as the principal eigenvalue of the following four centrality measures: degree, eigenvector, betweenness, and closeness centralities. *Cum Degree* is calculated as the sum of an executive's present and past direct connections. *Cum Eigenvecto*r is measured as weigh degree centrality by the degree centralities of the executive's present and past connections. *Degree* is calculated as sum of an executive's direct connections. *Eigenvector* is measured as weigh degree centrality by the degree centralities of the executive's connections. The definitions of control variables are provided in the Appendix. Robust errors are clustered by firm. Statistical significance is designated by ***, **, and * at the 1%, 5%, and 10% levels, respectively. Control variables are winsorized at the top and bottom 1% to reduce the impact of outliers.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Degree $_{t-1}$	0.020***						
	(4.514)						
Betweenness $_{t-1}$		0.007***					
		(2.796)					
Eigenvector $_{t-1}$			0.002				
			(0.570)				
Closeness $_{t-1}$				0.014***			
				(4.632)			
Centrality (PCA) $_{t-1}$					0.014***		
					(3.924)		
Cum Degree $_{t-1}$						0.007*	
						(1.930)	
Cum Eigenvector $_{t-1}$							0.005*
							(1.789)
NYSE $_{t-1}$	-0.116	-0.043	-0.051	-0.102	-0.069	0.012	-0.004
	(-0.806)	(-0.312)	(-0.376)	(-0.756)	(-0.512)	(0.091)	(-0.028)
Lnasset $_{t-1}$	0.251***	0.296***	0.296***	0.229***	0.247***	0.331***	0.320***
	(5.892)	(7.076)	(6.510)	(5.175)	(5.501)	(7.097)	(6.975)
ROA$_{t-1}$	0.602*	-0.849***	0.566	-0.883***	-0.846***	-0.825***	0.638*
	(1.746)	(-3.297)	(1.522)	(-3.132)	(-3.002)	(-3.145)	(1.813)
Sales Growth $_{t-1}$	0.035	0.004	0.007	0.015	0.013	0.015	0.041*
	(1.475)	(0.183)	(0.426)	(0.964)	(0.846)	(0.943)	(1.847)

R&D $_{t-1}$	-0.172	-0.082	0.168	-0.127	-0.085	-0.232	-0.099
	(-0.333)	(-0.164)	(0.340)	(-0.271)	(-0.180)	(-0.480)	(-0.193)
PPE $_{t-1}$	-0.545	-0.157	-0.203	-0.107	-0.105	-0.096	-0.128
	(-1.201)	(-0.442)	(-0.567)	(-0.342)	(-0.337)	(-0.281)	(-0.351)
MB $_{t-1}$	0.141***	0.142***	0.158***	0.171***	0.172***	0.133***	0.165***
	(3.169)	(3.360)	(3.832)	(4.361)	(4.256)	(3.231)	(3.932)
Cum_Return $_{t-1}$	-0.153	-0.091	-0.177	-0.065	-0.079	-0.087	-0.166
	(-1.024)	(-0.631)	(-1.181)	(-0.450)	(-0.541)	(-0.593)	(-1.106)
Skewness $_{t-1}$	-0.173***	-0.193***	-0.192***	-0.200***	-0.195***	-0.187***	-0.188***
	(-3.161)	(-3.358)	(-3.394)	(-3.365)	(-3.380)	(-3.321)	(-3.386)
Returns Std $_{t-1}$	1.314***	1.214***	1.511***	0.836**	1.096**	1.165***	1.504***
	(2.928)	(2.846)	(3.584)	(2.231)	(2.529)	(2.664)	(3.468)
Stock Turnover $_{t-1}$	0.140***	0.148***	0.151***	0.146***	0.154***	0.140***	0.142***
	(3.460)	(3.761)	(3.893)	(3.683)	(3.900)	(3.553)	(3.596)
Equity $_{t-1}$	0.920**	0.404	0.937**	0.282	0.287	0.293	0.871**
	(2.235)	(0.991)	(2.077)	(0.712)	(0.707)	(0.756)	(2.072)
Debt $_{t-1}$	0.334	0.296	0.303	-0.442	-0.440	0.301	0.281
	(1.185)	(1.068)	(1.095)	(-1.643)	(-1.642)	(1.071)	(0.999)
Altman's Z $_{t-1}$	-0.013*	0.013	-0.002	-0.033	-0.032	0.003	-0.014**
	(-1.713)	(0.691)	(-0.187)	(-1.573)	(-1.544)	(0.262)	(-2.005)
Working Capital $_{t-1}$	0.612	0.203	0.196	0.603	0.604	0.833**	0.906**
	(1.555)	(0.319)	(0.291)	(0.960)	(0.961)	(2.251)	(2.445)
Goodwill $_{t-1}$	-0.494	-0.007	0.063	0.283	0.384	0.060	0.079
	(-0.985)	(-0.016)	(0.138)	(0.672)	(0.911)	(0.139)	(0.179)
Constant	1.819**	1.557*	1.737**	1.202	-0.151	1.764**	2.130**
	(2.125)	(1.826)	(2.035)	(1.474)	(-0.160)	(2.039)	(1.977)
Industry fixed effects	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES
Number of observations	31,282	31,282	31,282	31,282	31,282	31,282	31,282
Adjusted R-squared	0.101	0.099	0.102	0.024	0.088	0.098	0.111

Table 4: CEO Network Centrality and Cumulative Abnormal Stock Returns around the Announcement of a Suit.

The dependent variable is the cumulative abnormal stock return from a standard market model in a -5/+5 window around the announcement of a class-action suit. Column 1 reports differences between the highest quartile and the lowest quartile in each centrality measure. Columns 2 – 8 report results of regressions of the CAR on seven measures of CEO network centrality, as described in Appendix. *Betweenness* is measured as the number of times an executive lies between two otherwise disconnected nodes relative to all possible connections. *Closeness* is measured as the inverse of the number of steps it takes for a node to reach all other nodes in the network. *Centrality (PCA)* is calculated as the principal eigenvalue of the following four centrality measures: degree, eigenvector, betweenness, and closeness centralities. *Cum Degree* is calculated as the sum of an executive's present and past direct connections. *Cum Eigenvecto*r is measured as weigh degree centrality by the degree centralities of the executive's present and past connections. *Degree* is calculated as sum of an executive's direct connections. *Eigenvector* is measured as weigh degree centrality by the degree centralities of the executive's connections. The definitions of control variables are provided in the Appendix. Robust errors are clustered by firm. Statistical significance is designated by ***, **, and * at the 1%, 5%, and 10% levels, respectively. Control variables are winsorized at the top and bottom 1% to reduce the impact of outliers.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Degree $_{t-1}$	7.797***	0.001***						
	(2.765)	(3.403)						
Eigenvector $_{t-1}$	5.885*		0.002**					
	(3.034)		(2.111)					
Betweenness $_{t-1}$	5.233*			0.003**				
	(2.950)			(1.982)				
Closeness $_{t-1}$	8.181***				0.001*			
	(2.589)				(1.754)			
Centrality (PCA) $_{t-1}$	6.234**					0.001**		
	(2.769)					(2.059)		
Cum_Degree $_{t-1}$	4.463*						0.001***	
	(2.528)						(2.805)	
Cum_Eigenvector $_{t-1}$	-1.611							0.001**
	(-2.803)							(2.106)
NYSE $_{t-1}$		-0.002	-0.001	-0.011	-0.010	0.016	0.032	0.032
		(-0.086)	(-0.051)	(-0.428)	(-0.388)	(0.573)	(0.978)	(0.974)
Lnasset $_{t-1}$		0.009	0.009	0.008	0.007	0.011	0.010	0.011

		(1.096)	(1.270)	(0.922)	(0.808)	(1.339)	(1.258)	(1.402)
ROA $_{t-1}$		0.053	0.041	0.035	0.048	0.083	0.072	0.064
		(0.458)	(0.366)	(0.318)	(0.427)	(0.735)	(0.588)	(0.526)
Sales Growth $_{t-1}$		0.054	0.067	0.067	0.055	0.084	0.031	0.029
		(1.023)	(1.257)	(1.270)	(1.038)	(1.381)	(0.493)	(0.457)
R&D $_{t-1}$		-0.161	-0.199	-0.247	-0.215	-0.143	-0.289	-0.284
		(-0.909)	(-1.229)	(-1.374)	(-1.237)	(-0.745)	(-1.373)	(-1.373)
PPE $_{t-1}$		0.090	0.095	0.022	0.009	0.084	0.067	0.067
		(1.068)	(1.306)	(0.286)	(0.120)	(0.915)	(0.673)	(0.684)
MB $_{t-1}$		-0.018**	-0.017**	-0.018**	-0.018**	-0.019**	-0.015	-0.015
		(-2.212)	(-2.043)	(-2.120)	(-2.262)	(-2.077)	(-1.637)	(-1.593)
Return $_{t-1}$		0.023	0.022	0.050	0.051	0.013	-0.008	-0.008
		(0.466)	(0.452)	(1.178)	(1.225)	(0.256)	(-0.152)	(-0.150)
Skewness $_{t-1}$		0.024**	0.024**	0.013**	0.012**	0.023*	0.028**	0.028**
		(2.058)	(2.093)	(2.114)	(1.988)	(1.832)	(2.074)	(2.076)
Returns Std $_{t-1}$		-0.859	-0.827	-0.383	-0.001	0.211	0.333	0.329
		(-0.982)	(-0.977)	(-0.456)	(-0.002)	(0.201)	(0.307)	(0.307)
Stock Turnover $_{t-1}$		-0.005	-0.006	-0.002	-0.002	-0.015**	-0.015*	-0.016*
		(-0.716)	(-0.844)	(-0.346)	(-0.346)	(-1.976)	(-1.897)	(-1.919)
Equity $_{t-1}$		0.068	0.073	0.085	0.067	0.063	0.050	0.051
		(0.687)	(0.754)	(0.865)	(0.683)	(0.593)	(0.460)	(0.472)
Debt $_{t-1}$		0.051	0.046	0.036	0.039	0.037	0.027	0.029
		(1.192)	(1.027)	(0.903)	(0.993)	(0.813)	(0.601)	(0.635)
Altman's Z $_{t-1}$		0.003	0.002	0.002	0.002	0.002	0.001	0.001
		(0.681)	(0.428)	(0.508)	(0.619)	(0.458)	(0.241)	(0.278)
WC $_{t-1}$		-0.010	-0.014	-0.018	-0.012	-0.013	-0.026	-0.023
		(-0.353)	(-0.501)	(-0.575)	(-0.390)	(-0.434)	(-0.868)	(-0.741)
Goodwill $_{t-1}$		-0.068	-0.063	-0.026	-0.037	-0.082	-0.108	-0.101
		(-0.671)	(-0.674)	(-0.279)	(-0.407)	(-0.928)	(-1.104)	(-1.059)
Constant		0.219	-0.651	-0.307	-0.341	-0.275	-0.029	-0.936
		(0.408)	(-1.204)	(-0.499)	(-0.553)	(-0.445)	(-0.174)	(-0.896)
Industry fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES

Number of observations	716	716	716	716	716	716	716	716
Adjusted R-squared	0.169	0.097	0.228	0.229	0.228	0.158	0.214	0.163

Table 5: CEO Network Centrality and the Probability of Dismissal

The dependent variable *Dismiss_dummy* is an indicator equal to one if the firm is subject to a class-action lawsuit that has been dismissed. The variables of interest are seven measures of CEO network centrality *Betweenness* is measured as the number of times an executive lies between two otherwise disconnected nodes relative to all possible connections. *Closeness* is measured as the inverse of the number of steps it takes for a node to reach all other nodes in the network. *Centrality (PCA)* is calculated as the principal eigenvalue of the following four centrality measures: degree, eigenvector, betweenness, and closeness centralities. *Cum Degree* is calculated as the sum of an executive's present and past direct connections. *Cum Eigenvecto*r is measured as weigh degree centrality by the degree centralities of the executive's present and past connections. *Degree* is calculated as sum of an executive's direct connections. *Eigenvector* is measured as weigh degree centrality by the degree centralities of the executive's connections. The definitions of control variables are provided in the Appendix. Robust errors are clustered by firm. Statistical significance is designated by ***, **, and * at the 1%, 5%, and 10% levels, respectively. Control variables are winsorized at the top and bottom 1% to reduce the impact of outliers.

Dependent Variable: Dismiss_dummy

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Degree $_{t-1}$	0.015***						
	(2.828)						
Betweenness $_{t-1}$		0.007*					
		(1.864)					
Eigenvector $_{t-1}$			0.011**				
			(1.986)				
Closeness $_{t-1}$				0.008*			
				(1.735)			
Centrality (PCA) $_{t-1}$					0.011*		
					(1.681)		
Cum_Degree $_{t-1}$						0.014**	
						(2.269)	
Cum_Eigenvector $_{t-1}$							0.012**
							(2.057)
NYSE $_{t-1}$	-0.190	-0.032	-0.034	-0.138	-0.236	-0.021	0.003
	(-1.008)	(-0.152)	(-0.159)	(-0.673)	(-1.073)	(-0.093)	(0.046)
Lnasset $_{t-1}$	-0.104*	-0.024	-0.014	-0.009	-0.017	0.005	-0.006
	(-1.874)	(-0.415)	(-0.247)	(-0.184)	(-0.281)	(0.080)	(-0.106)
ROA $_{t-1}$	1.542*	-0.374	-0.463	1.927**	0.209	-0.824	-0.701
	(1.779)	(-0.668)	(-0.841)	(1.993)	(0.833)	(-1.329)	(-1.139)
Sales Growth $_{t-1}$	-0.239	-0.017	-0.013	0.006	0.006	-0.011	-0.017
	(-0.688)	(-0.666)	(-0.502)	(0.252)	(0.162)	(-0.346)	(-0.553)
R&D $_{t-1}$	0.281	1.035	0.833	0.723*	-0.083	0.038	0.495
	(0.476)	(1.509)	(1.202)	(1.710)	(-0.527)	(0.054)	(0.664)
PPE $_{t-1}$	-0.361	-0.162	-0.003	-0.312	-0.484	-0.252	-0.126
	(-0.750)	(-0.327)	(-0.006)	(-0.723)	(-0.894)	(-0.502)	(-0.235)
MB $_{t-1}$	0.029	0.083	0.103	0.057	0.177	0.054	0.053
	(0.353)	(1.182)	(1.448)	(0.676)	(1.525)	(0.691)	(0.636)
Cum_Return $_{t-1}$	0.185	0.116	0.102	0.098	0.221	0.092	0.137
	(0.826)	(0.596)	(0.513)	(0.456)	(0.678)	(0.488)	(0.641)
Skewness $_{t-1}$	0.011	0.036	0.034	0.046	0.094	0.031	0.047
	(0.135)	(0.637)	(0.602)	(0.529)	(0.674)	(0.518)	(0.754)
Returns Std $_{t-1}$	-0.768	0.241	0.372	0.743	0.693	0.205	0.333

	(-1.306)	(0.391)	(0.603)	(1.045)	(0.980)	(0.308)	(0.492)
Stock Turnover $_{t-1}$	0.126*	0.023	0.008	-0.000	0.074	0.028	0.026
	(1.650)	(0.365)	(0.125)	(-0.002)	(0.803)	(0.426)	(0.368)
Equity $_{t-1}$	0.203	-0.672	-0.826	-0.304	-1.067	-0.699	-0.692
	(0.441)	(-1.297)	(-1.632)	(-0.635)	(-1.191)	(-1.260)	(-1.226)
Debt $_{t-1}$	-0.298	-0.170	-0.041	0.085	0.888*	0.262	0.229
	(-0.737)	(-0.356)	(-0.087)	(0.184)	(1.897)	(0.539)	(0.436)
Altman's Z $_{t-1}$	-0.000	0.007	-0.001	-0.000	-0.048	0.004	0.000
	(-0.198)	(0.355)	(-0.074)	(-0.053)	(-1.150)	(0.166)	(0.018)
Working Capital $_{t-1}$	-0.601	-0.136	0.354	0.293	0.284	0.297	0.360
	(-1.246)	(-0.259)	(1.230)	(1.088)	(1.043)	(0.914)	(1.145)
Goodwill $_{t-1}$	0.215	0.415	0.604	0.370	0.335	0.429	0.474
	(0.364)	(0.617)	(0.915)	(0.568)	(0.448)	(0.588)	(0.617)
Constant	-0.150	-1.947**	-2.300**	-2.002**	-2.085**	-2.065**	-2.261**
	(-0.233)	(-2.059)	(-2.536)	(-2.378)	(-1.964)	(-2.250)	(-2.305)
Industry fixed effects	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES
Number of observations	716	716	716	716	716	716	716
Adjusted R-squared	0.024	0.096	0.098	0.079	0.081	0.066	0.092

Table 6: CEO Network Centrality and Settlement Amounts

The dependent variable is the natural log of the settlement amount (USD) of a class action lawsuit *Log (Settle)*. The variables of interest are seven measures of CEO network centrality. *Betweenness* is measured as the number of times an executive lies between two otherwise disconnected nodes relative to all possible connections. *Closeness* is measured as the inverse of the number of steps it takes for a node to reach all other nodes in the network. *Centrality (PCA)* is calculated as the principal eigenvalue of the following four centrality measures: degree, eigenvector, betweenness, and closeness centralities. *Cum Degree* is calculated as the sum of an executive's present and past direct connections. *Cum Eigenvecto*r is measured as weigh degree centrality by the degree centralities of the executive's present and past connections. *Degree* is calculated as sum of an executive's direct connections. *Eigenvector* is measured as weigh degree centrality by the degree centralities of the executive's connections. Definitions of other variables are provided in the Appendix. Robust errors are clustered by firm. Statistical significance is designated by ***, **, and * at the 1%, 5%, and 10% levels, respectively. Control variables are winsorized at the top and bottom 1% to reduce the impact of outliers.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Degree $_{t-1}$	-0.048**						
	(-1.997)						
Betweenness $_{t-1}$		-0.036**					
		(-2.288)					
Eigenvector $_{t-1}$			-0.035*				
			(-1.776)				
Closeness $_{t-1}$				-0.036*			
				(-1.662)			
Centrality (PCA) $_{t-1}$					-0.051**		
					(-2.106)		
Cum_Degree $_{t-1}$						-0.036*	
						(-1.764)	
Cum_Eigenvector $_{t-1}$							-0.031*
							(-1.652)
NYSE $_{t-1}$	-0.362	-0.032	-0.034	0.410	0.843	0.957	0.499
	(-0.410)	(-0.152)	(-0.159)	(0.550)	(0.953)	(1.108)	(0.667)
Lnasset $_{t-1}$	0.340	0.273	0.169	0.218	0.289	0.226	0.156
	(1.389)	(1.166)	(0.814)	(0.952)	(1.143)	(1.038)	(0.650)
ROA $_{t-1}$	-0.037	-0.910	-0.305	0.474	-4.017	0.759	-4.016
	(-0.042)	(-0.670)	(-0.243)	(0.359)	(-1.058)	(0.671)	(-1.172)
Sales Growth $_{t-1}$	0.683	-0.005	-0.031	0.084	-0.152	0.101	0.411
	(1.317)	(-0.055)	(-0.237)	(0.571)	(-1.350)	(0.744)	(0.907)
R&D $_{t-1}$	0.212	-0.317	-1.466	0.253	0.817	-1.039	0.032

	(0.434)	(-0.118)	(-0.574)	(0.090)	(1.550)	(-0.410)	(0.069)
PPE $_{t-1}$	-1.791	-1.825	-1.846	-2.218	-1.865	-1.543	-0.669
	(-0.798)	(-0.864)	(-0.890)	(-1.026)	(-0.794)	(-0.846)	(-0.362)
MB $_{t-1}$	-0.152	-0.211	-0.250	-0.151	-0.872	-0.128	-0.241
	(-1.049)	(-0.843)	(-1.026)	(-0.524)	(-1.543)	(-0.544)	(-0.546)
Cum_Return $_{t-1}$	0.018	0.329	0.276	0.761	0.314	0.700	-0.246
	(0.030)	(0.430)	(0.371)	(0.977)	(0.253)	(1.020)	(-0.212)
Skewness $_{t-1}$	-0.186	-0.283	-0.206	-0.246	-0.763	-0.085	-0.124
	(-0.932)	(-1.230)	(-0.991)	(-1.060)	(-1.499)	(-0.402)	(-0.587)
Returns Std $_{t-1}$	-3.751	-2.644	-1.605	-2.695	-1.687	-2.136	-1.878
	(-1.370)	(-1.079)	(-0.767)	(-1.273)	(-0.497)	(-1.121)	(-0.864)
Stock Turnover $_{t-1}$	0.298	0.258	0.218	0.285	-0.114	0.204	0.174
	(1.113)	(0.972)	(0.920)	(1.132)	(-0.251)	(0.923)	(0.723)
Equity $_{t-1}$	3.250*	0.098	0.584	0.243	2.904	-0.051	-0.450
	(1.659)	(0.051)	(0.332)	(0.131)	(0.339)	(-0.030)	(-0.271)
Debt $_{t-1}$	-2.570	-0.734	-0.070	0.771	0.055	1.887	-2.563*
	(-1.589)	(-0.366)	(-0.040)	(0.393)	(0.016)	(1.083)	(-1.763)
Altman's Z $_{t-1}$	-0.007**	0.007	-0.007	-0.039	0.134	-0.036	-0.013
	(-2.217)	(0.355)	(-0.179)	(-0.960)	(0.899)	(-0.889)	(-0.510)
Working Capital $_{t-1}$	-1.364	-0.136	-2.346	-1.826*	-1.716**	0.465	-1.440*
	(-0.670)	(-0.259)	(-1.200)	(-1.926)	(-1.981)	(0.240)	(-1.798)
Goodwill $_{t-1}$	-3.001	-3.121	-4.941*	-4.556	-3.080	-3.684	-4.717*
	(-1.027)	(-1.083)	(-1.940)	(-1.597)	(-1.109)	(-1.462)	(-1.776)
Constant	13.497***	14.141***	13.559***	9.588***	15.222***	9.770***	11.633***
	(3.423)	(4.122)	(3.995)	(4.181)	(3.915)	(3.932)	(3.182)
Industry fixed effects	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES
Number of observations	716	716	716	716	716	716	716
Adjusted R-squared	0.191	0.185	0.147	0.098	0.165	0.036	0.135

Table 7: SCAs and CEO Turnover

The dependent variable *CEO Turnover* is an indicator that equals one if the firm replaces the CEO within two years of the filing year. The variables of interest are seven measures of CEO network centrality *Betweenness* is measured as the number of times an executive lies between two otherwise disconnected nodes relative to all possible connections. *Closeness* is measured as the inverse of the number of steps it takes for a node to reach all other nodes in the network. *Centrality (PCA)* is calculated as the principal eigenvalue of the following four centrality measures: degree, eigenvector, betweenness, and closeness centralities. *Cum Degree* is calculated as the sum of an executive's present and past direct connections. *Cum Eigenvecto*r is measured as weigh degree centrality by the degree centralities of the executive's present and past connections. *Degree* is calculated as sum of an executive's direct connections. *Eigenvector* is measured as weigh degree centrality by the degree centralities of the executive's connections; The definitions of control variables are provided in the Appendix. . Robust errors are clustered by firm. Statistical significance is designated by ***, **, and * at the 1%, 5%, and 10% levels, respectively. Control variables are winsorized at the top and bottom 1% to reduce the impact of outliers.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Degree $_{t-1}$	0.018*						
	(1.697)						
Betweenness $_{t-1}$		0.012**					
		(2.346)					
Eigenvector $_{t-1}$			0.014**				
			(2.007)				
Closeness $_{t-1}$				0.007**			
				(1.985)			
Centrality (PCA) $_{t-1}$					0.019*		
					(1.864)		
Cum Degree $_{t-1}$						0.011*	
						(1.771)	
Cum Eigenvector $_{t-1}$							0.012**
							(1.973)
NYSE $_{t-1}$	0.043	-0.054	-0.041	-0.834	0.134	0.046	-0.013
	(0.139)	(-0.200)	(-0.153)	(-0.449)	(0.352)	(0.171)	(-0.051)
Lnasset $_{t-1}$	0.004	-0.011	-0.009	1.142**	-0.023	-0.031	-0.005
	(0.041)	(-0.150)	(-0.133)	(2.218)	(-0.183)	(-0.443)	(-0.066)
ROA $_{t-1}$	0.047	-0.139	-0.172	0.127*	-0.114	-0.534	-0.176
	(0.097)	(-0.232)	(-0.281)	(1.770)	(-0.133)	(-1.622)	(-0.323)
Sales Growth $_{t-1}$	0.094**	0.035	0.038	-1.439	0.093*	0.037	0.032
	(2.236)	(1.242)	(1.328)	(-0.791)	(1.929)	(1.462)	(1.231)
R&D $_{t-1}$	-0.234	-0.015	-0.000	-11.099	-0.449	-0.053	-0.034
	(-0.645)	(-0.053)	(-0.000)	(-1.627)	(-0.769)	(-0.219)	(-0.122)

PPE_{t-1}	-1.201	-0.065	0.025	6.495	-1.476	0.058	0.139
	(-1.434)	(-0.090)	(0.035)	(1.206)	(-1.552)	(0.080)	(0.226)
MB_{t-1}	-0.045	0.029	0.021	-0.093	-0.055	0.021	0.023
	(-0.553)	(0.403)	(0.293)	(-0.167)	(-0.619)	(0.296)	(0.336)
$Return_{t-1}$	0.443	-0.066	-0.027	0.330	0.434	-0.052	-0.014
	(1.433)	(-0.269)	(-0.112)	(0.307)	(1.518)	(-0.222)	(-0.060)
$Skewness_{t-1}$	-0.066	-0.072	-0.078	-0.559	-0.106	-0.070	-0.072
	(-0.858)	(-1.169)	(-1.259)	(-1.588)	(-1.402)	(-1.149)	(-1.265)
$Returns\ Std_{t-1}$	-0.784	-0.351	-0.223	0.466	-0.148	-0.500	-0.384
	(-0.827)	(-0.491)	(-0.308)	(1.609)	(-0.136)	(-0.736)	(-0.576)
$Stock\ Turnover_{t-1}$	-0.048	-0.048	-0.050	-0.171	-0.007	-0.039	-0.045
	(-0.524)	(-0.763)	(-0.794)	(-0.381)	(-0.068)	(-0.618)	(-0.726)
$Equity_{t-1}$	1.196	1.277*	1.163	1.031*	1.765**	1.447**	1.064
	(1.394)	(1.786)	(1.604)	(1.719)	(1.996)	(2.080)	(1.535)
$Debt_{t-1}$	-1.520*	0.228	0.221	0.580	-2.946***	0.114	0.371
	(-1.803)	(0.391)	(0.382)	(0.110)	(-2.749)	(0.184)	(0.681)
$Altman's\ Z_{t-1}$	-0.041**	-0.009	-0.010	-0.133	-0.036*	-0.011	-0.009
	(-2.086)	(-0.805)	(-0.872)	(-0.983)	(-1.678)	(-1.044)	(-0.803)
WC_{t-1}	0.077	-0.731	-0.566	0.655	-0.588	-0.790	-0.427
	(0.097)	(-1.123)	(-0.875)	(0.224)	(-0.717)	(-1.300)	(-0.737)
$Goodwill_{t-1}$	0.383	1.057	1.128	0.466	-0.297	1.122	0.740
	(0.354)	(1.158)	(1.235)	(0.685)	(-0.253)	(1.297)	(0.889)
Constant	-2.397***	-0.004	-0.025	0.027	-2.577**	-0.497	-0.130
	(-2.591)	(-0.006)	(-0.032)	(0.041)	(-2.446)	(-0.650)	(-0.165)
Industry fixed effects	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES
Number of observations	716	716	716	716	716	716	716
Adjusted R-squared	0.111	0.141	0.139	0.137	0.177	0.111	0.118

Table 8: SCAs and Ex-post Changes Board Independence

The dependent variable *Board_Ind_Change* is the change in the percentage of the board comprised of independent directors within two years of the filing year. The variables of interest are seven measures of CEO network centrality *Betweenness* is measured as the number of times an executive lies between two otherwise disconnected nodes relative to all possible connections. *Closeness* is measured as the inverse of the number of steps it takes for a node to reach all other nodes in the network. *Centrality (PCA)* is calculated as the principal eigenvalue of the following four centrality measures: degree, eigenvector, betweenness, and closeness centralities. *Cum Degree* is calculated as the sum of an executive's present and past direct connections. *Cum Eigenvecto*r is measured as weigh degree centrality by the degree centralities of the executive's present and past connections. *Degree* is calculated as sum of an executive's direct connections. *Eigenvector* is measured as weigh degree centrality by the degree centralities of the executive's connections; The definitions of control variables are provided in the Appendix. Robust errors are clustered by firm. Statistical significance is designated by ***, **, and * at the 1%, 5%, and 10% levels, respectively. Control variables are winsorized at the top and bottom 1% to reduce the impact of outliers.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Degree $_{t-1}$	0.001**						
	(2.047)						
Betweenness $_{t-1}$		0.001**					
		(2.563)					
Eigenvector $_{t-1}$			0.001*				
			(1.749)				
Closeness $_{t-1}$				0.001*			
				(1.758)			
Centrality (PCA) $_{t-1}$					0.001**		
					(2.175)		
Cum_Degree $_{t-1}$						0.001**	
						(2.332)	
Cum_Eigenvector $_{t-1}$							0.001**
							(2.009)
NYSE $_{t-1}$	0.002	-0.001	0.004	0.010	0.002	0.006	0.009
	(0.081)	(-0.063)	(0.195)	(0.453)	(0.091)	(0.268)	(0.421)
Size (log assets) $_{t-1}$	-0.024***	-0.020***	-0.021**	-0.022***	-0.022**	-0.024***	-0.022**
	(-2.771)	(-2.611)	(-2.509)	(-2.585)	(-2.537)	(-2.896)	(-2.563)
ROA $_{t-1}$	0.059	0.056	0.053	0.053	0.053	0.041	0.050
	(1.228)	(1.199)	(1.133)	(1.207)	(1.089)	(0.959)	(1.170)
Sales Growth $_{t-1}$	0.002	0.002	0.002	0.001	0.002	0.001	0.001

	(1.502)	(1.646)	(1.642)	(0.926)	(1.355)	(0.832)	(0.958)
$R\&D_{t-1}$	-0.012	-0.014	-0.009	0.003	-0.011	0.007	0.001
	(-0.588)	(-0.698)	(-0.459)	(0.165)	(-0.553)	(0.340)	(0.076)
PPE_{t-1}	0.051	0.061	0.051	0.091*	0.044	0.093*	0.093*
	(1.000)	(1.156)	(0.972)	(1.749)	(0.831)	(1.852)	(1.786)
MB_{t-1}	-0.003	-0.002	-0.002	-0.003	-0.003	-0.001	-0.003
	(-0.651)	(-0.482)	(-0.485)	(-0.533)	(-0.636)	(-0.179)	(-0.637)
Cum_Return_{t-1}	-0.019	-0.019	-0.020	-0.021	-0.018	-0.023	-0.019
	(-1.208)	(-1.265)	(-1.273)	(-1.468)	(-1.141)	(-1.538)	(-1.375)
$Skewness_{t-1}$	0.005	0.006	0.005	0.005	0.005	0.004	0.006
	(1.533)	(1.646)	(1.304)	(1.466)	(1.340)	(1.075)	(1.529)
$Returns\ Std_{t-1}$	-0.022	-0.008	-0.023	-0.013	-0.020	-0.041	-0.015
	(-0.429)	(-0.174)	(-0.461)	(-0.261)	(-0.392)	(-0.994)	(-0.308)
$Stock\ Turnover_{t-1}$	0.005	0.005	0.006	0.003	0.004	0.004	0.003
	(0.911)	(0.992)	(1.094)	(0.648)	(0.789)	(1.052)	(0.736)
$Equity_{t-1}$	-0.002	0.005	-0.009	-0.006	-0.001	0.015	-0.004
	(-0.057)	(0.142)	(-0.248)	(-0.160)	(-0.023)	(0.433)	(-0.120)
$Debt_{t-1}$	-0.003	-0.002	-0.006	-0.005	0.000	-0.003	-0.000
	(-0.080)	(-0.062)	(-0.171)	(-0.149)	(0.009)	(-0.096)	(-0.006)
$Altman's\ Z_{t-1}$	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(-1.106)	(-1.369)	(-1.290)	(-1.211)	(-1.144)	(-1.104)	(-1.333)
$Working\ Capital_{t-1}$	0.025	0.033	0.027	0.053	0.029	0.033	0.047
	(0.600)	(0.828)	(0.657)	(1.355)	(0.685)	(0.873)	(1.238)
$Goodwill_{t-1}$	0.085	0.094	0.093	0.065	0.078	0.070	0.060
	(1.326)	(1.449)	(1.441)	(1.047)	(1.151)	(1.127)	(0.973)
Constant	0.635***	0.626***	0.659***	0.690***	0.729***	0.803***	0.673***
	(4.429)	(4.644)	(4.904)	(5.977)	(5.308)	(11.158)	(5.734)
Industry fixed effects	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES
Number of observations	716	716	716	716	716	716	716
Adjusted R-squared	0.179	0.176	0.179	0.123	0.190	0.076	0.127

Table 9: Changes in Contemporaneous CEO Centrality One to Six Years after SCA Filing

This table reports CEO centralities from year t+1 to year t+6 after an SCA filing, whereas t denotes the year a firm has a class action lawsuit filings. Panel A reports means of CEO centrality measures one to six years after SCA filing and Panel B reports medians of CEO centrality measures one to six years after SCA filing. The variables of interest are seven measures of CEO network centrality *Betweenness* is measured as the number of times an executive lies between two otherwise disconnected nodes relative to all possible connections. *Closeness* is measured as the inverse of the number of steps it takes for a node to reach all other nodes in the network. *Centrality (PCA)* is calculated as the principal eigenvalue of the following four centrality measures: degree, eigenvector, betweenness, and closeness centralities. *Cum Degree* is calculated as the sum of an executive's present and past direct connections. *Cum Eigenvecto*r is measured as weigh degree centrality by the degree centralities of the executive's present and past connections. *Degree* is calculated as sum of an executive's direct connections. *Eigenvector* is measured as weigh degree centrality by the degree centralities of the executive's connections. Statistical significance in changes in centrality from time t are designated by ***, **, and * at the 1%, 5%, and 10% levels, respectively.

Panel A: Mean of CEO centrality measures one to six years after SCA filing.

	t+1	t+2	t+3	t+4	t+5	t+6
Degree	76.35***	71.42***	71.01***	68.33***	67.05***	66.33***
	(10.332)	(7.654)	(6.634)	(5.571)	(10.351)	(8.734)
Eigenvector	68.74***	64.25***	63.47***	62.77***	61.88***	60.05***
	(8.425)	(9.152)	(7.995)	(7.182)	(3.951)	(3.013)
Betweenness	67.82***	65.01***	63.53***	62.00***	61.82***	60.79***
	(3.606)	(5.449)	(5.390)	(8.551)	(7.606)	(6.449)
Closeness	73.05***	70.79***	69.91***	68.52***	67.82***	67.06***
	(7.359)	(8.637)	(6.479)	(7.724)	(9.729)	(5.359)

Panel B: Median of CEO centrality measures one to six years after SCA filing

	t+1	t+2	t+3	t+4	t+5	t+6
Degree	84.02***	82.34***	82.33***	80.01***	78.32***	77.32***
	(6.793)	(8.271)	(7.265)	(11.227)	(6.313)	(5.793)
Eigenvector	69.31***	68.21***	67.42***	66.21***	65.32***	64.22***
	(8.270)	(8.354)	(12.523)	(6.426)	(7.352)	(9.270)
Betweenness	70.21***	66.42***	66.02***	63.32***	61.44***	60.65***
	(7.279)	(9.459)	(7.268)	(11.327)	(7.442)	(8.279)
Closeness	74.14***	72.24***	71.34***	70.55***	69.13***	68.24***
	(8.239)	(11.139)	(12.147)	(9.024)	(15.052)	(6.239)

Table 10: Network power and the probability of SCA lawsuits

The dependent variable *Class Action* is an indicator equal to one if the firm is subject to a class-action lawsuit. *Reputation* is measured as the predicted value resultant of a regression of network centrality on a vector of personal and firm characteristics, e.g. firm size, tenure, education, awards, that are likely collinear with our centrality measures. *Network power* is the residual from the same regression and is meant to isolate the benefits to executives of connections, e.g. entrenchment, absent reputational effects. Definitions of control variables are provided in the Appendix. Robust errors are clustered by firm. Statistical significance is designated by ***, **, and * at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)
Network power, t-1	0.063***	
	(3.688)	
Reputation $_{t-1}$		0.007
		(0.078)
NYSE $_{t-1}$	-0.022	-0.015
	(-0.216)	(-0.150)
Size (log assets) $_{t-1}$	0.333***	0.353***
	(11.836)	(12.174)
ROA $_{t-1}$	0.010	-0.004
	(0.050)	(-0.022)
Sales Growth $_{t-1}$	0.016	0.016
	(1.129)	(1.135)
R&D $_{t-1}$	0.124	0.144
	(0.411)	(0.481)
PPE $_{t-1}$	-0.457	-0.466
	(-1.531)	(-1.575)
MB $_{t-1}$	0.187***	0.190***
	(6.940)	(7.089)
Cum_Return $_{t-1}$	-0.221**	-0.227**
	(-2.347)	(-2.414)
Skewness $_{t-1}$	-0.146***	-0.146***
	(-4.007)	(-4.007)
Returns Std $_{t-1}$	1.710***	1.735***
	(6.255)	(6.391)
Stock Turnover $_{t-1}$	0.115***	0.111***
	(4.453)	(4.259)
Equity $_{t-1}$	0.586**	0.581**
	(2.262)	(2.238)

Debt $_{t-1}$	-0.012	-0.023
	(-0.057)	(-0.110)
Altman's Z $_{t-1}$	-0.005	-0.005
	(-1.166)	(-1.102)
Working Capital $_{t-1}$	0.873***	0.880***
	(3.538)	(3.552)
Goodwill $_{t-1}$	0.203	0.209
	(0.649)	(0.669)
Constant	-7.933***	-8.081***
	(-17.102)	(-17.446)
Observations	31,282	31,282
Industry fixed effects	YES	YES
Year fixed effects	YES	YES
Adjusted R-squared	0.100	0.099