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Dennis Hutschenreiter, Qianshuo Liu

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Authors

Dennis Hutschenreiter
Halle Institute for Economic Research (IWH) –
Member of the Leibniz Association,
Department of Financial Markets
E-mail: dennis.hutschenreiter@iwh-halle.de
Tel +49 345 7753 839

Qianshuo Liu
University of Barcelona, Department of
Economics
E-mail: Qianshuo.Liu@ub.edu

Editor

Halle Institute for Economic Research (IWH) –
Member of the Leibniz Association

Address: Kleine Maerkerstrasse 8
D-06108 Halle (Saale), Germany
Postal Address: P.O. Box 11 03 61
D-06017 Halle (Saale), Germany

Tel +49 345 7753 60
Fax +49 345 7753 820

www.iwh-halle.de

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Abstract

Institutional common ownership of firm pairs in the same industry increases the likelihood of a preexisting social connection among their CEOs. We establish this relationship using a quasi-natural experiment that exploits institutional mergers combined with firms' hiring events and detailed information on CEO biographies. In addition, for peer firms, gaining a CEO connection from a hiring firm's CEO appointment correlates with higher returns on assets, stock market returns, and decreasing product similarity between companies. We find evidence consistent with common owners allocating CEO connections to shape managerial decision-making and increase portfolio firms' performance.

Keywords: CEO appointments, CEO connections, common ownership, firm performance, product similarity

JEL classification: G23, G32, G34, L21, L22

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"PepsiCo, Mondelez deal would reunite powerful women CEOs Indra Nooyi, Irene Rosenfeld ... Without providing details, a spokesman said Nooyi keeps in touch with Rosenfeld, with whom she has a warm relationship..."

— *Star Tribune*, July 17, 2014

Top managers' social networks matter for their companies' strategies and performance (Fracassi and Tate, 2012; El-Khatib, Fogel, and Jandik, 2015; Bertrand, Kramarz, Schoar, and Thesmar, 2018), and firms value CEOs' social ties (Engelberg, Gao, and Parsons, 2013). The prevalence of social connections among CEOs of large corporations in the same industry has increased significantly in the past decades (see Figure 1a). However, the impact of financial markets and, in particular, institutional investors on CEO networks across portfolio firms remains understudied. In this paper, we investigate whether the overlap of institutional ownership in the shareholder base of strategically interacting companies (i.e., common ownership) can account for differences in the prevalence of social ties among their chief executives.

Studying CEO hiring events of large US corporations between 1992 and 2016, we show that newly hired CEOs are more likely to have prior connections to another CEO in the same industry if the two firms have more ownership overlap. Exploiting quasi-natural experiments of mergers among institutional investors (He and Huang, 2017; Lewellen and Lowry, 2021), we find that an additional common blockholder of two firms in the same 2-digit Standard Industry Classification (SIC) industry on average more than doubles the probability that the hiring firm appoints CEOs with existing social ties with their peer in the three to five years after the investors' merger. We further contribute to the literature exploring the effect of top managers' social connections and show that, at the firm-pair level, appointments of connected CEOs at an industry rival correlate with industry peers' behavior, performance, and firm value. Moreover, we explore different mechanisms to explain common owners' impact on portfolio firms' networks.

Anecdotal evidence from the financial press suggests that investors care about the relationships among companies' chief executives. In 2014, a campaign by Trian Fund Management, pushing for a merger between PepsiCo and Mondelez, came to an unsuccessful end (Reuters, 2014). In contrast to Trian, BlackRock, the largest institutional shareholder of both companies at the time, appeared less enthusiastic about the deal. BlackRock's leader, Larry Fink, expressed skepticism, stating "I question how it would add long-term value" (Reuters, 2013). Yet, Trian persisted in advocating for PepsiCo to divest its beverage business and shift focus towards the flourishing global snack food market, where Mondelez was a close competitor. However, Indra Nooyi, PepsiCo's CEO, successfully rebuffed Trian's efforts (George and Lorsch, 2014;

WSJ, 2016). The press discussed the potential impact of Nooyi's relationship with Modelez CEO Irene Rosenfeld, as indicated by the quote from the *Star Tribune*. Both had met before at PepsiCo when Nooyi was the company's CFO and Rosenfeld was the CEO of PepsiCo's Frito-Lay division (Forbes, 2020; StarTribune, 2013).[1]

Beyond anecdotes, previous literature has shown that CEOs' social networks may affect corporate governance and behavior in different ways. On the one hand, CEO-director social ties within a company may weaken the intensity of board monitoring, which can lead to value-destroying M&As and an increase in CEO entrenchment (see, for instance, Fracassi and Tate, 2012; El-Khatib et al., 2015). On the other hand, CEO connections with their peers in other companies may increase a firm's investment in R&D and the number of high-quality patents (Faleye, Kovacs, and Venkateswaran, 2014). CEO connections also induce reciprocal behavior among business leaders, enabling them to support one another in filling vacant board positions (Kim, Fahlenbrach, and Low, 2023).[2] In this paper, we focus on CEOs' social ties with other chief executive officers of companies in the same industry.

Drawing upon the existing literature on executives' social ties and networks (Fracassi and Tate, 2012; Engelberg et al., 2013; El-Khatib et al., 2015), we conceptualize CEOs as connected if they have overlapped professionally, educationally, or personally in their previous endeavors. We call a pair of firms *connected* if their CEOs have a prior social connection. Figure 1a shows the rise in the percentage of firms having CEO connections with at least one, two, three, and five 2-digit SIC industry rivals from 1992 to 2016 in our raw data.[3] This figure illustrates that the percentage of firms' CEOs having at least one connection with the CEO of an industry rival increases from 5.7% to nearly 27.4% over 24 years, i.e., an increase of almost 381%. Despite potential measurement error, the evidence suggests that social ties among CEOs are an increasingly prevalent phenomenon. We also find that firm pairs in our sample are, on average, more than three times more likely to exhibit CEO connections than interlocking directorates,[4] which have been shown to correlate with common ownership on the firm-pair level (Azar, 2022).

Common ownership has sparked the interest of researchers and policymakers alike (Schmalz,

[1] It appears plausible that Nooyi maintained a close relationship with Rosenfeld, as she has a reputation for personally reaching out to her leadership team's families, even visiting their parents (Forbes, 2020).

[2] See more about CEOs' and managers' networks, for instance, Geletkanycz, Boyd, and Finkelstein (2001), Khanna, Kim, and Lu (2015), Acemoglu, Johnson, Kermani, Kwak, and Mitton (2016), and Chang and Wu (2021).

[3] Since connections form over time, the increase could be partially driven by truncation. We alleviate this concern by using data on CEOs' activities history back to 1970 and address this issue carefully in our estimation models by using variation in connections of a single CEO hire with industry peers and controlling for their characteristics, such as age.

[4] Interlocking directors are board members of more than one firm in the same industry at the same time. We define this variable in Section 2.

2018) due to the potential danger of undermining product-market competition (Azar, Schmalz, and Tecu, 2018). Some evidence suggests that institutional owners' overlapping investments impact firms' strategies by coordinating top managers' behavior. However, the evidence still seems inconclusive (Lewellen and Lowry, 2021). Moreover, the mechanisms through which these owners align managers' behavior with their preferences need further study. While the previous literature provides several channels such as voting, executive compensation, and promoting interlocking directorates (Shekita, 2022; Azar, 2022; Antón, Ederer, Giné, and Schmalz, 2023), the role of CEO networks has received less attention.

In this paper, we propose that fostering CEO networks across portfolio firms represents an additional mechanism through which diversified institutions can shape managerial decision-making. To the best of our knowledge, our paper is the first to explore the effect of common ownership on hiring CEOs with social connections to industry rivals' CEOs. As we will discuss in Section 1, these connections may lead to more cooperative behavior among investors' portfolio firms. Figure 1b decomposes the evolution of the probability of a company being connected to an industry rival through their CEOs by the median of ownership overlap at the firm-pair level in our sample. It indicates that the increase in connectedness over time occurs among firm pairs with high common ownership, while the probability of connection to rivals with below-median common ownership has decreased since the early 2000s. These differences in the evolution of connectedness of firms' CEOs could be driven by the dramatic increase in ownership overlap as documented by Backus, Conlon, and Sinkinson (2021).

[Insert Figure 1 here]

In addition, Figure 2 shows that the positive correlation between common ownership and the likelihood of a firm pair being connected through their CEOs' prior social ties persists across different sample periods. Figure 2a illustrates the firm-pair-level probability of a CEO connection among firms in the same 2-digit SIC industries for the full sample period (1992–2016), grouped by quintiles of common ownership. It indicates that higher common ownership is associated with a greater prevalence of CEO connections. Similarly, this positive relationship holds in the cross-section of firm pairs for individual years, as shown in Figure 2b. In Figure 2c, we further divide the sample into firm pairs within the same 3-digit SIC industry and those in different industries.[5] While CEO connections are generally more frequent among firms in the same narrowly defined industry, the correlation between common ownership and CEO connections is also stronger within these industry-specific firm pairs.

[5]The figure presents results for firm pairs in 2005, but a similar pattern holds across the full sample.

[Insert Figure 2 here]

Our contribution is threefold. First, we seek to explain the stylized facts presented in Figure 2. We develop the hypothesis that the presence of common owners influences the prevalence of CEO connections across industry rivals in their portfolios by promoting the hiring of CEO candidates with already existing social ties to their corresponding incumbent peers in other portfolio companies. To test our hypothesis, we first estimate a linear probability model and show that the association between common ownership based on one-year lagged ownership data and the probability of connections on the hired CEO-firm-pair level is positive, statistically significant, and robust to different specifications concerning fixed effects and a large set of firm and CEO characteristics.

To further address endogeneity concerns, we use quasi-natural experiments, where the exogenous variation in common ownership results from a set of mergers of institutional investors following He and Huang (2017) and Lewellen and Lowry (2021).[6] Since firms are affected by their owners' mergers at different points in time, we employ a stacked-by-events difference-in-differences approach (Cengiz, Dube, Lindner, and Zipperer, 2019). At each merger event, two distinct investors become one investment company, which may create a new common blockholder for some pairs of firms. Quantitatively, an additional common blockholder with a peer firm makes it more than two times more likely for the hiring firm to appoint a CEO connected to the peer's CEO in the three to five years after the investors' merger. Our results are robust to excluding data from the financial crisis and, in particular, the merger between BlackRock and Barclays Global Investors, as suggested by Lewellen and Lowry (2021).[7] Thus, we conclude that common owners likely play an important role in selecting CEO candidates with existing social ties to their peer CEOs in other portfolio firms. Moreover, we show that this positive relationship is economically and statistically more significant among firms that are similar in terms of the products they produce or that operate in more narrowly defined industries, as suggested by Figure 2c.[8]

Second, we examine the potential underlying incentives of common owners. To this end, we also contribute to the literature on the effect of CEO connections. Compared to previous

[6]Prior research suggests that these institutional mergers were primarily driven by financial industry consolidation resulting from regulatory changes and strategic factors, such as economies of scale and market share expansion, rather than the specific portfolio positions of the merging partners in individual companies (He and Huang, 2017; Jayaraman, Khorana, and Nelling, 2002).

[7]We find qualitatively similar results in these robustness tests, included in Internet Appendix A. We also construct our sample by applying an exact matching on firms' industry (see Lewellen and Lowry, 2021).

[8]To show this, we use the text-based measure of product similarity developed by Hoberg and Phillips (2016) and a simple split into firm pairs within and across 3-digit SIC industries.

papers studying CEO connectedness at the CEO-firm level (Engelberg et al., 2013; Faleye et al., 2014; El-Khatib et al., 2015), we apply a different approach, providing evidence on the individual connection level using again a stacked-by-events difference-in-differences design (Cengiz et al., 2019). In particular, we investigate how the appointment event of one firm affects other firms in the same industry with incumbent CEOs connected to the hired candidate. Using losses of connections due to the death or illness of a CEO, we corroborate our main results.

Our results are consistent with the hypothesis that CEO connections are valuable. Peer firms gaining a connection through a hiring firm's CEO appointment experience higher returns on assets in the following one to three years. Using an event study around the announcements of new CEO hirings, we find that industry peers whose incumbent CEOs have prior social ties to a new hire experience positive abnormal returns. On average, we estimate that a newly established connection translates into a 6.78 million dollar increase in peers' firm value. Moreover, our estimates of the value of connections and their relation to long-term performance are larger and statistically more significant concerning peer firms that are ex-ante more similar to the hiring company in terms of their products (Hoberg and Phillips, 2016) or industry classification (3-digit SIC).

The anecdotal evidence on Mondelez and PepsiCo suggests that Nooyi avoided expanding PepsiCo's business into Mondelez's snack food market. Therefore, we also study whether connected CEOs prefer their companies to operate in less similar product markets. The data show that firms differentiate their products after gaining a CEO connection; the time-varying text-based product similarity measure of Hoberg and Phillips (2016) decreases significantly after the hiring event, which leads to a new CEO connection among the firms.

Finally, we provide evidence for two potential mechanisms for common owners to impact portfolio firms' connections through their CEOs' social networks. (1) Having shown that connections are valuable, we test if common owners increase the likelihood of hiring connected CEO candidates because they anticipate positive effects on peer firms, boosting their portfolio performance. We use the financial crisis as a quasi-natural experiment, a shock that has been shown to enhance the potential benefits and value of top managers' social ties (Acemoglu et al., 2016; Hasan and Manfredonia, 2022) and the flow of information and trust (Lins, Servaes, and Tamayo, 2017). We expect firms with more ownership overlap would more likely have connected CEOs in the post-crisis (recovery) period. (2) We test whether asymmetric information in the CEO market and information acquisition by institutional investors drive our results. To this end, we exploit the heterogeneity of CEO candidates in their prior CEO experience and the associated availability of information on their expected performance. In this case, we hypothe-

size that a newly hired CEO with less known CEO ability is more likely to be connected to an incumbent peer CEO when two firms have more ownership overlap. While we find evidence supporting the first mechanism, we do not find evidence for the second.

The remainder of the paper is organized as follows. In Section 1, we provide theoretical background and develop our hypotheses. Section 2 introduces the data and variables. Section 3 presents the empirical results showing the effect of common ownership on having connected CEOs. Section 4 provides evidence on the effect of CEO connections on the performance and behavior of industry peer firms. Section 5 sheds light on possible mechanisms that explain the effect of common ownership on CEO connections. Finally, Section 6 concludes.

1 Theoretical Background and Hypothesis Developement

In this section, we draw on various strands of existing literature to establish the theoretical foundations for the empirical hypotheses tested in this study.

First, the stylized facts presented in Figure 2 suggest a relationship between common ownership at the firm-pair level and the social ties between firms' CEOs. However, for common owners to influence the formation of firms' connections via CEOs' preexisting social ties, institutional shareholders must be able to shape the selection process of potential CEO candidates.

Institutional investors, as sophisticated shareholders with significant financial stakes in their portfolio firms, may have strong incentives to gather information about these processes, as their investment returns depend on selecting a suitable candidate and ex-post strategies and performance. Consequently, they are motivated to monitor board activities, particularly during the CEO appointment process. As Parrino, Sias, and Starks (2003) show, institutional investors "vote with their feet" by divesting from firms if a CEO appointment does not align with their interests.

Beyond this, board members also have reasons to engage large and sophisticated shareholders in the selection process, as they are responsible to shareholders. Furthermore, their career prospects, compensation packages, and reelection outcomes hinge on investor approval. For instance, they may anticipate the threat of investor disapproval of a CEO appointment and the resulting exit of large investors (Parrino et al., 2003).[9] Moreover, Aggarwal, Dahiya, and Prabhala (2019) find that directors who face resistance in uncontested elections are more likely to

[9] Shekita (2022) also shows that large institutional investors can drive CEO turnover. The author reports that "Fidelity, a common owner of car companies such as Tesla, Nikola, and GM, leveraged its influence to remove Trevor Milton as the CEO of Nikola." Such actions likely encourage directors to involve powerful shareholders in the selection of a new CEO.

leave the board or, if they remain, assume less prominent roles. Therefore, to minimize the risk of significant shareholder opposition, directors have strong incentives to align CEO selection with investor interests.

If common owners prefer CEOs with established connections to lead their portfolio companies—particularly in firms where they hold larger financial stakes—they are likely to leverage their influence over a hiring firm's board to favor candidates with social ties to incumbent CEOs at industry peers where their financial interests are larger. Based on these findings, we argue that institutional investors can affect CEO selection and propose the following hypothesis:

Hypothesis 1. *The probability that a newly hired CEO has prior social ties to an incumbent CEO of an industry-peer company increases with common ownership between the hiring and the peer firm.*

Second, we investigate common owners' incentives and motivations for fostering such ties among their portfolio firms. To this end, we first assess the value that a newly hired CEO brings to peer firms with incumbent CEOs socially connected to this new hire.

CEO connections can influence firm and CEO behavior in several ways. First, CEOs may exhibit other-regarding preferences toward their connected peers, internalizing the impact of their strategic decisions on peer firms' performance. Experimental economics research demonstrates that anticipated verbal feedback in dictator games leads to greater generosity and fairness (Ellingsen and Johannesson, 2008; Xiao and Houser, 2009). Similarly, Capizzani, Mittone, Musau, and Vaccaro (2017) provide evidence that in strategic interactions, such as ultimatum games, proposers behave more cooperatively when they expect two-sided communication with the responder. Since verbal feedback and communication are more likely among socially connected CEOs than among those without personal ties, these connections may encourage greater cooperation. Empirical evidence supports this notion: Kim et al. (2023) show that connected CEOs engage in more reciprocal behavior, while Bertrand et al. (2018) find that politically connected CEOs influence firm behavior, even when their firms do not directly benefit from political access, suggesting deviations from pure profit-maximization. Second, social networks shape both the flow and quality of information while fostering trust among members (Granovetter, 2005). Connected CEOs can also act as decentralized sources of knowledge about their peers (Drexler and Schoar, 2014). As a result, CEO social ties serve as crucial channels for transmitting valuable information between firms and, potentially, between firms and common owners.

Intuitively, if connected CEOs foster greater cooperation and facilitate valuable information exchange, firms gaining such connections should benefit. Improved coordination and informa-

tion flow should enhance profitability, as evidenced by increased returns on assets. Besides, we examine whether connected firms differentiate their products, which would be consistent with CEOs coordinating to mitigate direct competition. Additionally, financial markets should also reflect these advantages, leading to higher firm valuations. Based on these arguments, we test the following hypothesis:

Hypothesis 2. *If a peer firm gains a CEO connection to a hiring firm, then (a) the peer firm experiences an increase in operating performance; (b) the product similarity between the hiring and the peer firm decreases; (c) the peer firm experiences an increase in firm value.*

Third, we also explore why common owners might favor CEOs with such connections and promote their hiring. We propose two distinct mechanisms. First, common owners may prefer CEOs who internalize the externalities that portfolio firms impose on each other. By selecting CEOs with social ties to leaders of other portfolio firms, they can guide managerial decisions in ways that align with their broader ownership interests. Second, common owners may leverage information about CEO candidates, which they obtain through communication with other CEOs of portfolio companies. In doing so, they could mitigate information asymmetries in the selections of CEOs, inadvertently giving an advantage to CEO candidates with established social ties to other portfolio firms' CEOs.

Portfolio Motive Channel—The first mechanism builds on the theoretical incentives of diversified investors outlined in the common ownership literature. The foundation of the *common ownership hypothesis* dates back to Rotemberg (1984), which posits that when institutional investors hold significant stakes in multiple firms within the same industry, these firms may behave less competitively than they would under independent ownership. Chiappinelli, Papadopoulos, and Xefteris (2023) provide a theoretical model demonstrating that common owners have incentives to support socially concerned managers, thereby shifting firms' objectives from individual profit maximization toward maximizing industry-wide profits.

As discussed earlier, connected CEOs may enhance information exchange, engage in cooperative behavior, and align corporate strategies, allowing common owners to steer market outcomes in their favor. Moreover, connected CEOs may possess superior knowledge about these externalities and the strategic adjustments necessary to optimize joint performance, reducing the need for direct monitoring by common owners. In this way, CEO networks can serve as an effective tool for aligning managerial decisions with the interests of diversified investors.

Since involvement in the CEO appointment process, candidate evaluation, and exerting influence over boards are costly, common owners are likely to focus these efforts on firms whose strategies have the greatest impact on each other's performance. As companies that are more

similar in terms of their products are more likely to interact strategically in the product market, coordination through social connections among their chief executives should have higher benefits for performance and firm value compared to the case of less similar firms. Thus, if common owners anticipate that CEO connections improve performance among close rivals, we expect them to be more eager to foster connections among these similar firms. We test Hypothesis 3 along with our two main hypotheses stated above.

Hypothesis 3. *Among companies with higher product market similarity (or that operate in the same industries): (a) the effect of common ownership on the likelihood of hiring connected CEOs is larger. (b) the value of a CEO connection and its association with performance is larger.*

To further examine the *portfolio motive channel*, we exploit variation in the value of CEO connections over time. The period of recovery from the 2008–2009 financial crisis has been shown to enhance the benefits of top managers' social ties (Hasan and Manfredonia, 2022) and the flow of information and trust associated with these connections (Lins et al., 2017) on the firm level. If institutional investors promote the hiring of connected CEOs not only to benefit the hiring firm but also with their broader portfolio in mind and boost the recovery of their portfolio firms after the crisis, we expect the following pattern:

Hypothesis 4. *The probability that a firm hires a CEO connected to a peer firm's incumbent CEO increases more with common ownership between the firms in the post-crisis period.*

Informational Channel—We also propose an alternative explanation for the relationship between common ownership and CEO connections. If common owners engage in CEO appointment processes for reasons beyond creating networks among portfolio firms, they may focus on identifying talented candidates and gathering information about them. To obtain this information, they could leverage their existing networks of CEOs within their portfolio firms. This process allows them to assess candidates' abilities and mitigate asymmetric information in the hiring process. Incumbent CEOs' knowledge of candidates they are connected to could serve as a signal of a candidate's ability, giving those with prior social ties to CEOs at investors' portfolio firms an advantage over unconnected contenders. As major shareholders, common owners have an incentive to share this information with company boards if it helps directors make more informed hiring decisions. Through this mechanism, common ownership influences the appointment of connected CEOs via an *informational channel*.

Common owners may rely on private information from connected incumbent CEOs at their portfolio firms, especially when there is limited public knowledge about a potential CEO candidate's expected performance. In such cases, the insights provided by connected CEOs become

particularly valuable to investors, as they could serve as decentralized sources of knowledge about their peers (Drexler and Schoar, 2014). Therefore, if the *informational channel* plays a significant role in the relationship between common ownership and CEO connections, we expect the following outcome:

Hypothesis 5. *The effect of common ownership between a hiring firm and its industry peers on the likelihood of a CEO connection between the hired candidate and the peers' CEOs is stronger when less public information is available about the candidate's CEO ability.*

2 Data

2.1 Sample and Data Sources

The sample contains information on U.S. public firms and their CEOs from 1992 to 2016 in Compustat and ExecuComp, covering recent and former S&P1500 constituents. From ExecuComp, we identify the CEOs, the date they became a CEO, age, and gender. Firms' financial information comes from Compustat. To retrieve more CEO characteristics, especially their prior experience, we use the historical information from the BoardEx individual profile database. BoardEx contains the individual historical profile, including professional, educational, and other activities, allowing us to identify which CEOs were in the same company, educational institution, or other organizations at the same time in the past since 1970.[10] We manually match the CEOs in ExecuComp with the individual historical profiles in the BoardEx database.[11]

However, for the CEOs' historical employment, BoardEx does not include firm-level financial information. Therefore, we merge the BoardEx with Compustat data.[12] Then, we gather the historical firms' information, in which the CEOs were employed, from Compustat and the Compustat Segment database. With this information, we are able to gauge the CEO's managerial ability and incorporate it as control variables in our empirical models. Furthermore, we

[10]However, BoardEx data are subject to survivorship bias because the executives who died or retired before 2000 are not included. Therefore, we also restrict our sample to those CEO appointments after 2000, and the results are consistent with those presented in the paper.

[11]We complement and double-check the individual links between EXECID in ExecuComp and Directorid in BoardEx by using the BoardEx-ExecuComp People Link from the Wharton Research Data Services.

[12]We match the firm identifier (CompanyID) in BoardEx to Compustat's identifier (GVKEY) using the Committee on Uniform Securities Identification Procedures (CUSIP) and the International Securities Identification Number (ISIN). For those firms in BoardEx without ISIN, we manually match them with firms in Compustat by their names. We complement and double-check the matches by using the WRDS BoardEx-CRSP-Compustat Link.

gather board information from BoardEx to identify interlocking directors, referring to board members who concurrently serve on the boards of multiple firms.

We use the Thomson Reuters Institutional Holdings (form 13F) database to collect institutional ownership information. It contains information about the number of outstanding shares and shares held by institutional investors for each firm. However, the 13F dataset suffers from several data quality issues. Therefore, we manually clean the data, removing duplicate and incorrectly assigned holdings observations. We complement information on outstanding shares and stock prices with data from the Center for Research in Security Prices (CRSP) and Compustat. Furthermore, we aggregated fund holdings at the institutional investor level.[13] We gather information on institutional investors' mergers from He and Huang (2017) and Lewellen and Lowry (2021).

Finally, to explore the stock market reaction to the appointments of connected CEOs, we need to accurately identify the announcement dates of CEO appointments to match these with stock market returns from CRSP. Therefore, we manually search for and extract the announcement date from both licensed and free sources of news articles on Factiva, which report most of the companies' official announcements of CEO appointments.[14]

2.2 Variables

In this section, we describe our main variables and controls.

CEO Connections—To study the effect of common ownership on hiring a connected CEO who has prior linkages with the portfolio firms' CEOs, we use the variable *Connection*. This variable is an indicator taking the value one if the two CEOs of a firm pair have prior connections before the hiring event. Following Fracassi and Tate (2012), Engelberg et al. (2013), and El-Khatib et al. (2015), we consider different reasons for which CEOs become connected. First, two CEOs may share professional connections. They may have served on the same board of directors, have worked together in the same company, and one could have been the employee of the other in the same fiscal year in the past. Second, CEOs may have been educated in the same university at the same time in the past. Third, they may also be connected to each other because they are active members of the same charitable organization or other clubs. We obtain all prior linkages between CEOs in our sample from BoardEx since 1970. We identify whether the CEOs of a firm pair are connected one year before the fiscal year of the hiring event to

[13] Some large institutional investors, such as BlackRock, report holdings disaggregated to the asset manager level. We aggregate such information when necessary, as suggested by Gilje, Gormley, and Levit (2020).

[14] The item "BECAMECEO" from ExecuComp is the date on which the CEO officially takes the position, which might be very different from the date when the market receives the information about the CEO appointment.

ensure that we are using the prior (long-term) CEO connections that do not include the new linkages obtained from the hiring event year.

Common ownership measure—We measure the firm-pair level common ownership using the *Cindex* as proposed by Lewellen and Lowry (2021), which is the sum over all investors' product of ownership shares in the two firms:

$$Cindex = \sum_{i} \beta_{ih}\beta_{ip}, \tag{1}$$

where i indexes the set of investors and β_{ih} (β_{ip}, respectively) is the fraction of outstanding shares of the hiring (peer, resp.) firm owned by investor i. Mathematically, this measure coincides with a version of the one proposed by Gilje et al. (2020).[15] The authors derive their measure from a theory that models the incentives of a firm's insiders to internalize the interests of common owners, accounting for differences in investors' ability and incentives to engage with corporate decision-makers.[16] Furthermore, this measure is straightforward to construct, as it relies solely on the individual ownership shares of investors in each firm. Since it is based entirely on observable quantities, it is well-suited for empirical analysis. Intuitively, it increases in each common owner's ownership share of the firm on which the impact is estimated, to proxy for owners' power to influence corporate decisions, and in their ownership share of the other firm, to gauge owners' financial interests concerning this firm.

Performance Measurements—The firm's standard performance measurement is the return on assets (*ROA*). To mitigate the effect of outliers, we winsorize *ROA* at the 5th and 95th percentiles.

Product Similarity—The variable *Similarity*, is obtained from Hoberg and Phillips (2016), who provide time-varying text-based product similarities for firms in Compustat by analyzing the text of the firms' 10-K forms. We use this measure to identify more similar firms in terms of their products and to see how CEO connections correlate with product differentiation.

Interlocking Directors—Previous literature has documented the importance of directors that serve concurrently on more than one board of different firms in the same industry and its association with common ownership (Nili, 2019, 2022; Fletcher, Peitz, and Thépot, 2022; Azar,

[15] This version assumes full or equal investor attention to insiders' actions. Given that CEO appointments are pivotal events, we consider this assumption appropriate. Alternative assumptions regarding investor attention did not improve the fit of our empirical models.

[16] Gilje et al. (2020) present their measure as capturing *managerial* incentives to internalize common ownership preferences. However, since their model assumes that common owners can exert influence—for instance, by expressing dissent through director elections—we argue that their effect on board decisions provides a more direct and convincing channel of influence than managerial incentives. This argument is supported by empirical evidence on investor influence in director elections (Aggarwal et al., 2019).

2022). To account for connected corporate boards, we construct a variable, *InterlockingDir*, that measures the number of interlocking directors serving on both boards of directors of a firm pair in the hiring year.

Control Variables—We control for several firm and CEO characteristics. First, we control for *FirmSize*, which is the natural logarithm of total assets; *FirmAge*, which is the logarithm of (one plus) the number of years the firm has existed, according to Compustat; *Leverage*, which is the ratio of firm debt to total assets; *Cash*, corresponding to firms' cash scaled by total assets; *PPEassets*, computed as firms' property, plant, and equipment, scaled by total assets; *MktCapitalization*, which measures the firm's market capitalization at the fiscal year end; and the *KZindex*, a measure of financial constraints (Kaplan and Zingales, 1997). *Tobin's Q* is the market value of equity plus book value of assets minus book value of equity minus balance sheet deferred taxes, divided by the book value of assets. We use *Tobin's Q* as a control in the analysis of the stock market returns. We also use *ROA* as a control variable when analyzing the common ownership effect on the CEO connections.

Then, at the CEO level, we control for the CEO's demographic information and prior managerial ability following Custódio, Ferreira, and Matos (2013): *Age* is the natural logarithm of (one plus) the CEO's age; *Gender* indicates the female CEO; *Nindustry* measures the number of different 4-digit SIC industries where the CEO has worked before; *NCEOexp* sums up the prior CEO positions in different firms that a CEO has held in the past; *Npositions* concludes the number of different positions that the CEO has served; *Conglomerate* indicates whether the CEO has worked at a conglomerate firm before; finally, *Nfirms* measures the number of different firms in which the CEO has worked in the past. Moreover, we control for the CEO tenure of incumbent CEOs in the peer firm, i.e., *Tenure*. Table A1 in the Internet Appendix defines all variables used in our paper.

2.3 Descriptive Statistics

Table 1 provides summary statistics of all variables in our analysis for the 3,683 hiring events of hiring firms in our sample and their 25,562 industry peer firm-year observations in the same 2-digit SIC industry as the hiring firms, as well as their pairwise characteristics of connectedness in terms of ownership, boards, and CEO social ties.

[Insert Table 1 here.]

In terms of the common ownership measure, the average *Cindex* for the firms in a pair is around 0.007. To interpret this number, it corresponds roughly to having two to three blockholders in common that hold around 5% in each firm in the pair. The hiring firms, Firm_h, have

about 10.08 billion in total assets on average and peers' average assets are 11.16 billion. Firm$_h$ and firm$_p$ have similar ratios of assets in cash and equivalents, which are 15.2% and 15.9%, respectively. Firm$_h$'s and firm$_p$'s average market capitalization is 7.006 and 7.378 billion, respectively. In our sample, the hiring firms have lower *KZindex* on average than the peer firms, which are -10.12 and -26.66, respectively. This means that both hiring and peer firms are not highly financially constrained. The average leverage ratio of the hiring firms is 23.7%, and that of the peer firms is close, which is 22.1%. The hiring firms' mean return on assets is 0.6%, lower than the peer firm's mean return on assets, which is 2.8%. Firm$_h$ and firm$_p$ have 27.9% and 26.4% property, plant, and equipment to assets, respectively.

Regarding the employment profile in our sample, newly hired CEOs in the hiring events, on average, have worked in 3.27 industries, in 6.03 different firms, served as a CEO about one time, and served 8.22 different positions in the past. Also, more than 70.8% of CEOs have worked in a conglomerate firm before the hiring events. In contrast, the CEOs in the peer firms have less experience. The mean number of industries and different firms in which CEO$_p$ have worked are 2.58 and 4.45, respectively. 47.8% of CEO$_p$ have worked in a conglomerate firm before the hiring event. CEOs in the peer firms have held 0.70 CEO positions on average and served 6.16 positions on average in the past. Regarding the demographic information, the mean age of CEO$_h$ is 52.14 years old, and that of CEO$_p$ is 55.47 years old. In our sample, 3.8% of CEO$_h$ and 2.6% of CEO$_p$ are female. The CEOs in our peer firms have been working as CEOs for 7.44 years on average. To summarize, our newly hired CEOs in firm$_h$ are younger, more likely to be female, and have more employment experience.

Previous literature has focused on the effect of interlocking boards of directors (Nili, 2019, 2022; Fletcher et al., 2022) and the relationship between common ownership and connected boards Azar, 2022). In our sample of hiring events with pairs hiring and peer firms, we find that the number of directors these pairs in the same 2-digit SIC industrie share is 0.003 on average. The firm pairs in our sample are at least three times more likely to be connected through CEOs' social ties than through interlocking directors, as indicated by the mean of the variable *Connection*. CEO social ties could be empirically more relevant than board interlocks if they lead to altered firm behavior.

3 The Effect of Common Ownership on the Prevalence of Hiring Connected CEOs

In this section, we study the effect of institutional investors' common ownership on hiring firms' tendency to appoint CEOs with prior social connections to CEOs of other portfolio firms.

3.1 Baseline Evidence on the Relationship between Common Ownership and CEO Connections

3.1.1 Sample and Empirical Strategy

We first estimate a linear probability ordinary least squares (OLS) model at the firm-pair level to study Hypothesis 1. In each pair, firms are in the same 2-digit SIC industry. Our sample comprises 2,060 hiring firms, 3,683 hiring events, 3,614 different CEOs, and 129,140 firm pairs. More than half of the firms hire CEOs at least two times during the sample period. In all hiring events, we observe 1,667 connections between the hired CEOs and CEOs of peer firms.

To mitigate endogeneity concerns, we control for a battery of firms' and CEOs' characteristics mentioned in the previous section. Concerning unobservable firm characteristics, we employ different sets of fixed effects. Moreover, we address reverse causality by measuring common ownership in the year before the hiring event (i.e., the measure is lagged one period with respect to the dependent variable) in all baseline regressions. We estimate the following model:

$$\begin{aligned} \textit{Connection}_{(h,p,t)} =& \beta_0 + \beta_1 \textit{Cindex}_{(h,p,t-1)} + \beta_2 \textit{InterlockingDir}_{(h,p,t)} \\ &+ \gamma X_{(h,p,t)} + \eta_h + \lambda_p + \delta_t + \epsilon_{(h,p,t)}, \end{aligned} \tag{2}$$

where subindexes h, p, and t represent the hiring firm (or its newly appointed CEO), the peer firms (or their CEOs), and the hiring year, respectively. The dependent variable *Connection*$_{(h,p,t)}$ is a binary measure of the connection between the newly hired CEO$_h$ and the peer firm's counterpart. *Cindex*$_{(h,p,t-1)}$ is our main independent variable, which measures the degree of common ownership across all shareholders between hiring firm$_h$ and peer firm$_p$ in year $t-1$ before the hiring event of firm$_h$. *InterlockingDir* refers to the number of interlocking directors between the two firms of a pair (h, p) in year t.[17] We include different sets of the two firms'

[17] Azar (2022) shows that firm pairs with higher levels of common ownership are associated with a higher likelihood of sharing directors. Since these interlocking directors may affect the appointment of a connected CEO we use interlocking directors as our main control variable. Thus, we estimate the effect of common ownership

and their CEO's characteristics in $X_{h,p,t}$. Moreover, η_h, λ_p, and δ_t are firm h, firm p, and year fixed effects, respectively. Standard errors are clustered at the firm$_h$ level.

3.1.2 Baseline Results

First, we estimate variations of the baseline model (2) to test Hypothesis 1. Second, we estimate the effect of common ownership on CEO connections for firms within and across the same 3-digit SIC industry and for dyads that are closer competitors in the product market using the product similarity measure (Hoberg and Phillips, 2016) to test Hypothesis 3(a).

Starting with pairs of firms in the same 2-digit SIC industry, the results are shown in Table 2.

[Insert Table 2 here]

In the regression in column (1), we only include the *Cindex*, i.e., our measure of common ownership between the two firms: the hiring one (firm$_h$) and the peer (firm$_p$). The coefficient of common ownership is positive and significant at the 1% level, indicating that firms are more likely to hire a CEO who is connected to a peer firm's CEO if common owners hold significant shares of both firms. In columns (2) to (6), we add different combinations of fixed effects, firm and CEO controls.[18]

Column (2) adds hiring-event fixed effects, a set of dummies taking the value one for a given firm$_h$ hiring a CEO in year t. Thus, the coefficient of the *Cindex* in this regression estimates the average effect of common ownership within the same firm$_h$-CEO hiring observations across different peer firms. Thus, in this way, we can control for time-varying unobservable firm$_h$ and CEO$_h$ characteristics. The estimated effect of common ownership is again positive and significant. In the rest of the columns, the results are qualitatively consistent, adding firm$_h$, firm$_p$, and year fixed effects, as well as a battery of dyadic firm and CEO controls.

In column (6), we include the whole set of control variables and fixed effects, resulting in a coefficient estimate for the *Cindex* of 0.211. The standard deviation of the *Cindex* in our sample is 0.006. Thus, an increase in one standard deviation in common ownership leads to a $(0.006 \times 0.211/0.009 =)$ 14.1% increase in the probability that the new CEO is connected to the incumbent CEO of the peer firm. The results support Hypothesis 1.

on CEO connections beyond any indirect effect of common ownership due to a higher number of interlocking directorates.

[18] We also find consistent results if we use the common ownership measures which are restricted to those investors that hold at least 1%, 2%, 3%, 4%, and 5%, respectively (results are included in the Internet Appendix).

In addition, we expect the common ownership effect to be more relevant when we consider firms operating in the same, more narrowly defined, industry as proposed in Hypothesis 3(a). These firms are, thus, more similar in terms of the products or services they provide and, therefore, tend to engage in fiercer competition. As these firm pairs are more likely to engage in strategic interactions, they should benefit more from cooperation than firm pairs operating in unrelated markets. Hence, in this setup, we expect common institutional investors to have more incentives to coordinate top managers' behavior. Therefore, common ownership should have an economically more significant effect on the hiring firm's new CEO's connections to the more similar peer firms. We estimate the coefficient of common ownership on CEO hiring within and across narrower industries in two split-sample analyses using different definitions of closer competitors.

In the first split sample analysis, we identify firm_h and firm_p in the same 3-digit SIC industries and split the sample into firms within and across the industries.[19] Moreover, we also consider the interaction of common ownership and firms in the same industry to check the robustness of our results. Table 3 Panel A shows the results.

[Insert Table 3 here]

Column (1) reports the baseline estimate of column (6) of Table 2. Columns (2) and (3) show that when the firms in a dyad are in the same narrower industry, common ownership has a significant and larger association with appointing a connected CEO at firm_h. In contrast, we do not find evidence of such an association when firms are in different industries. Using all pairs in column (4), a significant and positive interaction term of common ownership and an indicator of firms in the same 3-digit SIC industry is estimated. Besides, the coefficient of common ownership is not significant, which suggests that it only has an impact on hiring a connected CEO concerning peer firms in the same industry as the hiring firm. Thus, column (4) corroborates the notion that common ownership matters for CEO connections in the context of close competitors.

In a second split sample analysis, we use our alternative measure of product similarity to identify close competitors. We identify firm_p whose product similarity is above the median similarity between a firm_h and all peer firms within each hiring event and define them as (relatively) closer competitors of firm_h. Next, we split the sample into firms that are relatively closer and farther competitors of firm_h. Moreover, we also consider the interaction of common ownership with an indicator for closer competitors to check the robustness of our results. Table 3 Panel B shows the results.

[19] We define the same industry using 3-digit SIC such that the sizes of subsamples are more balanced.

Column (1) reports the same estimate as in column (6) of Panel B in Table 3, which is our baseline regression. Similarly, column (2) shows that when the firms in a dyad are closer competitors, common ownership has a significant and larger coefficient on appointing a connected CEO at firm_h. In contrast, the association is weaker when firms are farther competitors, as shown in column (3). Column (4) shows a significant and positive coefficient of the interaction of common ownership and the close-competitor indicator, which corroborates the stronger association of common ownership on hiring a connected CEO at firm_h with closer rival firm_p-CEOs. Thus, the evidence is consistent with Hypothesis 3(a).

3.2 Adressing Endogeneity Exploiting Institutional Mergers

Endogeneity, such as reverse causality or omitted variables bias, still poses a significant concern in our baseline analysis, albeit controlling for a battery of firms' and CEOs' characteristics, fixed effects, and lagging our common ownership measure by one year.

We address potential endogeneity concerns in our baseline estimation by exploiting quasi-natural experiments in a stacked-by-event difference-in-differences (DiD) model (Cengiz et al., 2019). We exploit exogenous events that affect common ownership. These exogenous events are institutional investors' mergers, which increase common ownership due to two distinct blockholders of the two firms of a dyad becoming one investment company. Such a merger likely leads to a new common blockholder of the two firms.

This identification strategy requires that financial institutions' mergers are not driven by the specific characteristics of the firms in which these institutions invest, and, in particular, not by the expectation of future CEO connections between them. For several reasons, this assumption is very plausible. First, He and Huang (2017) show that about 60% of mergers result from consolidations in the banking sector, caused by fundamental changes in the regulation of financial institutions, leading to a wave of mergers of these institutions and their asset management arms. Given the scope of the regulations and the size of the financial institutions involved, it is unlikely that their mergers are driven by future hiring choices of individual portfolio companies. Second, Jayaraman et al. (2002) suggest that the mergers of pure asset management institutions, i.e., the remaining 40% of the mergers, are due to strategic reasons such as exploiting economies of scale and gaining market share. Thus, these mergers are also plausibly unrelated to portfolio firm characteristics and the resulting CEO hires including the implied social ties to other portfolio firms.[20]

[20]We have also estimated the same model by using pre-crisis data and, in particular, excluding the merger-event from BlackRock's acquisition of Barclays Global Investors, as suggested by Lewellen and Lowry (2021). The results are shown in Table A5 in the Internet Appendix and are consistent with our baseline analysis.

3.2.1 Sample Construction and Empirical Strategy

Following He and Huang (2017) and Lewellen and Lowry (2021), we use 20 merger events between 1993 and 2010.[21] For each firm pair, we create an 11-year window period around each merger event (i.e., five years before and after the merger events plus the merger year).[22] In this 11-year window period, some firms hire CEOs more than one time in the pre-and/or post-merger periods. Furthermore, the frequency and timing of hiring may itself depend on the shareholder base and common ownership relations of a firm to its industry peers. Due to this endogeneity of hiring events, we do not limit our analysis to these events. Rather, we analyze the effect of exogenous changes in common ownership on the change in the probability of connections between firms' CEOs. Therefore, we track firm pairs' CEO connections (created at the hiring events) for each year of the pre- and post-merger periods for 20 mergers in our sample.

To construct our treatment sample around the mergers, we follow the process in He and Huang (2017) and Lewellen and Lowry (2021). The firms in the treatment and the control samples are owned by (at least) one institutional investor involved in a merger. The treated firm dyads are only cross-blockowned by a merging-investor after the merger. That is, a merging investor cannot hold more than 5% in both companies of the treated pair before the merger. Thus, a firm pair is treated if the merger is likely to create a new common blockholder holding at least 5% in both firms. In particular, firm_h is block-held by one merger party, and firm_p is block-held by the other merger partner the quarter before the merger announcement date. Then, after the merger firm_h and firm_p are likely cross-blockowned by the merged investor. We estimate the following model:

$$\begin{aligned} \textit{Connection}_{(h,p,t)} = \beta_0 + \beta_1 \textit{Treat} \times \textit{Post} + \beta_2 \textit{Treat} + \beta_3 \textit{Post} \\ + \gamma X_{(h,p,t)} + \zeta_{(h,M)} + \epsilon_{(h,p,t)}, \end{aligned} \tag{3}$$

where the subindex M indicates the merger events. The dependent variable $\textit{Connection}_{(h,p,t)}$ is

[21] We use 1993 as the beginning year because our sample starts from 1992, and we want to guarantee the existence of the pre-merger period for each merger event. The last institutional investors' merger event in the sample of Lewellen and Lowry (2021) was in 2010. Our initial sample consists of CEO hirings from 1992 and 2018; since the information on institutional mergers from Lewellen and Lowry (2021) are limited to 2010, we use firm pairs between 1992 and 2015 in this quasi-natural experiment.

[22] Since we aim to study the effect of common ownership on hiring CEOs with social ties, we obtain the CEO connection in each pair of firms from the firm_h's hiring event rather than the connection information in each year of the window period. That is because CEO_h and CEO_p may be connected via professional (being board members in each other's firms or a third firm) or other activities during the tenure period, which may cause our estimates to be biased upwards. Therefore, we maintain the CEO connection indicator from the hiring event until one firm in a pair changes CEO.

the same indicator as before, taking the value one, if the two CEOs have prior social ties, and zero otherwise. *Treat* is a dummy variable that equals one for treated firm pairs and zero for control firm pairs. *Post* is an indicator that equals one for the post-merger years and zero for the pre-merger years for each merger event. We include firms' characteristics for both dyadic companies and their CEOs in the vector of control variables $X_{h,p,t}$ as in our baseline regression. β_1 is the coefficient of interest, which shows whether firm_h is more likely to have a CEO_h who has prior connections with CEO_p at firm_p in those treated firm pairs, in which firms are likely to gain a new common blockholder as the result of the merger. We include firm_h-merger fixed effects in $\zeta_{(h,M)}$. That is, we compare the change in the probability of connection of a firm_h with some peer with which the institutional merger increased common ownership with those control pairs consisting of the same firm_h and other peers that were not affected by the merger event. Standard errors are clustered at the firm_h level.

3.2.2 Results from the Quasi-Natural Experiments of Institutional Mergers

First, we analyze whether institutional investors' mergers increase common ownership. In this analysis, we estimate model (3) but use the common ownership measure $\textit{Cindex}_{(h,p,t)}$ in the last quarter of the current calendar year as the dependent variable. Second, we estimate model (3) to analyze the effect of exogenous increases in common ownership on the probability of CEO connections.

To ensure the validity of the DiD estimation, we check the parallel trends assumption using the same models, but replacing the *Post* dummy with indicators for each year, from *Year-5* to *Year+5*. We consider *Year-1* as the reference year because most institutional investors merge before the end of the fiscal *Year 0* in which the merger is announced. Thus, their effect on common ownership is realized at the end of the same calendar year, at which we measure common ownership in this model. In this analysis, we investigate the dynamic effects of being treated by an institutional merger (i.e., the coefficients of *Treat*$\times$*Year*) on our common ownership measure and CEO connections. Dynamic effects are shown in Figure 3.

[Insert Figure 3 here]

The parallel trend assumption seems to be satisfied for common ownership and CEO connections, as there are no significant pre-trends from *Year-5* to *Year-2*. Figure 3a shows a significant increase in the *Cindex* following treatment in the event year. Figure 3b shows a jump in the CEO connections for the treatment group after the merger year. Figure 3c shows a similar dynamic effect when we restrict the sample to those firm pairs in which firm_h is treated at least

with regard to one firm$_p$. Therefore, we are confident that the parallel-trends assumption is satisfied.

The average treatment effects of institutional investors' mergers on common ownership and CEO connections are shown in Table 4. We consider different specifications of the model using different windows around the merger events. In all panels of Table 4, column (1) reports the results of the estimates using observations that belong to three years before the merger event and three years after, i.e., window [-3,+3]. In column (2), we use observations that correspond to four years before and four years after the merger event, i.e., window [-4,+4]. Column (3) uses observations corresponding to five years before and five years after the merger year, i.e., window [-5,+5].

[Insert Table 4 here]

First, the coefficient of *Treat*×*Post* is significant and positive in all regressions in Panel A of Table 4, in which *Cindex* is the dependent variable. This suggests institutional investors' mergers significantly increase common ownership in the treated firm pairs.

As expected, the two institutional investors each holding one block in one firm of the pair are likely to become one large common owner of both companies, increasing the observed measure of common ownership of the firm pair. The magnitude of the shock to common ownership is 0.003 and, thus, just above the threshold of additional common ownership a common block with exactly 5% in both firms should add to the *Cindex* if no shares are sold or bought, i.e., $0.05 \times 0.05 = 0.0025$. Therefore, the estimated effect of the merger on treated pairs' common ownership appears plausible. The effect is also very stable for the different window periods. Thus, we can alleviate the concern that merged institutional investors rebalance their portfolios such that the impact of mergers on common ownership would vanish before it could make any impact.

Second, we study the effect of this exogenous increase in common ownership in a firm pair on hiring a connected CEO. We first estimate model (3) using the same sample as in Panel A. The results are shown in Panel B of Table 4. Finally, we estimate the model (3) but restrict the sample to those firm pairs in which firm$_h$ is treated at least with regard to one firm$_p$. That is, we compare the effect of the differences in exogenous common ownership changes for the same hiring firms with respect to different peers and their effect on the resulting changes in CEO connections. We report the results in Panel C of Table 4. The coefficients of *Treat*×*Post* are significant and positive in all specifications shown in Panels B and C of Table 4. These estimations corroborate our baseline results; that is, higher common ownership increases the

probability that firms appoint CEOs who have prior social connections with incumbent CEOs in their peer firms.

Quantitatively, our estimate in column 3 of Panel C suggests that gaining a common blockholder in the average merging event increases the probability of hiring a connected CEO by one percentage point, i.e., an increase of 125% (0.01/0.008). In terms of a one standard deviation increase in common ownership in our baseline sample, this corresponds to an increase of 250% (1.25*0.006/0.003) in the probability of hiring a connected CEO with the peer firm's CEO.[23] The results of this quasi-natural experiment further support Hypothesis 1.

Similar to the split sample analysis conducted in the baseline analysis, we test whether common ownership's effect is more prominent when focusing on hiring decisions involving peer firms that are relatively close competitors within the product market by exploiting the text-based industry classification again. To this end, we identify firm_p, whose product similarity exceeds the median similarity between firm_h and all peer firms for each hiring event, as a relatively closer competitor of firm_h. Subsequently, we partition the sample into firms categorized as closer and farther competitors of firm_h. Table 5 presents the results.

[Insert Table 5 here]

Columns (1), (3), and (5) use the subsample in which the peer firms are closer competitors of the hiring firms in each specification. Columns (2), (4), and (6) report the results in which the peer firms have lower than median similarity with the hiring firms. The coefficients of interest (*Treat*×*Post*) are statistically significant and positive in all regressions when firms in a dyad are closer competitors in the product market. In contrast, the coefficients are not significant and very low when they are farther competitors. Consequently, the split-sample analysis of the DiD estimations reaffirms that common ownership matters for CEO connections of newly hired CEOs for close product market rivals, as stated in Hypothesis 3(a).

As Lewellen and Lowry (2021) suggest, we have also estimated the same model by using pre-crisis data before 2008 and, in particular, excluding the merger event from BlackRock's acquisition of Barclays Global Investors. The results are consistent with our analysis.[24]

[23] As a robustness check, we analyze if hiring firms are treated more than once by different merger events such that the event periods overlap. This is the case for only one hiring firm affected by two merger events in our sample, corresponding to 1,256 firm-pair-year observations. Eliminating these observations yields the same results.

[24] The results are shown in Table A5 in the Internet Appendix.

4 CEO Connections and Firms' Performance and Strategy

Having established the link between common ownership and the hiring of CEO candidates with social ties to the CEOs of industry peers within institutional owners' portfolios, we examine the potential underlying incentives of common owners in this section. To do so, we test our Hypothesis 2 by exploring the relationship between CEO connections and firm performance and behavior. That is, we estimate the association of a firm_h hiring a CEO with prior connections to peer firm_p's CEO with the latter's (firm_p's) performance, value, and product similarity. Thus, we compare these characteristics of a firm_p if it gains a CEO connection from firm_h's hiring event to other peer firms that do not establish a new connection in the same event.

4.1 Sample Construction and Empirical Strategy

To test our hypotheses, we construct a sample at the firm-pair level. We adopt again a stacked-by-event design following Cengiz et al. (2019). First, we create a firm-pair level dataset containing all hiring firms in our sample and their industry peers. In each pair, firms are in the same 2-digit SIC industry. Second, we create a seven-year window period around each hiring event: three years before and after the event plus the hiring year. Third, we keep those firm pairs for which we observe the hiring firm to be active before and after the hiring event; in particular, we select those firms in which the previous CEO in firm_h is dismissed in the same year in which the new CEO is appointed. In this way, we can obtain the changes in CEO connections in each hiring event and analyze the effect of these changes. Fourth, since we construct a three-year period before and after the hiring event, we only consider those firm dyads in which both the previous and new CEOs of firm_h have tenures longer than three years. Fifth, we match the CEOs' and firms' information and only select those firm pairs in which firm_p does not appoint any CEO in these seven years to eliminate the effect of changing or reappointing a CEO on firm_p's performance. Finally, we observe whether firm_p's CEO has prior linkages with the previous and newly hired CEO of firm_h; thus, we are able to identify those peer firms that gain a CEO connection in a hiring event.

In the treatment sample of firm pairs, the peer firms' CEOs have a prior connection with CEO_h appointed at firm_h in a hiring event and do not have such social connection with the previous CEO of firm_h. In other words, these peer firms gain new CEO connections with the hiring firms through the hiring event of the hiring firms. This treatment sample consists of 134 firm pairs, 110 peer firms, and 102 hiring events across 96 hiring firms.

The control sample includes those firm pairs in which peer firms do not obtain a CEO

connection in a hiring event. There could be three possibilities: (1) CEO$_p$ has no social linkage with both the previous and the newly hired CEOs of firm$_h$ (i.e., no connection at all); (2) it has a social connection with the previous CEO but does not have that with the new CEO of firm$_h$ (i.e., losing a connection); (3) CEO$_p$ has social connections with both the previous and new CEOs of firm$_h$ (i.e., always connected).[25]

Finally, our sample consists of 155,537 observations. We construct and estimate the following model:

$$\begin{aligned} \textit{Performance}_{(p,t)} = \beta_0 + \beta_1 \textit{Gaining Connection} \times Post + \beta_2 \textit{Gaining Connection} + \beta_3 \textit{Post} \\ + \gamma X_{(p,t)} + \rho_{(p,H)} + \epsilon_{(p,t)}, \end{aligned} \tag{4}$$

where subindexes p, t, and H represent the peer firms, time, hiring event at firm$_h$, respectively. The dependent variable *Performance*$_{(p,t)}$ contains firm$_p$'s return on assets and product similarity. *Gaining Connection* is an indicator that equals one for those firm pairs in which the peer firms gain CEO connections with firm$_h$ through the hiring event of firm$_h$. *Post* is a dummy variable that equals one for the post-hiring years and zero for the pre-hiring years of each hiring event. We include the hiring year in the post-hiring period. Vector $X_{(p,t)}$ contains the firm$_p$'s characteristics.[26] We include the firm$_p$-hiring event fixed effect in $\rho_{(p,H)}$, and the standard errors are clustered at firm$_p$'s level.

4.2 The Effect of CEO Connections on Peer Firms' Performance and Product Differentiation

First, to confirm the validity of our estimates, we test the parallel trends assumption. We use model (4), but we replace the variable *Post* with a battery of indicators for each year, from *Year-3* to *Year+3*. We consider *Year-1* as the reference. As the new CEOs are appointed in *Year 0*, the effect of gaining a CEO connection on peer firms may be observed at the end of the same calendar year. The dynamic effects (i.e., the coefficients of *Gaining Connection*$\times$*Year*) are shown in Figure 4. Figure 4a presents the dynamic effect of gaining a CEO connection from a hiring firm's CEO appointment on the peer firms' *ROA*, and Figure 4b shows the dynamic effect on their dyadic product similarity. In the two sub-figures, none of the coefficients are statistically significant in the pre-hiring years; therefore, it seems plausible that the assumption

[25] All our results are robust and quantitatively similar when eliminating case (2), i.e., taking out from our sample those firm pairs in which the peer firm loses a connection (470 observations of 86 dyads).

[26] The control variables of firm$_p$ include *FirmSize*$_p$, *FirmAge*$_p$, *Cash*$_p$, *MktCapitalization*$_p$, *KZindex*$_p$, *Leverage*$_p$, and *PPEassets*$_p$.

of parallel trends is satisfied.

[Insert Figure 4 here]

In Table 6, we show the results of the effect of gaining a CEO connection on firm$_p$'s *ROA*$_p$ and *Similarity*$_{hp}$ according to model (4), using different windows around the hiring events. Columns (1) to (3) use the *ROA*$_p$ as the dependent variable. In columns (4) to (6), the dependent variable corresponds to *Similarity*$_{hp}$. In all columns, the pre-hiring period includes all three years before the hiring year. In contrast, we use different post-hiring period specifications. In columns (1) and (4), we use observations corresponding to one year after the hiring in the post-hiring period, i.e., [-3,+1]. Columns (2) and (5) include the observations that belong to two years after the hiring year, i.e., [-3,+2]. Finally, in columns (3) and (6), we consider the observations corresponding to three years after the hiring year as our post-hiring period, i.e., [-3,+3].[27]

[Insert Table 6 here]

We focus on our main coefficient, i.e., *Gaining Connection*×*Post*, which is significant in all regressions. The peer firms that gain CEO connections in firm$_h$-hiring events (i.e., treated peer firms) experience a positive and significant increase in profitability as Hypothesis 2(a) stated. If a firm$_p$ gains a CEO connection from firm$_h$'s hiring event, its profitability increases by 2 and 1.8 percentage points on average in the first year and in all three years after the hiring event, respectively, i.e., an increase of 153.8% (=0.02/0.013) and 120% (=0.018/0.015) over the unconditional mean, respectively.

Although we address endogeneity concerns and test the parallel trends assumption in our difference-in-differences approach, we interpret these results as descriptive, as both connections and performance could be driven by some unobservable characteristics. In Internet Appendix A, we use departures due to the sudden death (and illness) of CEOs in an industry, which either leads to a loss of a prior connection with a (treated) peer firm or not (control peer firm). Using these plausibly exogenous events, the results corroborate our baseline findings in this section, although the sample is quite small due to the rareness of these events.

Furthermore, as we expect in Hypothesis 2(b), gaining a CEO connection reduces the product similarity between firm$_h$ and firm$_p$ in all post-hiring years, consistent with connected CEOs reducing product-market rivalry among their firms. Gaining a CEO connection reduces the

[27] We also check the robustness of results by using symmetric window periods (untabulated), i.e., [-1,+1] and [-2,+2]. The results are qualitatively and quantitatively similar.

pairwise product similarity by 65.5 and 82.5 percentage points on average in the first year and in all three years after the event, respectively, i.e., a reduction of about 9.66% (=0.655/6.78) and 12.11% (=0.825/6.81) over the unconditional mean.[28]

Additionally, we are interested in the differential effect for firms operating in closely related markets versus those that produce less related goods. Thus, we test Hypothesis 3(b). Focusing on the peer firm's ROA_p, we perform two split sample analyses for firms in the same industry or that produce similar products. These firms are more likely to experience fiercer product-market rivalry and are expected to benefit more from the cooperation of their top managers than those dyads operating in unrelated markets or supplying more differentiated goods.

We split the sample into the same 3-digit SIC industry and different industry dyads. We then explore the differential effect of connections on firm_p's ROA_p for the two subsamples analogously to our baseline analysis. Table 7 illustrates our results.

[Insert Table 7 here]

Columns (1) to (3) show the effect of gaining CEO connections when peer firms are in the same industry as the hiring firm, and columns (4) to (6) show the case when they are not. The coefficient of interest, i.e., *Gaining Connection*×*Post* is always statistically significant in all regressions when firms in a dyad are in the same narrowly defined industry. In contrast, it is not significant when firms are in different 3-digit industries; also, these insignificant coefficients, although positive, are smaller in magnitude. Hence, our analysis supports Hypothesis 3(b), that is, gaining a CEO connection with a hiring firm significantly affects a peer firm's profitability if the hiring firm operates in a closely related market.

Since many firms have several product lines and may operate across standard industry boundaries as defined by SIC codes, we further leverage the text-based industry classification outlined in Hoberg and Phillips (2016). In this split sample analysis, we categorize three sets of peer firms relative to each hiring firm_h: those that are close, middle, and far from firm_h in the product market. A peer firm_p is deemed close to a hiring firm_h during each year of our sample period if their text-based product similarity surpasses the 66th percentile in product similarity among hiring firm_h and all its peer firms. Consequently, such a peer firm_p is considered a significant competitor of firm_h. For product similarities falling between the 66th and 33rd percentiles (or below the 33rd percentile), the peer firm is categorized as middle to (or far from,

[28]Moreover, to avoid bad controls (Angrist and Pischke, 2009), we also replicate the regressions with an alternative setting of controls (untabulated). We set controls to their values at *t-3*, i.e., 3 years before the hiring event, for the pre-period and at *t*, i.e., the hiring year, for the post-period. The results are quantitatively and qualitatively the same.

respectively) the hiring firm$_h$ in the product market space. Next, we explore firm$_p$'s ROA_p in a seven-year window period, i.e., three years before and three years after the hiring event plus the hiring year. Panel A of Table 8 shows the results.

[Insert Table 8 here]

In Panel A of Table 8, columns (1) to (3) show the effect of gaining CEO connections when peer firms are close to, middle to, and far from hiring firms, respectively. As we can see, the coefficient of interest, i.e., *Gaining Connection*×*Post* is only statistically significant when firms in a dyad produce very similar products. In contrast, it is insignificant when firms are middle to or far from the hiring firm in the product market space. Hence, our analysis suggests that gaining a CEO connection significantly affects firms' profitability (i.e., ROA_p) if they operate in closely related product markets. However, the statistical significance of the coefficient of interest in column (1) is only 10%. This can be because if two close competitors in the product market change their mode of competing with each other (e.g., starting to behave more cooperatively), this will also affect other close rivals, which in column (1) form the control group. Similar to the case of a merger, in which an outsider may gain market share and market power due to the merger of its rivals, our control firms may be positively affected by the change in strategic behavior of the newly connected firms. We perform a triple DiD in column (4) to test this. The interaction term *Gaining Connection*×*Post* stays positive but is only significant at the 17% level. Interestingly, however, *Post*×*Close* is the only significant interaction term in column (4), which suggests that the strategy of the hiring firms benefits not only the newly connected firms but also other non-connected firms when they are close competitors. Therefore, we do not observe the increased profitability for the newly connected firms that are closer competitors of the hiring firms (i.e., the coefficient of *Gaining Connection*×*Post*×*Close* is insignificant). Nevertheless, both coefficients (*Post*×*Close* and *Gaining Connection*×*Post*×*Close*) are positive and jointly significant at the 5% level.

In the second part of the split sample analysis using the text-based industry classification, we further substantiate that new connections may affect the competitive landscape in the product market where the hiring firm and its newly connected peers operate. To do this, we broaden our scope to include all treated peer firms that obtain CEO connections. We then categorize the control peer firms based on their proximity as competitors to the hiring firms and treated peer firms. This is a simple test of the impact of newly established connections between hiring and treated peer firms on the competitive landscape among close competitors of these firms. It helps us to address a potential bias that results from the product-market spillover of the treat-

ment to close-competitor control firms (Berg, Reisinger, and Streitz, 2020), which are likely in our setup.[29]

In addition to our analysis in Panel A, where we focused on the similarity to the hiring firm, we also consider the product similarity between control and treated firms. Suppose close competitors with new connections change product market strategies (e.g., lower product similarity or reduced output). In that case, we expect that control firms close to the newly connected firms may also benefit from the connected firms' conduct. This product market spillover could lead to a downward bias. Thus, we expect the effect of the treatment to be downward biased and less significant if control firms are close to the treated and hiring firms in the product market. Panel B of Table 8 shows the results.

First, we narrow down our selection only to control peer firms whose product similarities with both the hiring firm and treated peer firm are lower (higher, resp.) than the product similarity between the hiring and treated peer firms each year, in column (1) (column (2), resp.). This criterion ensures that the product rivalry between control peer firms and both the hiring and treated peer firms is comparatively weaker (stronger, resp.) than the rivalry observed between the hiring and treated firms. Thus, these control firms should be less (more, resp.) affected by any changes in the competitive landscape induced by the change in the connections between the hiring and treated peer firms. Then, we proceed to test our Hypothesis 3(b) in columns (3) and (4) based on the sample in column (1) by selecting each hiring firm's treated peer firms whose product similarity is higher and lower than the median similarity of this hiring firm and all treated peers, respectively. Thus, we can alleviate the potential issue of a downward bias resulting from spillover effects.

Notably, the coefficient of *Gaining Connection*$\times$*Post* is statistically significant when the selected control firms are not considered close competitors of the treated peer firms and the hiring firms, as shown in column (1). That is, if the control firms are less likely to be affected by changes in the competitive landscape in the section of the product market space in which treated and hiring firms operate. In column (2), however, when using close competitors as control firms, the effect is muted, likely due to the bias introduced by the product market spillover. The results presented in columns (3) and (4) further support our Hypothesis 3(b); only those peer firms that have more similar products to the hiring firms experience a significant increase in their ROA_p if they gain a CEO connection, while those treated firms that are further from the hiring firm do not experience a significant change in performance.

[29] We indeed find evidence for such spillover effects. Figure A1 in the Internet Appendix shows the evolution of product similarities between hiring, treated, and control firms after the hiring event. Treated firms experience a decrease in product similarity with both hiring and control firms, indicating potential product-market spillovers.

Similarly, for those firm pairs that provide similar products, gaining a CEO connection should decrease their product similarity more compared to firms that initially produce less related goods. Table 9 shows a split sample analysis for firms' product similarity. Columns (1) to (3) use the subsample of which the product similarity between firm_h and firm_p belongs to the top 66%, 66% to 33%, and the bottom 33% of the whole sample, respectively. Only in column (1) the coefficient of *Gaining Connection*×*Post* is significant, which corroborates our hypothesis. Therefore, gaining CEO connections has a stronger and more significant effect within closely defined product markets, and two newly connected firms differentiate their products when they are initially closer competitors.

[Insert Table 9 here]

4.3 Stock Market Reaction to Connected CEO Appointments

The previous results illustrate the positive relationship between gaining CEO connections and the peer firm's profitability and document a decrease in product similarity between connected firms in the long run. However, the question arises as to whether stock market investors price the announcements of connected CEO appointments. Since gaining a CEO connection seems to benefit the peer firms in the long run, the stock market should react to information about the hiring of a connected CEO if it correctly anticipates the effect of this connection on firms' profitability. Thus, observing a positive price reaction of peer firms' stocks upon the announcement of another firm's hiring choice, establishing a new connection would support our Hypothesis 2(c), that there is a causal positive effect of connections on peers' value.

To address this question, we explore market reactions to the announcements of CEO appointments. We employ an event study methodology to examine the stock performance of the connected peer firms around the announcements of CEO appointments in hiring firms. We accurately identify the announcement dates of CEO appointments by manually searching for and extracting the announcement date from Factiva. For 1,208 CEO appointment events in our sample, we find exact announcement dates for 1,178 events from Factiva.

We estimate daily cumulative abnormal returns (CAR) for connected peer firms around those announcements using the Fama-French three-factor model and daily stock returns from CRSP.[30] To compute cumulative abnormal returns of connected peer firms, we consider the (-

[30] We estimate the expected return by utilizing the Fama-French three-factor model (Fama and French, 1993): $R_{pt} = a_i + b_i R_{Mt} + s_i SMB_t + h_i HML_t + e_{it}$. We consider a total of 241 days ending 30 days before the newly appointed CEO announcement to estimate the parameters for each firm. We also check the robustness of the model by employing the standard market model (either using CRSP value-weighted or equal-weighted index), from which we observe the same qualitative results.

10,+10) window around the CEO announcement of the hiring firms, i.e., CAR_p.[31] We estimate the following OLS model:

$$CAR_p = \alpha_t + \beta Gaining\ Connection_{pt} + \gamma X_{(p,t-1)} + \theta_p + \delta_t + \epsilon_{(p,t)}, \tag{5}$$

where *Gaining Connection*$_{pt}$ is a binary measure that equals one if firm$_p$ gains a CEO connection with firm$_h$ from firm$_h$'s CEO hiring event in year t, and zero, otherwise. We add the lagged control variables for firm$_p$, i.e, $X_{(p,t-1)}$.[32] Besides, we include Fama-French 10 industries fixed effects for firm$_p$, i.e., θ_p and year fixed effects, i.e., δ_t.

Table 10 shows the results of estimating cumulative abnormal returns of peer firms in response to obtaining CEO connections with the hiring firms around the announcement dates. Column (1) shows the result if we consider the full sample. From firm$_h$'s hiring event, gaining a connected CEO for firm$_p$ is associated with 0.098 percentage points higher announcement returns. Considering the mean capitalization is 6.915 billion dollars in this sample, gaining a CEO connection translates to a 6.78 million dollars increase in firm$_p$'s shareholder value at the CEO appointments of firm$_h$, which confirms our Hypothesis 2(c).

Similar to the analysis in the previous section, we expect the effect of gaining a CEO connection on firm$_p$'s stock market returns to be stronger and statistically significant when firm$_h$ and firm$_p$ have more similar products. Therefore, we conduct a split sample analysis to test Hypothesis 3(b) in columns (2) to (4), where the product similarity between firm$_h$ and firm$_p$ belongs to the top 66%, 66% to 33%, and the bottom 33% of the whole sample. From this analysis, we only observe a significant effect of gaining a CEO connection when pairwise firms provide more similar products, which is associated with 0.129 percentage points higher returns for firm$_p$. Thus, our results regarding investor expectations of the effect of gaining CEO connections appear consistent with the effects on long-run performance. Additionally, we also use shorter sample periods (-1,+1) and (-5,+5) in Table A7 in the Internal Appendix. The closer competitors experience significant positive abnormal returns if they gain a connection through the hiring firms' CEO appointments.[33]

[Insert Table 10 here]

[31] We consider an 11-day window period because there could be rumors about the newly hired CEO before the announcement day, and the market reaction to CEO appointments and especially the information gathering regarding the CEOs prior connections can be more prolonged.

[32] Control variables $X_{(p,t-1)}$ include *FirmSize*$_p$, *FirmAge*$_p$, *Cash*$_p$, *KZindex*$_p$, *Leverage*$_p$, *PPEassets*$_p$, *ROA*$_p$, and *Tobin's Q*$_p$.

[33] As Table A7 in the Internal Appendix indicates, for these shorter periods, we do not find a significant effect when using the full sample (significant at 13% and 15% levels).

5 Mechanisms

5.1 Portfolio Motive Channel: Common Owners and Post-Crisis Connections

In Section 3, we show that common ownership leads to appointments of CEO candidates with established connections to CEOs of other portfolio firms. To study common owners' potential motivation to foster CEO connections among their portfolio firms, we demonstrate that they are significantly associated with a peer firm's short-term stock market returns and likely contribute to long-term improvements in operational performance in Section 4.

To further explore common owners' incentives to promote CEO connections across their portfolio firms, we leverage a quasi-natural experiment. As shown in previous literature, the 2008-2009 financial crisis is a shock that increases the benefits and value of CEO social ties. Hasan and Manfredonia (2022) indicate that top managers' social connections help firms affected by the financial crisis to recover, increasing the value of top managers' social connections in the post-crisis period.[34] In addition, Lins et al. (2017) find that social capital, measured by corporate social responsibility, played a crucial role during the financial crisis. In this period, characterized by high information asymmetries, trust, and information flow across firms were particularly valuable. These findings suggest that CEO social connections become increasingly valuable during periods of economic downturns.

As social networks improve the flow and quality of information and foster trust (Granovetter, 2005), social ties can benefit hiring firms and their connected peers. Thus, we expect that during the financial crisis, CEO connections may provide sufficient incentives for common owners to push firms to hire CEO candidates who are connected to other CEOs of firms in their portfolio, compared to other peers with less ownership overlap. Therefore, we hypothesize that during the global financial crisis, a hiring firm is more likely to appoint a CEO connected with CEOs in other firms that share higher ownership overlap because of common owners' financial interest in these peer firms (*portfolio motive)*.

In Table 11, we test our Hypothesis 4. We use the 2008-2009 financial crisis as a shock, which enhances the value of the CEOs' social connections. We explore the effect of common ownership on CEO connections surrounding the financial crisis. We employ different definitions for the post-crisis period: the variable *Post Crisis* is a binary indicator equal to one for the years following the financial crisis, defined as 2010–2011 in column (1), 2010-2012 in column (2), and 2010–2013 in columns (3)–(5), and zero for the years 2008 and 2009. The variable

[34] See also Acemoglu et al. (2016).

$Cindex_{2006}$ measures common ownership as of 2006, prior to the financial crisis. Additionally, *Closer* is a binary variable equal to one if the text-based similarity between a $firm_h$ and a $firm_p$ is above the median similarity between $firm_h$ and all peer firms preceding the crisis in 2006, and zero otherwise.

The results support our Hypothesis 4, indicating that common ownership increases the likelihood that the newly appointed CEO of a hiring firm is connected to the incumbent CEO of a peer firm in the post-crisis period—a time when top managers' connections are particularly valuable for firms recovering from productivity and performance slowdowns. As the hiring of new CEOs and the induced establishment of connections evolve over time, the coefficient of interest becomes larger and statistically more significant as we increase the definition of the post-crisis period. Columns (4) and (5) show that common ownership has a more significant effect on CEO connections only if we consider peer firms that are relatively close to the hiring one in the product market space, consistent with our previous split-sample analyses.

We conclude from this quasi-natural experiment that, given the evidence of the financial and productivity value of CEO connections shown in Section 4, common owners are likely driven by financial interest regarding their portfolio value to push their portfolio firms to hire CEOs with established connections to CEOs of other firms within their portfolio. In other words, hiring firms not only hire more connected CEOs in the post-crisis periods, but those candidates are connected to their peers with more ownership overlap, consistent with common owners' financial interest in these peer firms.

[Insert Table 11 here]

5.2 Asymmetric Information regarding CEO Candidates' Ability

In this section, we investigate whether our results can be explained by asymmetric information regarding possible candidates for a CEO position in hiring firms, as we propose in Hypothesis 5. Assuming that institutional investors are incentivized to acquire information about candidates, the common owners among them may use their networks, e.g., by consulting industry peers' CEOs and directors about potential candidates, their fit for the position, and their ability. They may even seek within these peer firms for promising candidates or ask peers' CEOs for recommendations. Thus, candidates for which institutional owners obtain information from industry peers are more likely to be connected to peer firms' CEOs, which serve as decentralized sources of knowledge (Drexler and Schoar, 2014).

Moreover, the information obtained from industry peers should be more valuable, and thus common owners should be willing to exert more effort in acquiring such information if there is

less public knowledge about the candidate. Therefore, we would expect that common ownership leads to a higher probability of connections if less public knowledge is available about a candidate, i.e., if the ex-ante asymmetric information problem is more severe. This is likely to be the case in hiring events, in which a candidate is chosen, who has never held a CEO position before since his performance as a CEO has not been observed yet.

We test whether common ownership affects CEO connections through this informational channel by exploiting the heterogeneity in hired candidates in our sample. We split the sample of hiring events into those in which the newly hired CEO either has held a CEO position before and those where the hire holds their first CEO position. If the relationship between common ownership and CEO connections is driven by the informational channel explained above, we expect to find that the coefficient of common ownership is larger and statistically more significant in cases where the hired candidate is a first-time CEO.

The results are shown in columns (1) and (2) of Table 12. For the two subsamples of hiring events split by CEO_h experience, the coefficients of common ownership are virtually equal and both significant at the 5% level.

[Insert Table 12 here]

To further confirm that there are no significant differences in the effect of common ownership on CEO connection, we construct an indicator variable, $nonCEOexp_{dummy}$, that takes the value one if the CEO in the hiring event has no prior experience as a CEO, and zero otherwise. If the relationship between common ownership and CEO connections is driven by asymmetric information, we expect to find the interaction term of the *Cindex* with this indicator variable to be positive and significant. Column (3) of Table 12 shows, however, that the interaction is negative and not significant at any usual level of significance.

Finally, we interact common ownership with the raw measure of CEO experience in column (4). If connections are driven by the informational channel explained above, this interaction term should be negative. However, we find that it is positive and far from statistical significance, consistent with the results in columns (1) to (3).

Therefore, we do not find evidence for the informational channel to support our Hypothesis 5. Furthermore, we can confirm that the relationship between common ownership and CEO connections is present in both samples for hiring events of candidates with and without prior experience in a similar position. Again, this alleviates the concern that the results are driven by experienced CEOs who by pure chance are chosen to lead companies with higher institutional ownership and, thus, are likely to have more ownership overlap and also tend to be more

connected.[35] Otherwise, we would expect the impact of common ownership to be significantly larger for more experienced CEOs, which the results show is not the case.

6 Conclusion

This paper presents evidence that the impact of CEO connections across portfolio firms seems to favor common institutional shareholders. Consistent with this observation, common ownership increases the likelihood of firms appointing CEOs with prior connections. We confirm that this effect of common ownership is likely to be causal using a quasi-natural experiment, where the exogenous variation of common ownership comes from institutional investors' mergers. Furthermore, common owners' preference for connected CEOs appears to be motivated by their performance-enhancing effect through firm coordination, as the effect of common ownership on CEO connections is especially relevant for close competitors, for which CEO connections are most effective in boosting product market differentiation and performance. Consequently, our results suggest that promoting CEOs with social ties to other chief executives across portfolio firms is a mechanism through which common owners can induce coordination of their portfolio firms' corporate strategies.

In addition, we show that CEO connections lead to performance-enhancing changes in firms' strategic behavior, in particular, for those firm pairs operating in closely related industries. The positive relationship of CEO connections and peer firms' long-run operational performance and the positive effect on connected peers' abnormal returns to the announcement of new connections are economically and statistically significant. Besides the performance effect of CEO connections, we find that connected rivals tend to differentiate more from each other in the product market, corroborating our hypothesis that CEO connections spur firms to coordinate. Our results also provide evidence consistent with decreased product-market rivalry of connected firms, affecting the performance of unconnected competitors with similar products. Consistent with these patterns, we find that losing connections due to the sudden death and/or illness of a CEO causes the connected firms to experience lower performance.

Moreover, using the financial crisis as a natural experiment, we find a consistent effect of common ownership on connections among portfolio firms at the firm-pair level. This underlines common owners' financial interest in establishing these connections, i.e., to enhance their portfolio performance. While previous literature has shown that firms hire CEOs with more connections after the economic downturn, our evidence indicates that these connections are

[35] We have already addressed this concern by exploiting institutional mergers in Section 3.2 estimating the effect of exogenous shocks to common ownership on CEO connections.

with CEOs of firms with higher ownership overlap. Finally, we show that the effect of common ownership on CEO social ties does not result from information frictions in the CEO market.

Although we have shown that the effect of CEO connections is economically relevant, some important questions remain. To what extent do these connections affect pricing, market outcomes, and consumer welfare? Do common owners favor other top managers with social ties and promote social connections across top management teams even after their hires? We leave these questions for further research.

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Table 1: Descriptive Statistics

	p25	Median	Mean	p75	Std. Dev.	N
Firm$_h$ **Characteristics**						
FirmSize$_h$	0.414	1.411	10.083	4.966	56.990	3683
FirmAge$_h$	11.000	22.000	26.329	42.000	17.395	3683
Cash$_h$	0.025	0.081	0.152	0.215	0.177	3683
MktCapitalization$_h$	0.384	1.175	7.006	3.941	24.488	3683
KZindex$_h$	-5.502	-0.527	-10.120	1.299	90.516	3683
Leverage$_h$	0.059	0.215	0.237	0.345	0.228	3683
ROA$_h$	0.002	0.038	0.006	0.081	0.208	3683
PPEassets$_h$	0.092	0.206	0.279	0.416	0.234	3683
CEO$_h$ **Characteristics**						
Nindustry$_h$	2.000	3.000	3.267	4.000	2.505	3683
Nfirms$_h$	3.000	4.000	6.034	7.000	5.580	3683
Conglomerate$_h$	0.000	1.000	0.708	1.000	0.455	3683
NCEOexp$_h$	0.000	0.000	0.986	2.000	1.419	3683
Npositions$_h$	5.000	7.000	8.222	10.000	5.449	3683
Age$_h$	47.000	52.000	52.143	57.000	6.963	3683
Gender$_h$	0.000	0.000	0.038	0.000	0.191	3683
Firm$_p$						
FirmSize$_p$	0.404	1.336	11.162	4.955	76.211	25562
FirmAge$_p$	11.000	20.000	25.101	39.000	17.238	25562
Cash$_p$	0.024	0.083	0.159	0.229	0.186	25562
MktCapitalization$_p$	0.468	1.321	7.378	4.209	25.823	25562
KZindex$_p$	-7.596	-1.150	-26.664	1.075	1221.085	25562
Leverage$_p$	0.046	0.200	0.221	0.339	0.204	25562
ROA$_p$	0.011	0.045	0.028	0.085	0.183	25562
PPEassets$_p$	0.076	0.187	0.264	0.394	0.236	25562
CEO$_p$						
Nindustry$_p$	1.000	2.000	2.576	3.000	2.064	25562
Nfirms$_p$	2.000	3.000	4.450	5.000	4.444	25562
Conglomerate$_p$	0.000	0.000	0.477	1.000	0.499	25562
NCEOexp$_p$	0.000	0.000	0.699	1.000	1.128	25562
Npositions$_p$	3.000	5.000	6.157	8.000	4.642	25562
Age$_p$	51.000	56.000	55.469	60.000	7.410	25562
Tenure$_p$	3.000	6.000	7.441	10.000	6.621	25562
Gender$_p$	0.000	0.000	0.026	0.000	0.160	25562
Pairwise Characteristics						
Connection	0.000	0.000	0.009	0.000	0.095	184890
Cindex	0.002	0.004	0.007	0.010	0.006	184890
InterlockingDir	0.000	0.000	0.003	0.000	0.060	184890

Table 2: Linear regression, the effect of common ownership on hiring a connected CEO. This table shows that the linear probability model estimates the effect of firm-pair level common ownership on hiring a CEO who is connected with the CEO in the peer firm. All variables are defined in Table A1. *Connection* is an indicator variable equal to one if the CEOs in a firm pair are connected through the previous linkages between CEO_h and CEO_p. *Cindex* is our baseline measure of common ownership. Standard errors are clustered at the $firm_h$ level in columns (1), (3), (4), and (6). In the rest of the columns, standard errors are clustered at the hiring-event level. $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	*Connection*	*Connection*	*Connection*	*Connection*	*Connection*	*Connection*
Cindex	0.422***	0.359***	0.219***	0.203***	0.209***	0.211***
	[0.075]	[0.064]	[0.076]	[0.076]	[0.074]	[0.076]
InterlockingDir				0.070***	0.070***	0.070***
				[0.012]	[0.012]	[0.012]
Firm's Characteristics						
$FirmSize_h$				-0.000		-0.000
				[0.001]		[0.001]
$FirmAge_h$				0.002		0.002
				[0.003]		[0.003]
$Cash_h$				0.004		0.005
				[0.005]		[0.004]
$MktCapitalization_h$				-0.000		-0.000
				[0.000]		[0.000]
$KZindex_h$				-0.000		-0.000
				[0.000]		[0.000]
$Leverage_h$				0.001		0.001
				[0.004]		[0.003]
ROA_h				-0.003*		-0.003*
				[0.002]		[0.002]
$PPEassets_h$				0.013		0.014
				[0.012]		[0.011]
$FirmSize_p$				0.000	0.000	0.000
				[0.001]	[0.001]	[0.001]
$FirmAge_p$				-0.002	-0.001	-0.002
				[0.002]	[0.002]	[0.002]
$Cash_p$				-0.001	-0.000	-0.000
				[0.002]	[0.002]	[0.002]
$MktCapitalization_p$				0.000	0.000	0.000
				[0.000]	[0.000]	[0.000]
$KZindex_p$				0.000	0.000	0.000
				[0.000]	[0.000]	[0.000]
$Leverage_p$				0.002	0.003	0.002
				[0.003]	[0.003]	[0.003]
ROA_p				-0.000	-0.000	-0.000
				[0.002]	[0.002]	[0.002]
$PPEassets_p$				0.007	0.001	0.006
				[0.005]	[0.004]	[0.004]
CEO's Characteristics						
$Nindustry_h$					0.003	0.000
					[0.003]	[0.000]
$Nfirms_h$					-0.001	0.000

Continued on next page

Table 2 continued

Dependent Variable	(1) *Connection*	(2) *Connection*	(3) *Connection*	(4) *Connection*	(5) *Connection*	(6) *Connection*
					[0.001]	[0.000]
$Conglomerate_h$					0.006	0.007***
					[0.005]	[0.001]
$NCEOexp_h$					0.001	-0.001
					[0.002]	[0.000]
$Npositions_h$					-0.000	0.000
					[0.001]	[0.000]
Age_h					-0.001	-0.001
					[0.015]	[0.004]
$Gender_h$					0.009	0.008
					[0.011]	[0.005]
$Nindustry_p$					0.002***	0.002***
					[0.000]	[0.000]
$Nfirms_p$					0.000	0.000
					[0.000]	[0.000]
$Conglomerate_p$					0.005***	0.005***
					[0.001]	[0.001]
$NCEOexp_p$					-0.002***	-0.002***
					[0.001]	[0.001]
$Npositions_p$					-0.000	-0.000
					[0.000]	[0.000]
Age_p					0.005	0.004
					[0.004]	[0.004]
$Tenure_p$					-0.000	-0.000
					[0.001]	[0.001]
$Gender_p$					-0.002	-0.001
					[0.003]	[0.003]
Hiring Event FE	NO	YES	NO	NO	YES	NO
Hiring Firm FE	NO	NO	YES	YES	NO	YES
Peer Firm FE	NO	NO	YES	YES	YES	YES
Year FE	NO	NO	YES	YES	NO	YES
Observations	184,890	184,872	184,890	184,890	184,869	184,890
R-squared	0.001	0.049	0.062	0.064	0.083	0.065

Table 3: Linear regression, the effect of common ownership effect, split sample analysis. Panel A shows that the linear probability model estimates of the effect of firm-pair level common ownership on hiring a CEO who has a prior connection with the CEO in the peer firm within and across industries. *Connection* is an indicator variable equal to one if the CEOs in a firm pair are connected through the previous linkages between CEO_h and CEO_p. *SameIndustry* is an indicator variable equal to one if $firm_h$ and $firm_p$ are in the same 3-digit SIC industry, and zero otherwise. Columns (2) and (3) replicate column (1) for the subsample where $firm_h$ and $firm_p$ pairs are in the same 3-digit SIC industry and in different industries, respectively. Column (4) uses the full sample and includes the triple interaction with *SameIndustry*. Panel B shows that the linear probability model estimates of the effect of firm-pair level common ownership on hiring a CEO who has a prior connection with the CEO in the peer firm when the firms in a pair are closer or farther competitors in the product market. *Closer* is an indicator variable equal to one if the text-based similarity between $firm_h$ and $firm_p$ is above the median similarity between $firm_h$ and all peer firms within each hiring event, and zero otherwise. Column (1) is the baseline regression using the full sample. Columns (2) and (3) replicate column (1) for the subsample where $firm_h$ and $firm_p$ are closer competitors and farther competitors, respectively. Column (4) uses the full sample and includes the interaction with *Closer*. Standard errors are clustered at the hiring firm level. $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Split sample by 3-digit SIC				
	(1)	(2)	(3)	(4)
Sample	All	Same Industry	Different Industry	All
Dependent Variable	*Connection*	*Connection*	*Connection*	*Connection*
Cindex	0.211***	0.240**	0.086	-0.134
	[0.076]	[0.116]	[0.092]	[0.089]
Cindex×*SameIndustry*				0.678***
				[0.141]
SameIndustry				0.008***
				[0.001]
Controls	YES	YES	YES	YES
Hiring Firm FE	YES	YES	YES	YES
Peer Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	184,890	77,802	106,734	184,890
R-squared	0.065	0.131	0.076	0.067

Panel B: Split sample by product similarity				
	(1)	(2)	(3)	(4)
Sample	All	Close to H	Far from H	All
Dependent Variable	*Connection*	*Connection*	*Connection*	*Connection*
Cindex	0.211***	0.202*	0.142**	-0.037
	[0.076]	[0.117]	[0.068]	[0.082]
Cindex×*Closer*				0.377***
				[0.123]
Closer				0.004***
				[0.001]
Controls	YES	YES	YES	YES
Hiring Firm FE	YES	YES	YES	YES
Peer Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	184,890	99,206	85,402	184,890
R-squared	0.065	0.098	0.096	0.066

Table 4: Difference-in-Differences analysis using the institutional investors' mergers. This table shows the causal effect of common ownership on hiring a connected CEO using a difference-in-differences estimation, where the exogenous shock comes from the institutional investors' mergers. *Cindex* is the measure of common ownership. *Connection* is an indicator variable equal to one if the CEOs in a firm pair are connected through the previous linkages between CEO_h and CEO_p. *Treat* is a dummy variable equal to one if the merger institutions hold at least 5% of outstanding shares in $firm_h$ and $firm_p$, respectively, in the quarter before the merger announcement. *Post* is an indicator for the hiring events in the post-merger period, and zero otherwise. Panels A and B use the full sample. The analysis in Panel C restricts the sample to those firm pairs in which $firm_h$ is treated at least with regard to one $firm_p$. In all panels, columns (1), (2), and (3) use the sample period [-3,+3], [-4,+4], and [-5,+5], respectively. Standard errors are clustered at the hiring firm level. $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Common Ownership			
	(1)	(2)	(3)
Sample	[-3,+3]	[-4,+4]	[-5,+5]
Dependent Variable	*Cindex*	*Cindex*	*Cindex*
Treat×*Post*	0.003***	0.003***	0.003***
	[0.001]	[0.001]	[0.001]
Treat	-0.000	-0.000	-0.001
	[0.000]	[0.000]	[0.000]
Post	0.002***	0.002***	0.002***
	[0.000]	[0.000]	[0.000]
Controls	YES	YES	YES
Merger-Firm FE	YES	YES	YES
Observations	1,014,907	1,289,209	1,557,575
R^2	0.397	0.392	0.395

Panel B: Connections			
	(1)	(2)	(3)
Sample	[-3,+3]	[-4,+4]	[-5,+5]
Dependent Variables	*Connection*	*Connection*	*Connection*
Treat×*Post*	0.008**	0.008**	0.009**
	[0.004]	[0.004]	[0.004]
Treat	-0.006***	-0.006***	-0.006***
	[0.002]	[0.002]	[0.002]
Post	0.000	0.000	0.001
	[0.000]	[0.000]	[0.000]
Controls	YES	YES	YES
Merger-Firm FE	YES	YES	YES
Observations	1,014,907	1,289,209	1,557,575
R^2	0.045	0.045	0.047

Panel C: Connections $firm_h$ in the treatment sample at least once			
	(1)	(2)	(3)
Sample	[-3,+3]	[-4,+4]	[-5,+5]
Dependent Variables	*Connection*	*Connection*	*Connection*
Treat×*Post*	0.008**	0.009**	0.010**
	[0.004]	[0.004]	[0.004]
Treat	-0.006***	-0.007***	-0.007***
	[0.002]	[0.002]	[0.002]
Post	0.000	0.000	0.000
	[0.001]	[0.001]	[0.001]
Controls	YES	YES	YES
Merger-Firm FE	YES	YES	YES
Observations	82,765	102,548	121,844
R^2	0.024	0.023	0.022

Table 5: Difference-in-Differences analysis using the institutional investors' mergers, splitting the sample by closer or farther competitors. This table shows the causal effect of common ownership on hiring a connected CEO when the firms in a pair are closer or farther competitors in the product market using a difference-in-differences estimation. *Cindex* is the measure of common ownership. *Connection* is an indicator variable equal to one if the CEOs in a firm pair are connected through the previous linkages between CEO_h and CEO_p. *Treat* is a dummy variable equal to one if the merger institutions hold at least 5% of outstanding shares in $firm_h$ and $firm_p$, respectively, in the quarter before the merger announcement. *Post* is an indicator for the hiring events in the post-merger period, and zero otherwise. The analysis restricts the sample to those firm pairs in which $firm_h$ is treated at least with regard to one $firm_p$. Columns (1), (3), and (5) replicate the estimations for the subsample, where $firm_h$ and $firm_p$ are closer competitors in the product market. Columns (2), (4), and (6) replicate the estimations for the subsample where $firm_h$ and $firm_p$ are farther competitors in the product market. Standard errors are clustered at the hiring firm level. $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Window	[-3,+3]	[-3,+3]	[-4,+4]	[-4,+4]	[-5,+5]	[-5,+5]
Sample	Close to H	Far from H	Close to H	Far from H	Close to H	Far from H
Dependent Variable	*Connection*	*Connection*	*Connection*	*Connection*	*Connection*	*Connection*
Treat×*Post*	0.014**	0.001	0.017**	0.001	0.018**	0.001
	[0.007]	[0.001]	[0.008]	[0.001]	[0.008]	[0.001]
Treat	-0.009**	-0.002**	-0.010**	-0.003**	-0.011**	-0.003**
	[0.004]	[0.001]	[0.004]	[0.001]	[0.004]	[0.001]
Post	-0.000	0.001	-0.000	0.001	0.000	0.001
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Controls	YES	YES	YES	YES	YES	YES
Merger-Firm FE	YES	YES	YES	YES	YES	YES
Observations	43,507	39,258	53,943	48,605	64,301	57,543
R^2	0.041	0.026	0.040	0.025	0.037	0.023

Table 6: Difference-in-Differences analysis of the effect of gaining a CEO connection on firm$_p$'s performance and firm-pair level product similarity. This table shows the effect of gaining a CEO connection through firm$_h$'s hiring event on firm$_p$'s performance measures and the product similarity between the two firms. *ROA*$_p$ is firm$_p$'s net income divided by total assets. *Similarity*$_{hp}$ measures product similarity between firm$_h$ and firm$_p$. *Gaining Connection* is an indicator that takes the value one if firm$_p$ gains a CEO connection via the hiring event of firm$_h$ such that CEO$_p$ and CEO$_h$ have a connection. All Difference-in-differences regressions of *ROA*$_p$ and *Similarity*$_{hp}$ consider three years before the hiring event of firm$_h$, and either one year $(t+1)$, two years $(t+2)$, or three years $(t+3)$ after the hiring event of firm$_h$. *Post* in each regression is an indicator for fiscal years [0,1], [0,2], and [0,3], respectively. Standard errors are clustered at firm$_p$'s level. $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	*ROA$_p$ (t+1)*	*ROA$_p$ (t+2)*	*ROA$_p$ (t+3)*	*Similarity$_{hp}$ (t+1)*	*Similarity$_{hp}$ (t+2)*	*Similarity$_{hp}$ (t+3)*
Gaining Connection×Post	0.020***	0.022***	0.018**	-0.655***	-0.736***	-0.825***
	[0.006]	[0.007]	[0.007]	[0.237]	[0.253]	[0.282]
Post	-0.012***	-0.014***	-0.014***	-0.013	-0.039	-0.016
	[0.002]	[0.002]	[0.003]	[0.031]	[0.034]	[0.035]
FirmSize$_p$	0.068***	0.063***	0.060***	0.158***	0.181***	0.178***
	[0.011]	[0.010]	[0.009]	[0.046]	[0.046]	[0.049]
FirmAge$_p$	-0.013	-0.007	-0.009	0.868***	0.700***	0.240*
	[0.022]	[0.020]	[0.018]	[0.149]	[0.143]	[0.139]
Cash$_p$	0.083***	0.080***	0.075***	0.101	0.155	0.165
	[0.028]	[0.028]	[0.029]	[0.159]	[0.168]	[0.181]
MktCapitalization$_p$	0.000	0.000	0.000	-0.000	-0.000	-0.000
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
KZindex$_p$	-0.000	-0.000	-0.000	0.000	0.000**	0.000
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Leverage$_p$	0.002***	0.002*	0.001	0.003	0.003	0.001
	[0.001]	[0.001]	[0.001]	[0.002]	[0.002]	[0.003]
PPEassets$_p$	-0.377***	-0.337***	-0.303***	0.145	0.337	0.333
	[0.071]	[0.067]	[0.066]	[0.376]	[0.472]	[0.598]
Hiring Event-Firm$_p$ FE	YES	YES	YES	YES	YES	YES
Observations	115,437	136,148	155,537	115,437	136,148	155,537
R-squared	0.698	0.671	0.648	0.925	0.914	0.901

Table 7: Split Sample Analysis: Performance of peer firms (firm$_p$) in same and different industries as the hiring ones (firm$_h$). This table shows the effect of the connection between the newly hired CEO at firm$_h$ and peer firm$_p$'s CEO on firm$_p$'s returns on assets for firm pairs in the same and different 3-digit SIC industries. *Gaining Connection* is an indicator equal to one if firm$_p$'s CEO has no connection with firm$_h$'s previous CEO but has a connection with its new CEO. All Difference-in-differences regressions consider three years before the hiring event of firm$_h$, and either one year $(t+1)$, two years $(t+2)$, or three years $(t+3)$ after the hiring event. *Post* is an indicator for fiscal years [0,1], [0,2], and [0,3], respectively. Standard errors are clustered at firm$_p$'s level. $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	Same Industry			Different Industry		
Dependent Variable	*ROA$_p$ (t+1)*	*ROA$_p$ (t+2)*	*ROA$_p$ (t+3)*	*ROA$_p$ (t+1)*	*ROA$_p$ (t+2)*	*ROA$_p$ (t+3)*
Gaining Connection×*Post*	0.028***	0.027**	0.021*	0.006	0.013	0.011
	[0.010]	[0.011]	[0.011]	[0.006]	[0.008]	[0.007]
Post	-0.018***	-0.018***	-0.018***	-0.008***	-0.009***	-0.010***
	[0.004]	[0.004]	[0.004]	[0.002]	[0.002]	[0.002]
Firm$_p$ Controls	YES	YES	YES	YES	YES	YES
Hiring Event-Firm$_p$ FE	YES	YES	YES	YES	YES	YES
Observations	50,547	59,463	67,236	64,679	76,383	87,649
R-squared	0.684	0.655	0.631	0.717	0.692	0.673

Table 8: Split Sample Analysis: Performance of peer firms (firm$_p$) in the closer and farther product market of the hiring ones (firm$_h$). This table shows the effect of the connection between the newly hired CEO at firm$_h$ and peer firm$_p$'s CEO on firm$_p$'s returns on assets. *Gaining Connection* is an indicator equal to one if firm$_p$'s CEO has no connection with firm$_h$'s previous CEO but has a connection with its new CEO. All difference-in-differences regressions consider three years before the hiring event of firm$_h$, and three years $(t+3)$ after the hiring event. *Post* is an indicator for fiscal years [0,3]. *Close* equals one if the product similarity between two firms in a dyad is above the 66th percentile of all firm pairs in each hiring event and zero, otherwise. In Panel A, we split the sample of all peer firms. In column (1), we restrict the sample to those firm pairs of which the product similarity is above the 66th percentile of all firm pairs in each hiring event. Column 2 uses the firm pairs, the product similarity of which falls between the 66th percentile and the 33rd percentile. Column (3) uses the firm pairs of which the product similarity is below the 33rd percentile. Column (4) introduces an interaction term with indicator *Close*. In Panel B, column (1) uses a sample, which includes all treated firm pairs and only a subsample of control firm pairs, where the control peer firm's product similarities with both the hiring and treated peer firms are lower than the similarity between the hiring and treated firms in each hiring event. In other words, in this subsample, the hiring and treated peer firms' products are more similar. Column (2) uses a complementary subsample of the one used in column (1), where the control peer firms' product similarities with the hiring firms and treated peer firms are both higher than the hiring and treated peer firms' product similarity for at least one hiring and treated firm pair. Column (3) uses a subsample that is used in column (1) only selecting each hiring firm's treated peer firms whose product similarity is higher than the median similarity of hiring firm and all treated peers. Column (4) complements column (3), where the hiring and treated firms' product similarity is below the median similarity. Standard errors are clustered at firm$_p$'s level. $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Split all peer firms				
	(1)	(2)	(3)	(4)
Treated Sample	Close to H	Middle to H	Far from H	All
Controls Sample	Close to H	Middle to H	Far from H	All
Dependent Variable	ROA_p(t+3)	ROA_p(t+3)	ROA_p(t+3)	ROA_p(t+3)
Gaining Connection×*Post*	0.022*	-0.004	0.019	0.013
	[0.012]	[0.010]	[0.018]	[0.010]
Post×*Close*				0.005**
				[0.002]
Gaining Connection×*Close*				0.015
				[0.010]
Gaining Connection×*Post*×*Close*				0.007
				[0.016]
Post	-0.014***	-0.016***	-0.014***	-0.016***
	[0.003]	[0.003]	[0.003]	[0.003]
Firm$_p$ Controls	YES	YES	YES	YES
Hiring Event-Firm$_p$ FE	YES	YES	YES	YES
Observations	61,996	48,614	35,058	155,537
R-squared	0.623	0.696	0.764	0.648

Panel B: Split of control firm sample				
	(1)	(2)	(3)	(4)
Treated Sample	All	All	Close to H	Far from H
Controls Sample	Far from H&T	Close to H&T	Far from H&T	Far from H&T
Dependent Variable	ROA_p(t+3)	ROA_p(t+3)	ROA_p(t+3)	ROA_p(t+3)
Gaining Connection×*Post*	0.018**	0.001	0.021**	-0.002
	[0.008]	[0.008]	[0.008]	[0.007]
Post	-0.007	-0.002	-0.007	-0.005
	[0.005]	[0.007]	[0.005]	[0.004]
Firm$_p$ Controls	YES	YES	YES	YES
Hiring Event-Firm$_p$ FE	YES	YES	YES	YES
Control observations	5,444	2,881	5,444	5,444
Observations	6,215	3,652	6,080	5,570
R-squared	0.699	0.665	0.701	0.699

Table 9: Split Sample Analysis: The trend of product similarity when peer firms (firm$_p$) in the closer and farther product market of the hiring ones (firm$_h$). This table shows the effect of the connection between the newly hired CEO at firm$_h$ and peer firm$_p$'s CEO on the product similarity between firm$_h$ and firm$_p$. *Similarity*$_{hp}$ measures product similarity between firm$_h$ and firm$_p$. *Gaining Connection* is an indicator equal to one if firm$_p$'s CEO has no connection with firm$_h$'s previous CEO but has a connection with its new CEO. All difference-in-differences regressions consider three years before and after the hiring event of firm$_h$ i.e., (-3,+3). *Post* is an indicator for fiscal years [0,3]. We split the sample of all peer firms. In column (1), we restrict the sample to those firm pairs of which the product similarity before the hiring event is above the 66th percentile of all firm pairs in each hiring event. Column (2) uses the firm pairs of which the product similarity is between the 66th percentile and the 33rd percentile of all firm pairs in each hiring event. Column (3) uses the firm pairs of which the product similarity is below the 33rd percentile of all firm pairs in each hiring event. Standard errors are clustered at firm$_p$'s level. $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)
Sample	Close to H	Middle to H	Far from H
Dependent Variable	*Similarity*$_{hp}$	*Similarity*$_{hp}$	*Similarity*$_{hp}$
Gaining Connection×*Post*	-0.887**	-0.411	-0.243
	[0.414]	[0.440]	[0.455]
Post	-0.404***	0.064	0.502***
	[0.053]	[0.057]	[0.068]
Firm$_p$ Controls	YES	YES	YES
Hiring Event-Firm$_p$ FE	YES	YES	YES
Observations	60,798	52,643	40,820
R-squared	0.881	0.903	0.895

Table 10: The effect of gaining CEO connections on CAR of peer firms (firm$_p$). This table presents OLS regressions for the effect of gaining CEO connection between the newly appointed CEO$_h$ and CEO$_p$ on the firm$_p$'s stock market cumulative abnormal return (i.e., the dependent variable *CAR*). The event period of CAR is from ten trading days before to ten trading days after the announcement date of CEO$_h$'s appointment, i.e., [-10,+10]. *Gaining Connection* is an indicator equal to one if CEO$_p$ has no connection with firm$_h$'s previous CEO but has a prior connection with its new CEO$_h$, and zero otherwise. Column (1) uses the full sample. Columns (2) to (4) show a split sample analysis. Column (2) uses a subsample including only those firm$_p$ of which the product similarity (lagged one year before the event year) with firm$_h$ is above the top 33% of the total sample. Column (3) uses the subsample including firm$_p$s, of which the product similarity is below the top 33% but above 66%. Column (4) complements the rest part of the sample. All regressions control for Fama-French 10 industry fixed effect and Year fixed effect. $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

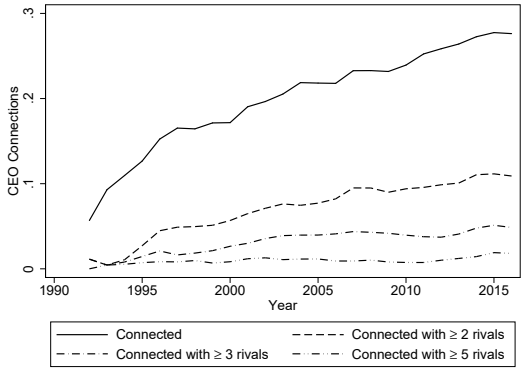
	(1)	(2)	(3)	(4)
Sample	All	Close to H	Middle to H	Far from H
Dependent Variable	*CAR* [-10,+10]	*CAR* [-10,+10]	*CAR* [-10,+10]	*CAR* [-10,+10]
Gaining Connection	0.098**	0.129**	0.078	-0.029
	[0.047]	[0.065]	[0.079]	[0.133]
FirmSize$_p$	-0.002	-0.001	-0.003	-0.001
	[0.004]	[0.006]	[0.007]	[0.008]
FirmAge$_p$	0.004	-0.009	0.019	0.002
	[0.010]	[0.016]	[0.017]	[0.025]
Cash$_p$	0.005	-0.005	-0.013	0.067
	[0.043]	[0.060]	[0.067]	[0.114]
KZindex$_p$	0.000	-0.000	0.000	0.000
	[0.000]	[0.000]	[0.000]	[0.000]
Leverage$_p$	-0.092**	-0.126**	-0.021	-0.138*
	[0.040]	[0.064]	[0.065]	[0.081]
PPEassets$_p$	-0.020	0.021	-0.132*	0.022
	[0.040]	[0.062]	[0.076]	[0.072]
ROA$_p$	-0.191**	-0.132	-0.141	-0.421
	[0.092]	[0.120]	[0.114]	[0.312]
Tobin's Q$_p$	-0.021***	-0.014	-0.029***	-0.018
	[0.006]	[0.009]	[0.010]	[0.012]
FF 10 Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	307,961	124,554	105,677	77,730
R-squared	0.008	0.009	0.009	0.008

Table 11: Common owners and CEO connections surrounding the 2008 - 2009 financial crisis. This table shows regression estimates of the CEO connection in a firm dyad on common ownership surrounding the financial crisis, which has been shown as a shock that positively affects the value of CEO connections in periods of economic downturns. *Cindex*$_{2006}$ is the measure of common ownership in 2006 preceding the financial crisis. *Post crisis* is an indicator that is equal to one for the years after the financial crisis, which includes the years [2010, 2011] in Column (1), [2010, 2012] in Column (2), and [2010, 2013] in Columns (3)-(5), and zero for the years 2008 and 2009. *Closer* is an indicator variable equal to one if the text-based similarity between firm$_h$ and firm$_p$ is above the median similarity between firm$_h$ and all peer firms preceding the crisis in 2006, and zero otherwise. *Connection* is an indicator variable equal to one if the CEOs in a firm pair are connected through the previous linkages between CEO$_h$ and CEO$_p$. Columns (1), (2), and (3) show the effect of common ownership on appointing connected CEOs in the different settings of post-crisis periods. Columns (4) and (5) replicate the estimations of Column (3) for the subsample where firm$_h$ and firm$_p$ are relatively closer and farther competitors in the product market. Controls are the same as that in Column (6) of Table 2. Standard errors are clustered at the hiring firm and year levels. $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

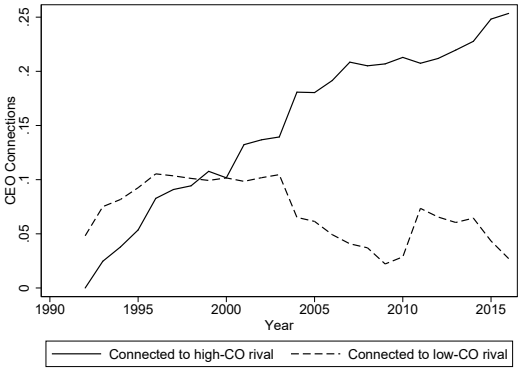
	(1)	(2)	(3)	(4)	(5)
Post-Crisis Period	[2010, 2011]	[2010, 2012]	[2010, 2013]	[2010, 2013]	[2010, 2013]
Sample	All	All	All	Close to H	Far from H
Dependent Variable	*Connection*	*Connection*	*Connection*	*Connection*	*Connection*
Cindex$_{2006}$ $\times$*Post Crisis*	0.091**	0.091**	0.106***	0.128***	0.025
	[0.023]	[0.025]	[0.021]	[0.022]	[0.055]
Cindex$_{2006}$	0.314***	0.301***	0.284***	0.242***	0.083*
	[0.012]	[0.015]	[0.014]	[0.015]	[0.038]
Post Crisis	0.001	0.002**	0.003**	0.004**	0.002*
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Controls	YES	YES	YES	YES	YES
Hiring Firm FE	YES	YES	YES	YES	YES
Peer Firm FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Observations	142,544	178,687	215,015	112,800	102,215
R^2	0.078	0.077	0.078	0.134	0.129

Table 12: Linear regressions test the influence of common ownership on hiring CEO connections through the informational channel. This table shows the linear probability models that test whether the common owners affect the hiring of a connected CEO through an informational channel. *Connection* is an indicator variable equal to one if the CEOs in a firm pair are connected through the previous linkages between CEO_h and CEO_p. *Cindex* is our baseline measure of common ownership. $nonCEOexp_{dummy}$ is a dummy variable equal to one if the CEO has never served as a CEO before and zero otherwise. $NCEOexp_h$ is the number of CEO positions that the newly hired CEO has held before. Columns (1) and (2) replicate the baseline regression in Column (6) in Table 2 for the subsample where CEO_h has never served as a CEO before and has at least one prior CEO experience, respectively. Columns (3) and (4) use the full sample and include the interaction with $nonCEOexp_{dummy}$ and $NCEOexp_h$, respectively. Standard errors are clustered at $firm_h$'s level. $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)
Sample	Without CEO experience	With CEO experience	All	All
Dependent Variable	*Connection*	*Connection*	*Connection*	*Connection*
Cindex	0.214**	0.213**	0.333***	0.194**
	[0.109]	[0.106]	[0.103]	[0.092]
Cindex× $nonCEOexp_{dummy}$			-0.222	
			[0.145]	
Cindex×$NCEOexp_h$				0.018
				[0.043]
Controls	YES	YES	YES	YES
Hiring Firm FE	YES	YES	YES	YES
Peer Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	93,799	90,932	184,890	184,890
R-squared	0.077	0.094	0.065	0.065

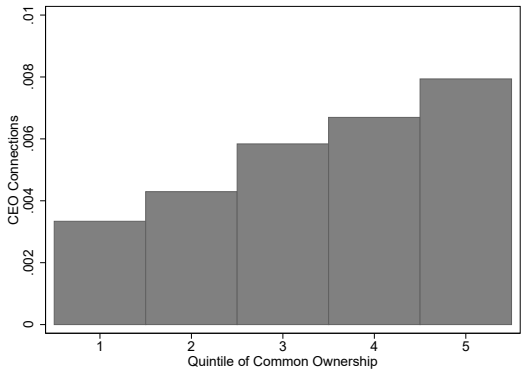


(a) This figure plots the percentage of firms having CEO connections with 2-digit SIC industry rivals from 1992 to 2016. The lines reflect the connection with various numbers of industry rivals.

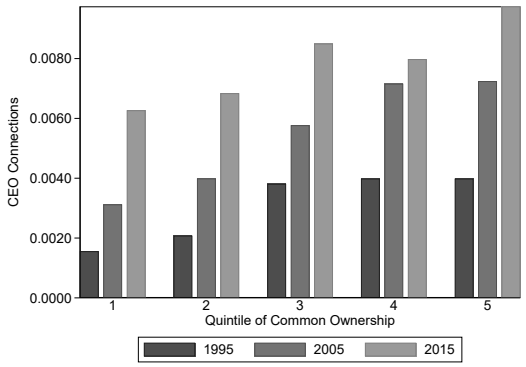


(b) This figure shows the percentage of firms being connected to at least one 2-digit SIC industry rival with above or below median common ownership (CO) over time.

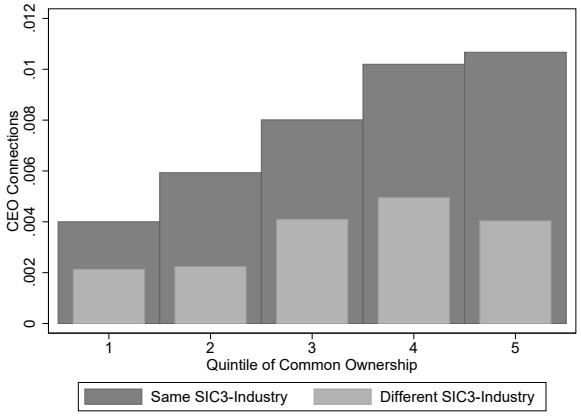
Figure 1: The percentage of CEO connections over time.



(a) 1992-2016

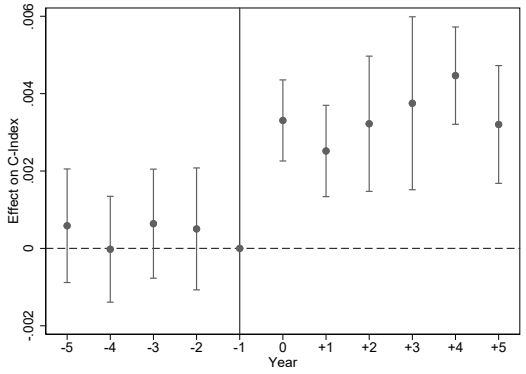


(b) Cross-section for individual years

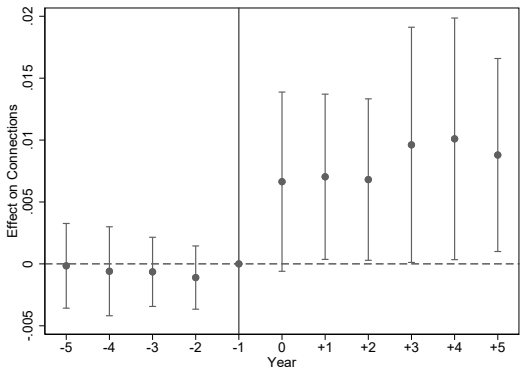


(c) 2005, Industry split

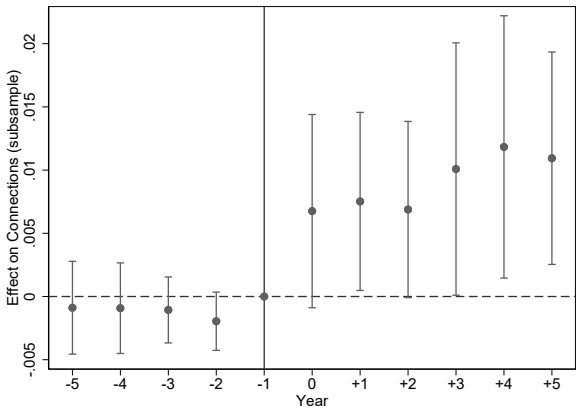
Figure 2: Firm-pair level probability of a CEO connection. These figures present the firm-pair level probability of a CEO connection by common ownership of the pair for different periods. Panel (c) reports probabilities conditional on within or across 3-digit SIC industry pairs.



(a) The dynamic effect on common ownership measure (*Cindex*).

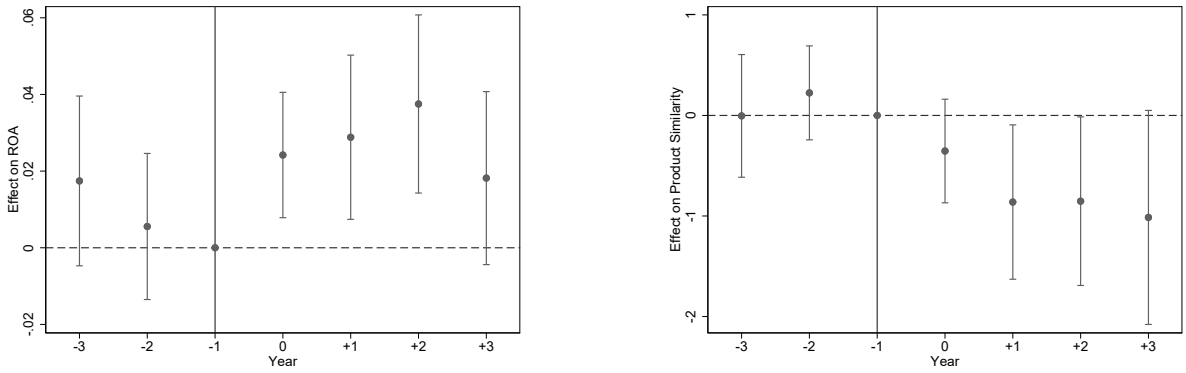


(b) The dynamic effect on CEO connections (full sample).



(c) The dynamic effect on CEO connections (subsample).

Figure 3: Dynamic effect of being treated by an institutional merger. These figures present the coefficients of the dynamic DiD regressions with 95% confidence intervals. We consider *Year-1* as the reference year.



(a) The dynamic effect on firm$_p$'s *ROA*.

(b) The dynamic effect on *similarity*.

Figure 4: Dynamic effect of gaining a CEO connection through a hiring firm's CEO appointment on the peer firms' performance and strategy. These figures show the coefficients of the dynamic DiD regressions with 95% confidence intervals. We consider *Year-1* as the reference year.

A Internet Appendix

List of Variables

Table A1: List of variables

Name of the variable	Definition of the variable
CEO Connections Measurement	
Connection	Indicator that takes the value 1 if the CEOs of the two firms in the dyad are connected, and 0 otherwise before the hiring event.
Gaining Connection	Indicator that equals one for those firm pairs in which the peer firm_p gains a CEO connection with the hiring firm_h through the hiring event of firm_h.
Common Ownership Measurements	
Cindex	Firm-pair level common ownership as measured by the sum over all investors' product of ownership shares in the two firms (Lewellen and Lowry, 2021).
$\textit{Cindex}_{x\%}$	*Cindex* restricted to the set of owners that hold at least x percent of the outstanding shares of each firm in a pair.
Firm Characteristics	
FirmSize	Natural logarithm of the book value of total assets at the end of the fiscal year.
FirmAge	Natural logarithm of (one plus) the number of years listed on Compustat.
Cash	Cash at the end of the fiscal year divided by book value of total assets.
MktCapitalization	Market value of equity (billion).
KZindex	Index of firm's financial constraints (Kaplan and Zingales, 1997).
Leverage	Book value of debt divided by book value of total assets.
ROA	Net income divided by book value of total assets.
PPEassets	Property, plant, and equipment divided by book value of total assets.
Tobin's Q	Market value of equity plus book value of assets minus book value of equity minus balance sheet deferred taxes, divided by book value of assets.
CAR	Daily cumulative abnormal returns estimated using the Fama-French three-factor model.
CEO Characteristics	
Nindustry	Number of different 4-digit SIC industries in which the CEO has worked before.
NCEOexp	Number of CEO positions that the CEO has held before.
Npositions	Number of different positions that the CEO has served before.
Conglomerate	Dummy equal one if the CEO has worked before at a conglomerate firm defined by 4-digit SIC codes, and 0 otherwise.
Nfirms	Number of firms in which the CEO has worked before.
Age	The natural logarithm of (one plus) the CEO's age.
Gender	Dummy equal one if the CEO is female, and 0 otherwise.
Firm-Pair Characteristics	
InterlockingDir	Number of interlocking directors in a firm pair.
SameIndustry	Dummy equal one if the firms in dyad are in the same 3-digit SIC industry and 0 otherwise.
Similarity	Index of pairwise firms' product similarity obtained from Hoberg and Phillips (2016).

Robustness Check: Common Ownership and CEO Connections using Different Ownership Thresholds

We estimate the model in column (6) of Table 2 for variations of the common ownership measure. We calculate the *Cindex* for investors that hold at least a given block size in each of the two firms. $Cindex_{x\%}$ restricts *Cindex* to the set of owners that hold at least x percent of the outstanding shares of each firm in a pair. Restricting the measure to investors that are large from the perspective of the firms may help to account for the degree of influence and interest of these investors within the firms. In particular, we use common ownership measures for those investors that hold at least 1%, 2%, 3%, 4%, or 5%, respectively, in both, the hiring firm_h and its industry peer firm_p.

Table A2 reports the results. Column (1) shows the same estimate as in column (6) of the previous table using the unrestricted *Cindex* for comparison. The results in columns (2) to (6) are consistent with our baseline: all coefficient estimates of the various common ownership measures are positive and statistically significant.

However, restricting our measure to common ownership by larger blockholders does not seem to increase the explanatory power of the model. Moreover, we lose some statistical significance when restricting to blocks holding more than 2%. This shows that even small common owners can influence the selection of CEOs such that they are connected to industry-peer CEOs in other firms. This result is consistent with the theoretical model of shareholder voting of Chiappinelli et al. (2023).

Table A2: Linear regressions, various common ownership measures. This table shows the estimate of the effect of common ownership on hiring a connected CEO for various definitions of the *Cindex*. All variables are defined in Table A1. *Connection* is an indicator variable equal to one if the CEOs in a firm pair are connected through the previous linkages between CEO_h and CEO_p. Standard errors are clustered at the hiring firm level. $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	*Connection*	*Connection*	*Connection*	*Connection*	*Connection*	*Connection*
Cindex	0.211***					
	[0.076]					
$Cindex_{1\%}$		0.216***				
		[0.075]				
$Cindex_{2\%}$			0.206***			
			[0.076]			
$Cindex_{3\%}$				0.195**		
				[0.077]		
$Cindex_{4\%}$					0.165**	
					[0.079]	
$Cindex_{5\%}$						0.176**
						[0.085]
InterlockingDir	0.070***	0.070***	0.070***	0.070***	0.070***	0.070***
	[0.012]	[0.012]	[0.012]	[0.012]	[0.012]	[0.012]
Controls	YES	YES	YES	YES	YES	YES
Hiring Firm FE	YES	YES	YES	YES	YES	YES
Peer Firm FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	184,890	184,890	184,890	184,890	184,890	184,890
R-squared	0.065	0.065	0.065	0.065	0.065	0.065

The Effect of Losing CEO Connections due to CEO Death and Illness

To further alleviate endogeneity concerns regarding the positive association between CEO connections and the peer firm's profitability, we investigate the effect of losing CEO connection on peer firm_p's profitability, i.e., *ROA*, using the departures of firm_h's previous CEO_h due to sudden death or illness as an exogenous shock. These events resulted in unexpected changes in the peer firm's CEO connection with those industry rivals' CEOs that leave office. Although the effects are probably not perfectly symmetric, since we observe a positive association between gaining CEO connections and peer firms' return on assets, we expect that losing a CEO connection due to the other firm's CEO removal (by sudden death or illness) will cause a reduction in it. Moreover, our estimates in this section are probably lower bounds (in absolute terms), since peer firms that lose the connection with the dismissed CEOs' firm could recover it due to the hiring of a new CEO at the latter firm. However, suppose the treated peer firms that were connected to the dismissed CEO are likely to lose a connection. In that case, we expect them to experience a reduction in performance after the event.

To conduct this analysis, we adopt the open-source dataset of CEO dismissal reasons provided by Gentry, Harrison, Quigley, and Boivie (2021) and associate the departure reason of the previous CEO in the hiring firm with hiring events in our pairwise CEO connection sample from 1992 to 2018. We employ a seven-year event window, covering three years before and after the unexpected departure of firm_h's CEO, plus the event year. We identify which of these firm_h CEO departure events, caused by sudden death or illness, involve at least one peer firm_p, whose CEO had a prior social connection with the departing firm_h's CEO. In this case, firm_p experiences the loss of a stable CEO connection with firm_h, and we include these firm pairs in the treatment sample. In the control sample, we identify peer firms of the same firm_h from the treatment sample whose CEOs had no prior social connection with the departing firm_h's CEO. We observed the departure of 4 CEOs due to sudden deaths and 15 CEOs due to illness in our sample. The treatment sample, in which the departure of CEO is caused by either sudden death or illness (sudden death only, resp.), contains 87 observations (15 observations, resp.). We construct and estimate the following model:

$$ROA_{(p,t)} = \beta_0 + \beta_1 Treat \times Post + \beta_2 Post + \gamma X_{(p,t)} + \rho_{(p,H)} + \tau_t + \epsilon_{(p,t)}, \qquad \text{(A1)}$$

where *Treat* is an indicator equal to one if the firm pair is in the treatment sample, and zero, otherwise. *Post* is a dummy variable that equals one for the post-departure years and zero for the pre-departure years of each CEO departure event of firm_h. We include the departure year

in the post-departure period. Vector $X_{(p,t)}$ contains the firm$_p$'s characteristics.[36] We include the firm$_p$-departure event fixed effect in $\rho_{(p,H)}$, year fixed effect in τ_t, and the standard errors are clustered at firm$_p$'s level.

To confirm the validity of our estimates, we test the parallel trends assumption. We use model (A1), but we replace the variable *Post* with a battery of indicators for each year, from *Year-2* to *Year+3*, and *Year-3* is the base year. The pre-trend coefficients are shown in Table A3. In this table, none of the coefficients is statistically significant in the pre-evnt years, only for the event year we find a significantly negative coefficient in one of our samples, i.e., the year in which the CEO left office due to his or her sudden death or illness. Therefore, the parallel trends assumption is satisfied.

Table A4 shows the main results of our analysis. Columns (1) to (3) show the effect of CEO departures due to sudden death or illness on the performance of those peer firms, whose CEOs have prior social ties to the dismissed CEO. In all three columns, the coefficient of interest is significantly negative, indicating that these firms experience a reduction in performance. However, in the long-run this effect is only significant at the 10% level as indicated in columns (2) and (3).

The inclusion of departure events due to illness could affect our results. That is, because the illness of a CEO may lead insiders and investors to anticipate that a new hire is necessary and to start a succession plan, including interim CEOs that may or may not be connected to some industry peers. We find that this is the case in our sample.

Therefore, we repeat the analysis using the subsample of departure events caused by the sudden death of firm$_h$'s incumbent CEO and repeat our analysis in columns (4) to (6). Although we have a very small sample of 15 treated peer-firm-year observations, we find negative effects of the loss in connection that are statistically significant at the 1% level.

The results in this section support our hypothesis that individual CEO connections affect firm performance.

[36] Firm$_p$'s controls include *FirmSize*$_p$, *FirmAge*$_p$, *Cash*$_p$, *MktCapitalization*$_p$, *KZindex*$_p$, *Leverage*$_p$, and *PPEassets*$_p$.

Table A3: Parallel trends for the effect of losing a CEO connection on firm$_p$'s profitability, using the departures of firm$_h$'s previous CEO$_h$ due to sudden death or illness as an exogenous shock. This table shows the parallel trends for the firm$_p$'s *ROA* before the departure event of firm$_h$'s CEO due to sudden death or illness. *ROA*$_p$ is firm$_p$'s net income divided by total assets. *Treat* is an indicator that takes the value one if firm$_p$'s CEO has a prior social connection with firm$_h$'s CEO, but loses this connection due to the departure of firm$_h$'s CEO caused by sudden death or illness, and zero if firm$_p$'s CEO has no prior social connection with firm$_h$'s CEO. *Year-t* is a dummy equal to one for the t^{th} year before the hiring event, and zero otherwise. *Year 0* indicates the departure year of firm$_h$'s CEO. Column (1) uses the sample where the departure of firm$_h$'s CEO is caused by either sudden death or illness. Column (2) uses the sample where the departure of firm$_h$'s CEO is only caused by sudden death. Standard errors are clustered at firm$_p$'s level. $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)
Sample	Sudden Death or Illness	Sudden Death
Dependent Variable	*ROA*$_p$	*ROA*$_p$
Treat×*Year-2*	0.017	0.024
	[0.042]	[0.072]
Treat×*Year-1*	0.019	0.089
	[0.034]	[0.076]
Treat×*Year 0*	-0.044**	-0.061
	[0.022]	[0.088]
Firm$_p$ Controls	YES	YES
Departure Event-Firm$_p$ FE	YES	YES
Year FE	YES	YES
Observations	8,679	693
R-squared	0.646	0.724

Table A4: Difference-in-Differences analysis of the effect of losing a CEO connection on firm$_p$'s performance, using the departures of firm$_h$'s previous CEO$_h$ due to sudden death or illness as an exogenous shock. *ROA*$_p$ is firm$_p$'s net income divided by total assets. *Treat* is an indicator that takes the value one if firm$_p$'s CEO has a prior social connection with firm$_h$'s CEO, but loses this connection due to the departure of firm$_h$'s CEO caused by sudden death or illness, and zero if firm$_p$'s CEO has no prior social connection with firm$_h$'s CEO. All regressions consider three years before the hiring event of firm$_h$, and either one year $(t+1)$, two years $(t+2)$, or three years $(t+3)$ after the hiring event of firm$_h$. *Post* in each regression is an indicator for fiscal years [0,1], [0,2], and [0,3], respectively, and zero, otherwise. Columns (1) to (3) use the sample where the departure of firm$_h$'s CEO is caused by either sudden death or illness. Columns (4) to (6) use the sample where the departure of firm$_h$'s CEO is only caused by sudden death. Standard errors are clustered at firm$_p$'s level. $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	Sudden Death or Illness			Sudden Death		
Dependent Variable	*ROA*$_p$ *(t+1)*	*ROA*$_p$ *(t+2)*	*ROA*$_p$ *(t+3)*	*ROA*$_p$ *(t+1)*	*ROA*$_p$ *(t+2)*	*ROA*$_p$ *(t+3)*
Treat×*Post*	-0.051**	-0.043*	-0.042*	-0.128***	-0.128***	-0.119***
	[0.026]	[0.024]	[0.023]	[0.049]	[0.043]	[0.043]
Post	0.007*	0.011***	0.009**	0.017	0.010	0.003
	[0.004]	[0.004]	[0.004]	[0.021]	[0.016]	[0.014]
Firm$_p$ Controls	YES	YES	YES	YES	YES	YES
Departure Event-Firm$_p$ FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	7,165	7,972	8,679	612	662	693
R-squared	0.680	0.661	0.646	0.754	0.730	0.723

Robustness Check: Sample before the 2008 Financial Crisis

Table A5: Difference-in-Differences analysis of CEO connections using the institutional investors' mergers and the years before the financial crisis. This table shows the causal effect of common ownership on hiring a connected CEO using the sample before the 2008 financial crisis by a difference-in-differences estimation. *Connection* is an indicator variable equal to one if the CEOs in a firm pair are connected through the previous linkages between CEO_h and CEO_p. *Treat* is a dummy variable equal to one if the merger institutions hold at least 5% of outstanding shares in $firm_h$ and $firm_p$, respectively, in the quarter before the merger announcement. *Post* is an indicator for the hiring events in the post-merger period, and zero otherwise. The analysis also restricts the sample to those firm pairs in which $firm_h$ is treated at least with regard to one $firm_p$. *Closer*, i.e., closer competitor, is an indicator variable equal to one if the text-based similarity between $firm_h$ and $firm_p$ is above the median similarity between $firm_h$ and all peer firms, and zero otherwise. Columns (1), (2), and (3) replicate the estimations for the subsample before 2008 and the window periods [-3,+3], [-4,+4], and [-5,+5], respectively. Column (4) replicates the estimation for the subsample where $firm_h$ and $firm_p$ are closer competitors in the product market. Column (5) replicates the estimation for the subsample where $firm_h$ and $firm_p$ are farther competitors in the product market. Column (6) includes the interaction with *Closer*. Standard errors are clustered at the hiring firm level. $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Window	[-3,+3]	[-4,+4]	[-5,+5]	[-5,+5]	[-5,+5]	[-5,+5]
Sample	All before 2008	All before 2008	All before 2008	Close to H before 2008	Far from H before 2008	All before 2008
Dependent Variable	*Connection*	*Connection*	*Connection*	*Connection*	*Connection*	*Connection*
Treat×*Post*	0.011***	0.011***	0.011***	0.016***	0.008**	0.008**
	[0.004]	[0.004]	[0.004]	[0.006]	[0.004]	[0.003]
Treat×*Post*×*Closer*						0.005**
						[0.003]
Treat	-0.008**	-0.008**	-0.008**	-0.011***	-0.005	-0.005
	[0.003]	[0.003]	[0.003]	[0.004]	[0.003]	[0.003]
Post	0.001	0.001	0.002	0.003	0.003	0.006*
	[0.003]	[0.002]	[0.003]	[0.004]	[0.004]	[0.003]
Controls	YES	YES	YES	YES	YES	YES
Merger-Firm FE	YES	YES	YES	YES	YES	YES
Observations	20,446	28,537	35,459	15,931	19,527	35,459
R-squared	0.029	0.027	0.027	0.052	0.027	0.028

Table A6: Difference-in-Differences analysis of the effect of gaining a CEO connection on firm$_p$'s performance except the financial crisis period. This table shows the effect of gaining a CEO connection through firm$_h$'s hiring event on firm$_p$'s profitability. *ROA*$_p$ is firm$_p$'s net income divided by total assets. *Gaining Connection* is an indicator that takes the value one if firm$_p$ gains a CEO connection via the hiring event of firm$_h$ such that CEO$_p$ and CEO$_h$ have a connection. All difference-in-differences regressions of *ROA*$_p$, consider three years before the hiring event of firm$_h$, and either one year $(t+1)$, two years $(t+2)$, or three years $(t+3)$ after the hiring event of firm$_h$. *Post* in each regression is an indicator for fiscal years [0,1], [0,2], and [0,3], respectively, and zero, otherwise. Columns (1) to (3) use the samples as that in Table 6 for each corresponding window period except for the years 2008 - 2013. Column (4) uses the sample except for the years 2008 and 2009. Standard errors are clustered at firm$_p$'s level. $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)
Sample	All but 2008 - 2013	All but 2008 - 2013	All but 2008 - 2013	All but 2008 - 2009
Dependent Variable	*ROA$_p$ (t+1)*	*ROA$_p$ (t+2)*	*ROA$_p$ (t+3)*	*ROA$_p$ (t+3)*
Gaining Connection $\times$ *Post*	0.045***	0.035***	0.023**	0.020***
	[0.015]	[0.011]	[0.010]	[0.008]
Post	-0.012***	-0.013***	-0.017***	-0.013***
	[0.003]	[0.003]	[0.003]	[0.003]
Firm$_p$ Controls	YES	YES	YES	YES
Hiring Event-Firm$_p$ FE	YES	YES	YES	YES
Observations	41,690	69,665	96,789	134,982
R-squared	0.778	0.693	0.638	0.643

Robustness Check for Different Sample Periods: Market Reaction to Connected CEO Appointments

Table A7: The effect of gaining CEO connections on CAR of peer firms (firm$_p$) using different sample periods. This table presents OLS regressions for the effect of gaining CEO connection between the newly appointed CEO$_h$ and CEO$_p$ on the firm$_p$'s stock market cumulative abnormal return (i.e., the dependent variable *CAR*). The event periods of CAR are from one (five, resp.) trading day before to one (five, resp.) trading day after the announcement date of CEO$_h$'s appointment, i.e., [-1,+1] ([-5,+5], resp.). *Gaining Connection* is an indicator equal to one if CEO$_p$ has no connection with firm$_h$'s previous CEO but has a prior connection with its new CEO$_h$, and zero otherwise. Column (1) and (5) uses the full sample. Columns (2) to (4) and (6) to (8) show split sample analyses of corresponding sample period as that in Table 10. All regressions control for Fama-French 10 industry fixed effect and Year fixed effect. $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample	All	Close to H	Middle to H	Far from H	All	Close to H	Middle to H	Far from H
Dependent Variable	*CAR* [-1,+1]	*CAR* [-1,+1]	*CAR* [-1,+1]	*CAR* [-1,+1]	*CAR* [-5,+5]	*CAR* [-5,+5]	*CAR* [-5,+5]	*CAR* [-5,+5]
Gaining Connection	0.194	0.358**	-0.226	0.592	0.110	0.224**	-0.089	0.096
	[0.129]	[0.173]	[0.209]	[0.433]	[0.077]	[0.111]	[0.110]	[0.210]
FirmSize$_p$	-0.009	-0.020	0.014	-0.016	0.002	0.003	0.009	-0.010
	[0.009]	[0.015]	[0.016]	[0.016]	[0.005]	[0.009]	[0.009]	[0.010]
FirmAge$_p$	-0.003	0.018	-0.048	0.009	0.007	-0.009	-0.001	0.042
	[0.023]	[0.037]	[0.041]	[0.041]	[0.014]	[0.022]	[0.024]	[0.026]
Cash$_p$	-0.078	0.104	-0.128	-0.334*	-0.025	-0.039	0.003	-0.034
	[0.088]	[0.135]	[0.160]	[0.171]	[0.056]	[0.089]	[0.094]	[0.110]
KZindex$_p$	0.000	-0.000	0.000	-0.000	0.000	-0.000*	0.000	0.000
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Leverage$_p$	-0.149*	-0.090	-0.163	-0.265*	-0.155***	-0.242**	-0.133	-0.074
	[0.079]	[0.132]	[0.138]	[0.144]	[0.055]	[0.100]	[0.088]	[0.088]
PPEassets$_p$	-0.051	-0.078	-0.008	-0.092	0.031	0.060	-0.078	0.067
	[0.086]	[0.145]	[0.155]	[0.154]	[0.054]	[0.087]	[0.093]	[0.106]
ROA$_p$	-0.122	0.133	-0.344	-0.398	-0.206*	-0.235	-0.170	-0.224
	[0.152]	[0.247]	[0.246]	[0.271]	[0.113]	[0.199]	[0.159]	[0.181]
Tobin's Q$_p$	-0.007	-0.018	-0.006	0.014	-0.006	0.001	-0.019	-0.005
	[0.013]	[0.021]	[0.024]	[0.024]	[0.008]	[0.013]	[0.014]	[0.016]
FF 10 Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	54,987	22,218	18,940	13,829	151,759	61,388	52,064	38,307
R-squared	0.012	0.013	0.012	0.016	0.011	0.010	0.011	0.015

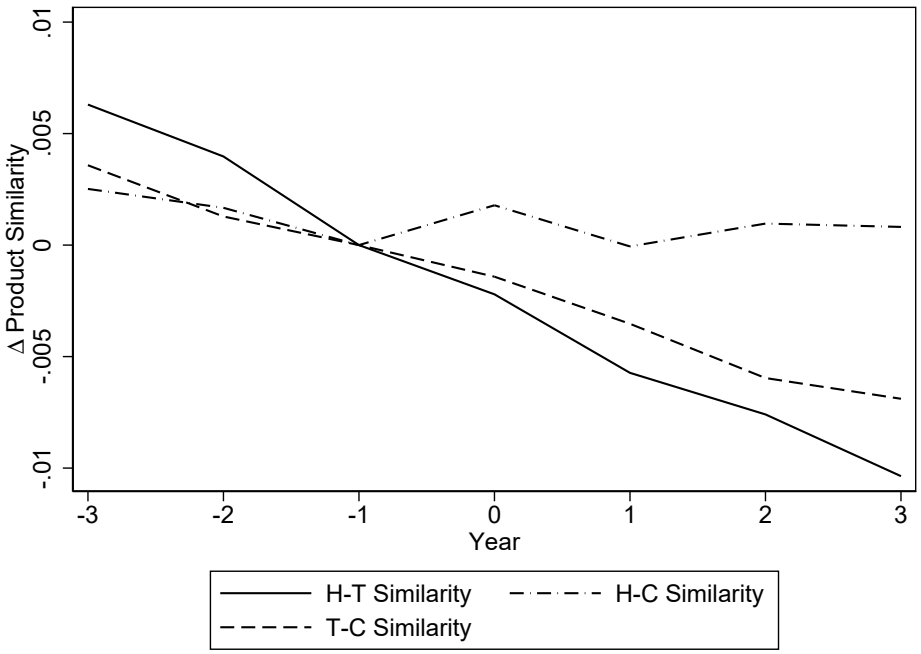


Figure A1: This figure shows the evolution of product similarities between hiring (H), treated (T), and control (C) firms relative to the year before the hiring event (year -1). It shows that treated firms experience a decrease in product similarity with both hiring and control firms, indicating potential product-market spillovers.

Halle Institute for Economic Research –
Member of the Leibniz Association

Kleine Maerkerstrasse 8

D-06108 Halle (Saale), Germany

Postal Adress: P.O. Box 11 03 61

D-06017 Halle (Saale), Germany

Tel +49 345 7753 60

Fax +49 345 7753 820

www.iwh-halle.de

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