Interlocked Benchmarking: How Do Directors Evaluate CEOs Across Multiple Boards?*

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Abstract

We show that relative benchmarks within a director's network of interlocked firms predict board meeting attendance and forced CEO turnovers, even after accounting for firm performance. The effects persist with firm-by-year and director-by-year fixed effects, and remain consistent in analyses of exogenous director turnovers, falsification tests, and quasi-natural experiments, providing compelling evidence that directors evaluate CEOs against peers in their networks. Consistent with biased decision-making, such dismissals are followed by performance declines, analyst downgrades, and lower announcement returns. The findings highlight a novel channel through which interlocking boards shape governance and shareholder value: implicit relative performance benchmarks.

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1. Introduction

This paper studies a cornerstone topic in corporate governance: the role of boards of directors in hiring and dismissing CEOs. It aims to answer three fundamental questions: How do boards evaluate CEO performance? Are their decisions systematically biased? And what are the consequences? To explore these questions, we propose that directors rely on benchmarks drawn from their own networks of interlocked firms, using those firms' performance as implicit comparators when assessing a CEO. Such benchmarking can arise from rational learning—directors update beliefs about effective leadership based on peers' performance—or from salience-driven heuristics (Tversky and Kahneman, 1973), where interlocked firms provide readily available reference points or mental shortcuts. In either case, underperformance relative to interlocked firms increases the likelihood of CEO dismissal.

To evaluate this proposition, we compile a comprehensive dataset of forced CEO turnovers, and construct director-specific measures of performance that exploit intra-board differences in interlocked directorships. In our sample of 2,590 public firms from 1997 to 2019, 58.7% of independent directors hold multiple board seats at other public firms, highlighting the prevalence of interlocking directorships. Our director-by-director measure of a CEO's annual relative performance is based on the ranking of a firm's annual stock returns in each director's full set of interlocked firms. We use this measure to study board decisions and CEO transitions in annual panels where the unit of observation is either a director-firm-year triplet or a firm-year pair.

The two baseline results can be summarized as follows. First, directors are 0.60 percentage points less likely to miss a significant number of board meetings if the focal company is the worst performer in the set of their interlocked firms. This effect implies an economically important decrease of 55% compared to the sample mean. The result holds after saturating the specifications

with director-by-year and firm-by-year fixed effects, thus absorbing any time-varying director-level and firm-level attributes, including firms' annual performance. As such, the evidence suggests that board members pay more attention to their worst-performing directorship, holding constant its overall performance or any other annual attributes at the firm- or director-level.

Second, the likelihood of forced CEO turnover is significantly higher when the firm performs poorly relative to directors' other interlocked firms. A one-standard deviation increase in the share of directors for whom the firm is the worst performer among their interlocks *(%Worst)* is related to a 0.79-0.94 percentage point increase in the probability of CEO dismissal. This represents a 32-37% increase relative to the unconditional likelihood of dismissal—roughly half of the effect of the firm's own stock returns, and 1.5 to 3 times the effect of industry performance. This baseline result remains robust after controlling for a comprehensive set of firm-level attributes—including absolute and industry-relative performance, CEO or board attributes—and persists even when the firm outperforms its industry peers. These finding aligns with anecdotal evidence, such as the 2011 dismissal of AMD's CEO, a case study we discuss in Section B of the Internet Appendix.

Section 8 of the Clayton Antitrust Act of 1914 prohibits individuals from serving as directors or officers of competing firms, which mitigates concerns that our findings reflect directors evaluating CEOs using information from interlocked product market/industry competitors. Nevertheless, to assess this possibility, we augment the specification with a wide-ranging set of absolute and relative performance measures, including second- and third-order polynomials of market and accounting performance, indicators for negative industry-relative performance (bottom decile or worst), product market and compensation peers, as well as analyst ratings and media sentiment. The estimated effect of *%Worst* remains virtually unchanged after including these controls. This evidence runs counter to the possibility that *%Worst* captures poor performance, possibly nonlinear, not accounted for by the baseline controls.

We perform several additional analyses to address concerns that director interlocks are nonrandom and therefore capture relevant information, such as common shocks and underlying economic links. First, we exploit variation due to exogenous director departures. The intuition is as follows: if interlocking directorships capture unobservable common shocks, the focal firm's performance relative to interlocked firms should continue to influence CEO dismissal even after the directors depart. The results show a sharp attenuation after the exit: the effect of departing directors' interlocks is economically and statistically significant before directors depart, but not after they are gone. This suggests that the baseline results are driven by active benchmarking rather than persistent, unobservable common shocks or economic links between firms.

Second, we provide estimates from falsification tests that reshuffle interlocked directorates across firms. Specifically, we replace each focal firm's board with the board of an industry-size-performance-matched firm and show that the performance of the matched board's interlocked firms does not influence CEO turnover. We also estimate the sensitivity of average industry CEO turnover rates to the performance of each focal company's interlocked firms and find that it is indistinguishable from zero. These tests show that director-specific performance benchmarks do not capture common economic shocks that explain CEO turnovers in matched firms or industries.

Lastly, we use the 2008 financial crisis as a quasi-natural experiment. According to our analysis, during the crisis, banks experienced a 14% larger decline in performance relative to non-banks. Therefore, *non-financial firms* with directors holding bank directorships are less likely to rank as the worst performer relative to their interlocks. Consequently, these firms should have lower CEO dismissal rates compared to firms without bank directors. In line with this prediction, matched-sample difference-in-differences tests show that firms with bank directors were less likely to rank as *Worst* or dismiss their CEOs following the crisis.

It is important to note that while each one of the identification strategies has its respective strengths and weaknesses, they collectively bolster the causal interpretation of our findings by providing similar conclusions despite using different methods, samples, periods, and empirical specifications. Thus, while no single bit of evidence is decisive, consilience across an ensemble of evidence makes the story compelling (Heckman and Singer, 2017, p.301) and helps us achieve triangulation to improve causal inference (Armstrong, Kepler, Samuels, and Taylor 2022, p.68).

To our knowledge, these findings provide some of the most direct evidence that individual directors influence CEO transitions. They do so by relying on unique performance evaluations that are not shared by other stakeholders. Further, these results provide novel evidence that board interlocks influence CEO turnover through channels other than busyness and quality by generating director-specific relative performance benchmarks. In this regard, the evidence points to an unintended consequence of appointing interlocked directors: the introduction of implicit relative performance benchmarks derived from their other board affiliations.

If neither firm performance nor endogenous interlocks fully account for why directors benchmark a CEO against a small set of interlocked firms, what does? We address this question by contrasting two mechanisms. Under rational learning, directors extract information about CEO ability or behavior not captured by conventional performance metrics. Under heuristic benchmarking, they rely on mental shortcuts when evaluating CEOs. Because heuristics are more likely when tasks are complex (Shah and Oppenheimer, 2008), we expect stronger effects where CEOs are harder to assess. Consistent with this view, benchmarking is amplified in firms with greater performance uncertainty—measured by stock return volatility, analyst forecast errors, and forecast dispersion—and when directors themselves are busier, proxied by the number of outside directorships they hold.

To further distinguish between rational learning and heuristic benchmarking, we study the consequences of CEO dismissals. If dismissals stem from heuristic or behavioral biases rather than rational learning, they should be followed by adverse outcomes. To test this, we compare CEO dismissals associated with poor interlocked performance with those unrelated to interlocks. We find that interlock-driven dismissals are followed by significantly weaker operating and market performance—lower ROA and market-to-book ratios—as well as a higher likelihood of analyst downgrades and deteriorating recommendations. The magnitudes are economically meaningful: a one–standard deviation increase in *%Worst* is associated with a 0.012 decline in post-turnover ROA, equivalent to roughly 12.8% of the standard deviation of ROA.

Next, we group firms by the fraction of independent directors for whom the focal firm is the worst performing interlock: (1) $\%Worst \geq 50\%$, (2) $25\% < \%Worst < 50\%$, and (3) $\%Worst \leq 25\%$. For each firm that dismisses its CEO, we construct a matched sample of same-industry firms that retain their CEO, using pre-dismissal performance metrics such as stock returns, ROA, and market-to-book ratios. The evidence shows that only firms in group 1—the worst interlocked performance ranking—experience weaker subsequent performance following CEO dismissal, whereas no such effects are observed in the other groups. In particular, among firms with $\%Worst \geq 50\%$, those that replaced their CEO experienced a 0.025 decline in ROA growth relative to similar firms that retained their CEO. This drop implies a 29% decrease compared to the standard deviation of ROA growth.

We also show that the stock market reaction to CEO turnover announcements is more negative when the dismissal is more likely driven by the board's heuristic assessment. Specifically, the cumulative abnormal return (CAR) around dismissal announcements is –3.4% for high *%Worst* firms ($\%Worst \geq 50\%$), compared with –1.0% for low *%Worst* firms ($\%Worst < 25\%$). Finally, we find that dismissed CEOs generally *lose* directorships; however, this effect is weaker when the

dismissal is likely driven by the interlocked directorships heuristic, suggesting that both investors and labor markets recognize the bias introduced by this heuristic.

The central contribution of this article is twofold. We nest a heuristic-based framework for individual decision-making in a typical governance model that has boards assess the incumbent CEO's ability and dismiss him if they expect to find a better alternative, net of replacement costs (Hermalin and Weisbach, 2017). Therefore, a primary contribution of our paper is providing novel evidence of behavioral biases in boards' decision-making – a possibility raised (yet unexplored) by Jenter and Kanaan (2015) and Guenzel and Malmendier (2020), among others. In this vein, our paper advances the strand of the behavioral finance literature studying whether cognitive biases or heuristics influence the decisions of corporate insiders (e.g., Baker, Pan, and Wurgler, 2012; Dessaint and Matray, 2017). Beyond influencing the careers of top managers, we show that boards' biased decisions have real and adverse effects on shareholders' wealth.

Our work also offers novel evidence on *how* boards evaluate CEO performance. By estimating the role of an individual director relative to other directors serving on the same board, we provide some of the most compelling estimates, to date, that directors directly influence the CEO replacement process. This evidence advances a large literature that studies the role of boards of directors in hiring and dismissing CEOs.[1] Our work also extends the literature on CEO turnover and relative performance evaluation (e.g., Jenter and Kanaan, 2015; Fee, Hadlock, Huang, and Pierce, 2018). It also puts forth a new channel through which interlocking boards affect corporate governance (e.g., Hallock, 1997; Bizjak, Lemmon, and Whitby, 2009; Eldar and Grennan, 2024).

[1] Broadly, these studies show that: (1) CEOs are more likely to be dismissed following bad performance (e.g., Coughlan and Schmidt (1985), Warner, Watts, and Wruck (1988), Weisbach (1988), Jensen and Murphy (1990), Denis, Denis, and Sarin (1997), Murphy (1999), Huson, Parrino, and Starks (2001), Kaplan and Minton (2012), and Jenter and Lewellen (2021)); and (2) Certain board attributes, such as independence, CEO/Chairman duality, size, busyness, ethnicity/race, or the presence of women directors, influence the sensitivity of CEO turnover to firm performance (e.g., Weisbach (1988), Yermack (1996), Dahya and McConnell (2007), Goyal and Park (2002), Fich and Shivdasani (2006), Adams and Ferreira (2009), and Field, Souther, and Yore (2020)).

2. Sample and Variables

We construct a sample of directors and firms with data from RiskMetrics, which contains director information for S&P1500 firms. We then merge this sample with data on forced CEO turnovers, firm-level financial information, analyst forecast data, and news sentiment data.

Data on forced CEO turnovers comes from Peter and Wagner (2014), who follow Parrino's (1997) method to classify CEO departures as forced or voluntary. A turnover is forced if the press reports that the CEO was fired, forced out, or resigned because of policy differences. All other departures of CEOs aged 60 or older are considered voluntary. Departures of CEOs younger than 60 are forced if the press does not report the reason as death, poor health, acceptance of another position, or if the CEO's departure was announced less than six months before it occurred.

We obtain stock prices and financial accounting information from CRSP and Compustat, respectively. We draw data on analyst forecasts and forecast dispersion from I/B/E/S, and news sentiment data from RavenPack. Our sample period begins in 1997, the first year for which board committee data are available from RiskMetrics, and ends in 2019, the last year for which forced CEO turnover data are available.

To arrive at our final sample, we use the following criteria. First, we drop interim CEOs defined as those who serve less than two years (e.g., Gao, Harford, Li, 2017; Goldman, 2022). Second, we restrict the sample to firms with common shares (CRSP share codes equal to 10, 11, or 12). Third, we exclude firm-years in which none of the independent board members has at least one external directorship. Fourth, we delete firm-year observations with missing control variables and winsorize all continuous variables at the 1st and 99th percentiles to mitigate concerns of outliers.

The main variables of interest are director-specific performance measures. We define $\%Worst$ ($Best$) as the fraction of independent directors for whom the focal firm is the worst (best) performer among their directorship firms. We focus on independent directors because they

play a vital role in monitoring the CEO (Hermalin and Weisbach, 1998). To construct these variables, we compare annual stock returns across all the interlocked firms for each director serving on multiple boards. Since firms have different fiscal year-end dates, we calculate the performance of interlocked firms using the focal firm's fiscal start and end dates. When the focal firm's CEO leaves office, we calculate performance based on the stock returns over the 12 months prior to the turnover announcement date. For each director, we flag whether the focal firm is the worst (best) performer. We then aggregate these flags at the board level by calculating the fraction of independent directors for whom the focal firm is the worst (best) performer. Variable definitions are reported in Section A of the Internet Appendix.

Panel A of Table 1 reports firm-level summary statistics. The firm-level sample consists of 23,369 firm-year observations from 2,590 unique firms, 4,630 unique CEOs, and 586 forced turnovers. The unconditional probability of a forced turnover is 2.5 percent. On average, firms are the worst performers for approximately 18 percent of their independent directors. A typical firm has 9.8 board members, of which 76 percent are independent.

Panel B of Table 1 reports director-firm-year-level summary statistics. Because our empirical design compares different directorship firms for the same board member during the same year, these statistics rely on outside directors who hold at least two directorships. The sample includes 59,455 director-firm-year observations from 2,452 firms and 4,917 unique directors. On average, directors hold 3 board seats at public firms, 2.4 directorships at S&P1500 firms, and are 63 years old. About 1.3 percent of directors miss more than 25% of their board meetings each year.

3. Baseline Econometric Specification

To study how director-specific performance evaluation affects the likelihood of CEO dismissals, we estimate the following regression model:

$$Forced\ CEO\ turnover_{it} = \beta_1 \%Worst_{it}(Best) + \gamma X_{it} + \alpha_i + \alpha_t + \epsilon_{it} \quad \textbf{(1)}$$

where i denotes firm and t denotes year. When there is no forced CEO turnover, stock returns are measured over the current fiscal year. Following Peter and Wagner (2014) and Jayaraman, Milbourn, Peters, and Seo (2021), if the current fiscal year overlaps with the announcement of a forced CEO turnover, we instead calculate stock returns over the 12-month period preceding the turnover announcement to avoid attributing performance to the successor CEO. X_{it} represents a vector of firm-level controls: current and lagged stock returns, ROA, (log of) total assets, value-weighted industry stock returns, the standard deviation of stock returns, CEO-Chair duality, CEO ownership, (log of) CEO age, (log of) CEO tenure, (log of) board size, board independence, equal-weighted stock returns of interlocking-directorship firms, and the percentage of independent directors for whom the focal firm is the largest (smallest) among their directorships (Masulis and Mobbs, 2014).[2] We additionally control for the fraction of directors who sit only on the focal firm's board and the average number of board seats held by each independent director, as these variables are mechanically correlated with *%Worst (%Best)*.

Our main analysis uses both logit and linear probability models. The baseline specification for both includes year fixed effects and performance controls — namely, firm stock returns, ROA, and industry stock returns. A more stringent specification adds industry fixed effects based on the Fama-French 48 industry classification, along with the full set of firm-level controls. For the linear probability model, our preferred specification further includes firm fixed effects to absorb

[2] Following Masulis and Mobbs (2014) we measure firm size using market capitalization.

unobservable time-invariant firm characteristics that may be correlated with *%Worst (%Best)* and CEO turnovers. The logit models do not include firm fixed effects due to the potential for inconsistent estimates arising from the incidental parameters problem (Wooldridge, 2010). Standard errors are clustered at the firm level. The coefficient of interest, β_1, measures the impact of *%Worst (%Best)* on forced CEO turnover. One concern is that *%Worst* and firm stock returns are highly correlated, leaving little variation in *%Worst* to estimate β_1 after controlling for performance. Empirically, this does not appear to be the case: the focal firm's stock returns explain only 23% of the variation in *%Worst.*

As an alternative specification, we estimate regressions where the unit of observation is a director-firm-year triplet. The key explanatory variable is *Worst*, an indicator equal to 1 if the focal firm is the worst performer among a director's set of interlocked firms in a given year, and zero otherwise. We saturate these models with director-by-year, industry-by-year, and firm fixed effects, allowing us to estimate the probability of CEO turnover when a firm becomes the worst performer for a given director in a given year. Standard errors are clustered at the director level.

4. Empirical Analyses

This section presents our main empirical analyses, with additional tests and supplementary analyses reported in Section C of the Internet Appendix (hereafter, IA).

4.1 Board Meeting Attendance

We posit that directors benchmark the performance of their portfolio firms against one another. To evaluate this prediction, we begin by examining directors' board meeting attendance. Independent directors require adequate information to effectively monitor and evaluate CEOs (Duchin, Matsusaka, and Özbas, 2010), and board meetings play a central role in facilitating this oversight

(Schwartz-Ziv and Weisbach, 2013). Because directors also value their reputations in the director labor market (Fama, 1980; Fama and Jensen, 1983), they are unlikely to miss meetings, particularly when firm performance is poor (Vafeas, 1999). If directors use the performance of their interlocked firms as a benchmark for evaluating the focal firm, they should be more likely to monitor their worst-performing directorship more closely, resulting in higher board meeting attendance at that firm.

We evaluate this prediction in Table 2 where the dependent variable is an indicator set to 100 if the director misses more than 25% of the board's annual meetings and set to zero otherwise. In columns (1) and (2), the independent variable of interest, *Worst*, is an indicator which equals one if the firm is the director's worst performing directorship firm. Analogously, the key independent variable in columns (3) and (4), *Best*, indicates whether the firm is the director's top performing directorship firm. In column (5), we include both indicators. All tests control for director tenure, ownership, and whether the firm is a large or small directorship company.[3] To absorb any time-varying director-level and firm-level attributes (including firms' annual performance) our tests include different combinations of director-by-year and firm-by-year fixed effects. The inclusion of firm-by-year fixed effects allows us to compare the attendance of directors who work for the *same* firm in the same year, noting that for some board members the firm is their worst- (best-) performing directorship, while for others it is not. By including director-by-year fixed effect, we hold constant any time-varying director characteristics that may be correlated with their attendance.

According to column (2), outside directors are 0.603 percentage points (p.p.) less likely to miss more than 25 percent of board meetings if the focal firm is their worst performing directorship

[3] We follow Masulis and Mobbs (2014) and classify a company as large (small) if its market capitalization is at least 10% larger (smaller) than the smallest (largest) directorship firm.

firm. This effect is economically important: it corresponds to a 55% decrease relative to the unconditional probability of missing more than 25% of board meetings. The coefficient for *Best* in column (4) implies a 0.485 p.p., or 44%, increase in the probability of missing more than 25% of board meetings.

The results in Table 2 indicate that a firm's performance—relative to other companies where its independent directors also serve—significantly influences board meeting attendance. Specifically, directors are less likely to miss meetings when the firm is their worst-performing directorship, and more likely to miss meetings when it is among their best-performing ones. This pattern supports the hypothesis that outside directors benchmark the focal firm's performance against their other board appointments when evaluating both the firm and its management.

4.2 Forced CEO Turnover

Replacing an underperforming CEO is arguably one of the most consequential decisions a board can make, with far-reaching implications for the firm's investment strategy, operations, and financial outcomes. We therefore evaluate whether CEOs are more likely to be dismissed when their firm underperforms relative to other firms where the directors also serve. If directors engage in such benchmarking, poor relative performance should increase the likelihood of CEO dismissal.

4.2.1 Descriptive Analysis

Panels A through E in Figure 1 display CEO dismissal rates across terciles of the *%Worst* measure, separately for firms classified as outperformers and underperformers using various performance metrics.

In Panel A, for firms with below-median returns, when *%Worst* rises from the lowest to the highest tercile from 1.64% to 5.25%, the dismissal rate increases by 3.6 p.p. which is close to the unconditional dismissal rate of 3.89% in the sample. In Panel B, for firms with above-median returns, the dismissal rate increase is 0.87 percentage points—substantial relative to the baseline

rate of CEO dismissal for outperforming firms, representing a 77% increase. We obtain qualitatively similar results in Panels C and D, where we define performance based on ROA, while continuing to calculate *%Worst* using stock returns, and in Panels E and F, where we classify a firm as an underperformer if its stock returns fall below the value-weighted industry benchmark.

4.2.2 Firm-level Analysis

Since the preceding univariate tests do not account for systematic differences across firms, we turn to multivariate analysis of CEO turnover. Table 3 presents the results. In columns (1) and (2), we estimate logit models where the key independent variable, %*Worst*, is the fraction of independent directors for whom the focal company is their worst-performing directorship. In all tests, the dependent variable is an indicator equal to 100 if the CEO is dismissed and zero otherwise. The coefficients in column (2) imply that a one-standard deviation increase in *%Worst* from its mean, while keeping all other variables at their actual values, is associated with a 1 p.p. increase in the CEO dismissal rate, a 41.2% increase compared to the sample mean.

In the remaining columns, we estimate linear probability models. To facilitate the interpretation of the economic magnitudes, all continuous variables are scaled by their standard deviations. The variable of interest in columns (3) – (5) is %*Worst,* and in columns (6) – (8), it is %*Best*. Column (9) includes both *%Worst* and *%Best*. All tests control for numerous firm attributes, including stock market and accounting performance, and board characteristics. In addition, the regressions include various iterations of year, industry, and firm fixed effects.

The estimates in columns (3) – (5) imply that an increase of one standard deviation in *%Worst* is associated with a 0.792 to 0.937 p.p. increase in the probability of forced turnover. By contrast, according to the estimates in columns (6) – (8), a one-standard deviation decrease in *%Best* is related to a 0.303 to 0.333 p.p. increase in the probability of forced turnover. The estimates in

column (9), however, which include both *%Best* and *%Worst*, suggest that the effects are asymmetrically concentrated in directors' worst performers relative to their interlocking directorship firms. Specifically, while a one-standard deviation increase in *%Worst* is associated with a 0.769 p.p. increase in forced turnover probability, variation in *%Best* is unrelated to forced turnover. These findings are robust to tighter specifications that control for a broad set of firm, board, and CEO characteristics, as well as industry and firm fixed effects. Notably, when we control for the performance of interlocking firms (*Interlocked RET[t]*), the coefficient on that variable is insignificant while the point estimate on *%Worst* barely changes, suggesting that *%Worst* captures relative ordinal rankings rather than absolute performance.

In terms of economic magnitude, the effect of %*Worst* is substantial, amounting to 32–37% of the unconditional probability of forced turnover. To further put this in perspective, we compare its impact to other major determinants of CEO dismissal. Prior research shows that firm and industry performance are key drivers of CEO turnover (Fee, Hadlock, Huang, and Pierce, 2018; Jenter and Kanaan, 2015). In columns (3)–(5), a one–standard deviation increase in a firm's current stock returns is associated with a 1.465 to 1.722 p.p. decrease in dismissal probability, while a one–standard deviation increase in industry stock returns is associated with a 0.283 to 0.561 p.p. increase. Thus, the impact of *%Worst* is roughly half the magnitude of the firm's own stock returns and 1.5 to 3 times larger than industry performance.

Managerial entrenchment, proxied by CEO-chair duality, offers another useful benchmark as prior studies show that entrenched CEOs are less likely to be replaced (Denis, Denis, and Sarin, 2017a; Goyal and Park, 2002). In columns (4) and (5), we show that CEOs who also chair their board are 1.6 to 2 p.p. less likely to be dismissed than their counterparts. Thus, the effect of a one–standard deviation increase in *%Worst* corresponds to about half the effect CEO–chair duality.

Collectively, the results in this section support the idea that directors evaluate CEOs using performance benchmarks drawn from the small set of firms whose boards they serve on. These findings also put forth a novel implication of interlocked directorates that has been largely overlooked in the literature: the introduction of director-specific relative performance benchmarks through interlocking firms.

4.2.3 Director-level Analysis

Next, we study forced CEO turnovers in director-firm-year panel data, which allows us to control for director-specific features and compare turnover decisions across the different interlocked firms served by the *same director* within the *same year*. If directors compare the performance of their interlocked firms, then the probability of CEO dismissal should be higher at the firm where a director holds their worst performing directorship.

To examine this question, Table 4 reports estimates from linear-probability regressions of forced CEO turnover on *Worst*—an indicator variable set to one if the focal firm is the director's worst performing interlocked directorship. All the regressions in Table 4 control for a vector of firm characteristics,[4] and also include different sets of director-by-year, industry-by-year, and firm fixed effects. The inclusion of director-by-year fixed effects enables us to contrast annual CEO dismissal rates across firms in which the same outside director holds a board seat in the same year, but only one of these directorship firms can be the worst performer.

The results in Table 4 are consistent with the earlier evidence. Holding firm performance constant, a director is more likely to dismiss the CEO of her worst-performing directorship firm. According to the regression estimates, the worst performing CEO in a director's portfolio of

[4] These controls are: current and lagged stock returns, firm size, industry stock returns, ROA, standard deviation of stock returns, (log of) CEO age, (log of) CEO tenure, CEO-Chair indicator, CEO ownership, (log of) board size, and board independence), %Single Board, and Avg. #board seats.

interlocked firms is associated with a 0.8 to 1.1 p.p. increase in the probability of forced turnover. These are sizeable effects when benchmarked against the sample's 2.5% unconditional probability of forced turnover.

4.2.4 Does director-specific benchmarking simply capture poor performance?

Thus far, we have shown that poor performance relative to interlocking directorship firms is associated with a higher likelihood of CEO dismissal. One concern is that *%Worst* simply captures nonlinear effects of firm performance. To address this, we augment the specification in column (7) of Table 3 with second- and third-degree polynomials of both lagged and current stock returns and ROA. Column (1) of Table IA1 reports the results. The coefficient on *%Worst* remains positive and statistically significant at the 1% level, and its magnitude is comparable to estimates that exclude these higher order terms. This evidence suggests that nonlinearities in performance are unlikely to drive the relationship between *%Worst* and CEO turnover.

A second concern is that *%Worst* may reflect poor performance relative to industry or product market peers, in which case the results could be due to standard peer benchmarking. To address this, columns (2) through (5) of Table IA1 include two additional controls: an indicator for whether the firm's performance is in the bottom decile of its industry and an indicator for whether the firm is the worst performer in its industry. Performance is measured using both stock returns and ROA, with industry definitions varying across each column: column (2) uses the Fama-French 48 industry classification; column (3) uses the broader Fama-French 12 classification; column (4) uses three-digit SIC codes; and column (5) uses TNIC-3 product market peers developed by Hoberg and Phillips (2016). Across all specifications, *%Worst* continues to load positively and significantly, with stable point estimates. These findings suggest that poor performance relative to industry peers does not account for the observed effect of *%Worst* on CEO turnover.

A third concern is that our findings are driven by poor performance that is not fully captured by stock returns, such as unfavorable analyst ratings or negative media sentiment. To examine this, in Table IA1, we control for analyst ratings in column (6) and for news sentiment in column (7). News sentiment data come from RavenPack, where we follow Cookson, Lu, Mullins, and Niessner (2024) by retaining articles with a relevance score above 75 and aggregating the Event Sentiment Score to the firm-day level. We then compute the average sentiment score by averaging across firm-years. The results show that better ratings and more favorable sentiment are associated with lower CEO dismissal rates. Importantly, the coefficient on *%Worst* remains positive and statistically significant at the 1% level.

In column (8) we include all controls from the previous columns. The coefficient on *%Worst* remains stable, with a point estimate of 0.802, closely aligned with that in our main specification. In general, the results in Table IA1 cast doubt on the possibility that *%Worst* is simply capturing poor absolute or relative performance, reinforcing the view that director-specific benchmarking plays an independent role in CEO dismissal decisions.

4.2.5 The Impact of External Performance Benchmarks

There is a long-held consensus that the probability of CEO turnover is negatively associated with firm performance.[5] In terms of industry performance, Eisfeldt and Kuhnen (2013) show that CEOs are more likely to be forced out of office whenever their performance is poor relative to the industry average. Given this evidence, we study whether the *%Worst* effect varies whenever the focal firm outperforms or underperforms its industry.

[5] Early studies in this area include, among others, Weisbach (1988), Warner, Watts and Wruck (1988) and Coughlan and Schmidt (1985) while Jenter and Lewellen (2021) headline more recent work in this area.

Table IA2 reports regressions of forced CEO turnover on *%Worst*, where we divide the sample into outperformers and underperformers using three industry classifications: Fama-French 12 (Panel A), 2-digit SIC (Panel B), and 3-digit SIC (Panel C). To measure a firm's relative performance, columns (1) and (2) use stock returns, columns (3) and (4) use accounting returns (ROA), and (5) and (6) use analysts forecasts. The odd-number columns analyze industry outperformers while the even-numbered columns analyze industry underperformers. All tests include a vector of firm controls as well as year and firm fixed effects.

In all specifications, the coefficient on *%Worst* is positive and statistically significant, but in one case. Hence, even when focal firms outpace their industries, their CEOs are more likely to be dismissed if their performance ranks as the worst among their directors' interlocked firms. Estimates in column (1) of Panel A indicate that a one-standard deviation increase in *%Worst* is associated with a 0.354 p.p. increase in the likelihood of forced turnover for out-performing firms, a 14% increase compared to the sample mean. Notably, for this subsample, the *%Worst* effect is comparable to the effect of the firm's own stock return, indicating *%Worst* has a sizable impact even for firms that outperform their industry peers.

Prior studies show that boards often evaluate their CEOs by benchmarking them against their performance and/or compensation peers (e.g., Gong, Li, and Shin, 2011; Jayaraman, et al., 2021). In Table IA3, we use data from Incentive Lab to examine whether the director-specific benchmark, *%Worst,* is capturing the focal firm's performance relative to that of its performance or compensation peers.

In column (1), we examine a subsample of firms that do not disclose performance peers, while columns (2) and (3) focus on firms that do. In all of these columns, *%Worst* consistently yields positive and statistically significant estimates. Notably, this result remains robust even when we

include *Worst (perf.)*—an indicator equal to one if the focal firm is the worst performer relative to its disclosed performance peers (see column (3)). This evidence suggests that *%Worst* captures information beyond standard peer benchmarking. Estimates in column (3) indicate that a one-standard deviation increase in *%Worst* is associated with a 1.7 p.p. increase in the likelihood of forced turnover. The same specification shows that being the worst performer among performance peers increases the probability of dismissal by 3.4 p.p., implying that the director-specific interlock benchmark has roughly half the impact of formal peer benchmarking on CEO dismissal decisions. In the remaining columns in Table IA3, we find similar results in a subsample based on compensation peers. The effect of *%Worst* persists for firms both with and without compensation peers, and it is not driven by poor performance relative to compensation peers.

In sum, the results in Table IA2 and Table IA3 indicate that the *%Worst* effect remains significant even when the focal firm outperforms its industry and is not captured by official performance/compensation peer benchmarks. These findings deliver strong evidence supporting the tenet that the director-interlock network is an independent source of performance evaluation.

4.2.6 Robustness

Our main result shows that independent board members use the performance of their directorship firms as benchmarks to make CEO dismissal decisions. To probe the robustness of this finding, we perform several analyses.

A possible concern with our baseline findings is that the outcome variable does not capture all forced CEO turnovers because firms that dismiss a CEO older than 59 years old might not report the dismissal as involuntary in the media (Jenter and Lewellen, 2021).[6] To address this concern,

[6] In our main specifications, CEO departures of CEOs aged 60 or older are considered voluntary if there is no media mentions of an involuntary turnover.

we use three alternative measures of CEO dismissal: (1) all CEO turnovers (forced and voluntary), (2) turnovers of all CEOs younger than 63, treating all departures of CEOs younger than 63 as forced, and turnovers of all CEOs younger than 60, treating all departures of CEOs younger than 60 as forced. The results are in Table IA4. Using these alternative measures, we continue to find a positive and statistically significant coefficient on *%Worst.* The estimates imply that a one-standard deviation increase in *%Worst* is associated with an increase of 7-14% in the likelihood of CEO turnover relative to the sample mean. This smaller effect is likely due to noise in these alternative measures, which may classify voluntary turnovers as forced dismissals.

The variable *%Worst* is based on the stock returns of the focal- and director interlocked-firms over the current fiscal year. In Panel A of Table IA5, we consider the possibility that directors compare the relative performance of the focal firm to their other directorship firms throughout their tenure. To this end, we replace *%Worst* with *%Worst over entire tenure*, which is similar to *%Worst* except that performance is measured since directors joined each of their directorship firms. We find that *%Worst over entire tenure* is positively related to CEO dismissals, with an economic magnitude similar to *%Worst*. A one-standard deviation increase in *%Worst over entire tenure* is associated with a 0.49 to 0.60 p.p. increase in the probability of CEO dismissal, suggesting that our results are not sensitive to altering the period in which performance is measured.

The key independent variable in the baseline empirical specifications, *%Worst*, measures the fraction of independent directors serving multiple boards for whom the focal firm is the worst directorship performer. For example, if this is the case for two out of five directors, *%Worst* equals 2/5 or 40%. This measure, however, does not capture the extent of the focal firm's underperformance relative to each director's interlocked firms. To address this issue, we compute a measure of treatment intensity by summing the underperformance for each director for whom

the firm is the worst performer (relative to the best performer directorship) and scaling this total by the number of directors. In the above example, suppose for the two directors for whom the focal firm is their worst directorship performer, the focal firm underperforms by 2.5% and by 3.5%, respectively. In this case, treatment intensity equals (2.5% + 3.5%)/ 5 = 1.2%.

Panel B of Table IA5 reports qualitatively similar results when we replace *%Worst* with the treatment intensity measure. The results also hold when, for each focal firm director, we estimate treatment intensity relative to their next worst performing directorship. In the latter case, increasing treatment intensity by one standard deviation is associated with a 1.3 p.p. increase in the probability of forced CEO turnover.

Overall, Tables IA4 and IA5 demonstrate that our results are robust to alternative definitions of CEO turnover (the outcome variable) and to alternative measures of %Worst (the key independent variable), respectively.

4.3 Estimates from Different Identification Approaches

4.3.1 Director Departure Analysis

Despite the extensive set of control variables and fixed effects in the baseline specifications, selection concerns still exist. In particular, a director's set of interlocked directorships is nonrandom, and his/her performance evaluation of the focal firm relative to the set of interlocked firms may capture common unobservable economic links or shocks. For instance, an unobservable demand shock may decrease the demand for the focal firm's products relative to the demand for the products of its director-interlocked firms. Such a common shock would result in a reduction in director-specific relative performance and would simultaneously increase the likelihood of CEO dismissal since it would change the optimal CEO traits required to run the company effectively, biasing our estimates upwards. Conversely, high-ability CEOs—who are less likely to be

dismissed—may systematically match with high-ability directors, who are more likely to experience high performance at their interlocked firms. Under this view, assortative matching between CEOs and directors biases the estimates of *%Worst* downwards.

We address selection concerns in several ways. First, we examine the effect of director-specific benchmarking on CEO turnover before and after director departures. The intuition is as follows: if interlocking directorships capture unobservable common shocks, the focal firm's performance relative to interlocked firms should continue to influence CEO dismissal after the director's departure. In contrast, if the effect on CEO dismissal is driven by the departing director's active benchmarking of the focal firm against her other board seats, the effect should disappear once the director leaves, particularly for exogenous departures (e.g., retirement, death, or health-related issues).

To test these predictions, we estimate the following model:

$$Forced\ Turnover_{i,t} = \beta_1 \%Worst_{leaver} + \gamma X_{it} + FE + \epsilon_{it} \quad (2)$$

Where $\%Worst_{leaver}$ is the fraction of departing directors for whom the focal firm is the worst performer among their directorships. For the post-departure sample, we compute this variable as if the director had remained on the board. Otherwise, the specification mirrors columns (3)–(6) of Table 3.

To identify director departure events, we focus on independent directors who hold multiple board seats and leave at least one firm in a given year.[7] For firms experiencing such departure, we estimate equation (2) separately for periods before and after the departure. Each subsample includes up to six years of firm-level observations, consistent with the median tenure of independent directors.

[7] This yields 4,878 unique departing directors associated with 1,711 firms in the year before their departures.

One concern with this approach is that director departures may be endogenous. For example, firms undergoing organizational changes may replace existing board members with individuals whose expertise align with the firm's new direction. To address these concerns, we focus on departures that are plausibly exogenous: those driven by multi-board directors retiring from the director labor market *altogether*, health-related issues, or death. Specifically, we classify directors as departing for retirement reasons if they leave all their board seats and are at least 65 years old. By focusing on directors that exit the director labor market altogether, we mitigate concerns that directors strategically time their exit from a given board due to firm-specific reasons. For departures before age 65, we determine the reason by searching the director's name in *ProQuest One Business*, which aggregates content from over 130 newspapers, within a one-year window around the departure year. We supplement this with ChatGPT to uncover potential explanations for the departures and verify their accuracy by reviewing the underlying sources it provides.[8] We classify those due to health reasons or deaths as exogenous turnovers.

Figure IA1 shows no discernible performance trends surrounding exogenous departures.[9] Moreover, performance, whether measured by *%Worst*, ROA, or stock returns, appears unrelated to exogenous departures (Table IA6). These results suggest that such exits are unlikely to reflect departures timed in anticipation of performance deterioration or associated with firm-initiated business restructuring.

Table 5 reports the results of this analysis. Panel A considers all turnovers, and Panel B uses exogenous turnovers. In both panels, columns (1)–(3) present estimates from the before-departure sample. The coefficient on $\%Worst_{leaver}$ is positive and statistically significant for five out of

[8] This process yields 409 unique departing directors associated with 858 firms in the year prior to departure.
[9] The F-tests for the joint significance of the coefficients in Figure IA1 yield *p*-values of 0.33 and 0.39 in Panels A and B, respectively.

the six specifications, indicating that CEO dismissal rates increase as the focal firm's performance deteriorates relative to departing directors' other board seats as long as they still serve on their boards. The effects are economically meaningful. For example, in Panel B-columns (1) – (3), a one-standard deviation increase in $\%Worst_{leaver}$ is associated with a 0.795 to 1.032 p.p. increase in the probability of CEO dismissal, representing a 31.8–40% increase relative to the sample mean.

In both panels, columns (4)–(6) present results from the after-departure sample, where the coefficient on $\%Worst_{leaver}$ is not statistically different from zero. Importantly, in all cases, the difference in coefficients before and after departure (associated with the $\%Worst_{leaver}$ variable) is statistically significant. These findings support the hypothesis that $\%Worst's$ effect on CEO turnover is driven by director benchmarking rather than by unobservable common shocks.

4.3.2 Falsification Tests

To further address endogeneity concerns, we conduct a series of falsification tests. If the effects of performance benchmarking across directorate interlocks were driven by other, potentially unobservable, economic links unrelated to director-specific heuristics, we should observe similar effects after reshuffling *%Worst* across firms with comparable economic fundamentals.

Our first test proceeds as follows: each year, we randomly reassign *%Worst* to a firm in the same industry and size tercile as the focal firm and estimate our baseline specification from column (5) of Table 3. We repeat this process 1000 times and plot the estimates in Figure 2. The falsification coefficients are centered around zero and are considerably smaller than our baseline estimates (red vertical line). This evidence suggests that unobservable annual shocks common to similar-size firms in the same industry do not drive the *%Worst* effect on CEO firings.

Second, we examine whether *%Worst* of the focal firm predicts the overall forced CEO turnover rates in its industry. Specifically, we estimate three regressions in which the dependent variable is the fraction of a focal firm's industry peers that fire their CEO during the year. The main explanatory variable in these regressions is *%Worst*, and we add control variables and fixed effects like those in the previous tests. The results, reported in Panel A of Table 6, do not support the hypothesis that *%Worst* captures industry-wide CEO dismissal rates, since the estimated effect of *%Worst* on industry turnover is equal to zero.

Next, we investigate whether the performance of matched peer firms relative to their directors' interlocked firms predicts forced CEO turnovers at the focal firm. We begin by matching (with replacement) each focal firm to an industry peer with similar size, growth opportunities, profitability, and stock performance using propensity score methods. To ensure match quality, we drop matches where the difference in firm characteristics is in the top decile. In unreported tests, we compare the characteristics of the focal firms and their matched peer firms and find no significant differences between the two groups. We then replace the focal firm's *%Worst* with *Peer %Worst*, defined as *%Worst* of its matched peer, and re-estimate the regressions from Table 3.

Panel B of Table 6 reports the results. The point estimates on *Peer %Worst* are indistinguishable from zero, indicating that *%Worst* of a focal firm's matched peers does not explain the focal firm's forced CEO turnover decisions. Together, the results in Figure 2 and Table 6 suggest that the effects are unlikely to be driven by industry shocks. To the extent this is generalizable to other economic links, it also suggests that potentially unobservable economic links between a focal firm and its peers do not explain our findings.

4.3.3 The Financial Crisis as a Quasi-Natural Experiment

The final identification strategy exploits the financial crisis as a quasi-natural experiment. Based on our findings, during this period, depository institutions experienced a 14% larger decline in stock returns compared to non-depository institutions (see Panel A of Table IA7). Therefore, we conjecture that *non-financial firms* with directors holding bank directorships before the crisis are less likely to be the worst performers compared to their director interlocking firms. Consequently, according to interlocked benchmarking, firms with bank-directors should exhibit less forced CEO dismissals. The main empirical challenge of evaluating this conjecture is that the presence of bank directors may be correlated with other firm characteristics that drive a differential response to the financial crisis. To mitigate this concern, we use a matched sample of firms with and without bank directors prior to the crisis.[10] Using this matched sample, we estimate the following difference-in-differences model using non-financial firms during the seven-year window (between 2004 and 2010) surrounding the financial crisis:

$$y_{it} = \beta\ Bank - director_{2005,i}\ \times Post_t + \alpha_i + \alpha_t + \epsilon_{it} \qquad (\mathbf{5})$$

where i and t denote firms and years, respectively. The outcome variables are *%Worst* and *forced turnover*. $Bank - director_{2005,i}$ is an indicator variable equal to one for firms with independent directors holding board seats at depository institutions (SIC code between 6000 and 6199) two years before the crisis.[11] $Post_t$ indicates the post-crisis period. α_i represents firm fixed effects,

[10] To construct the sample, we propensity score-match each firm that had at least one bank director in 2005 (two years before the crisis) with five firms that did not have any bank-directors in 2005. We calculate propensity scores by estimating a probit model in which the dependent variable is a bank-director indicator. The independent variables include: %Worst, board independence, the average number of board seats of independent directors, the fraction of directors who have a single board seat, the log of board size, and the log of total assets. The estimates from the probit model are reported in Panel B of Table IA7. Using the resulting propensity scores, we match (with replacement) firms with bank directors to those without.

[11] We construct the variable *Bank-director* based on directorships held before the crisis to avoid simultaneity concerns and the inclusion of bad controls (Gormley and Matsa, 2014).

which subsume $Bank - director_{2005,i}$, and α_t denotes year fixed effects, which subsume $Post_t$. Since exposure to treatment varies by firm, we cluster standard errors by firm.

Panel A of Table 7 reports the results. In columns (1) and (2) the dependent variable is *%Worst*, while in columns (3) and (4) it is *Forced Turnover*. In the even columns, we add firm size, firm performance, and industry performance as controls. The results show that following the financial crisis, firms with bank directors exhibit a larger decline in both *%Worst* and CEO dismissal rates compared to firms without bank directors. In particular, the decline in *%Worst* is 16.7% compared to the sample mean (column (1)), and the decline in dismissal rates is comparable to the unconditional probability of CEO dismissal of 2.5% (column (3)).

While the results from a covariate-balanced matched sample specification show that firms with and without bank interlocks exhibit no meaningful differences in pre-crisis characteristics such as performance and size (see Panel C of Table IA7), it is possible that these firms differ along unobservable dimensions. We ease this concern with a placebo test around the dot-com bubble burst, which did not have a similar negative effect on the performance of financial institutions. If our findings are driven by fundamental differences (unrelated to bank performance) that lead to differential CEO dismissal rates during recessions, we should observe similar patterns in dismissal rates following the dot-com bubble burst. Panel B of Table 7 reports the findings. The estimates on the key independent variable, the interaction term $Bank - director \times Post$, are indistinguishable from zero. This result lessens concerns that the findings are driven by unobservable differences across the two sets of firms that lead to different CEO retention policies surrounding economic downturns.

Overall, the combination of identification strategies that exploit different sources of variation, in different samples and over different sample periods, helps us achieve triangulation in the spirit

of DeFond (2010, p. 407). DeFond conjectures that "when …proxies are simply noisy measures of the same underlying theoretical construct, triangulation may rule out the possibility that the observed association is driven by the noise component of a given measure." Therefore, while each one of our empirical approaches has limitations, collectively they limit the scope for alternative explanations (Heckman and Singer, 2017) and improve causal inference (Armstrong et al., 2022).

4.4 Cross-Sectional Evidence

4.4.1 Board Characteristics

In this section, we examine whether the effects of interlock performance benchmarking vary with board characteristics. We first examine the role of board committees. Adams and Ferreira (2009) maintain that the board's critical oversight functions are within the purview of these four committees: audit, compensation, nominating, and corporate governance. Those authors refer to these four committees as *monitoring* committees. Faleye, Hoitash and Hoitash (2011) find that CEO turnover is more responsive to firm performance when independent directors dominate the monitoring committees. Based on this literature, in Panel A of Table 8, we estimate regressions that evaluate whether directors serving on monitoring committees alter the association between *%Worst* and forced CEO turnover.

Columns (1) and (2), replace *%Worst* in the forced CEO turnover specification of Equation (1) with a new independent variable, *Monitoring %Worst*, defined as the fraction of outside directors serving on monitoring committees for whom the focal firm is their worst-performing directorship. The new independent variable in columns (3) and (4) is *Rest-of-Board %Worst*, defined as the fraction of outside directors not serving on monitoring committees for whom the focal firm is their worst-performing directorship. Column (5) includes both *Monitoring %Worst* and *Rest-of-Board*

%Worst. As in previous analyses of forced CEO turnover, those in Table 8 control for a vector of firm characteristics as well as for year and industry (firm) fixed effects.

While estimates for *Monitoring %Worst*, are positive and significant in columns (1), (2), and (5), the *Rest-of-Board %Worst* variable does not earn statistically significant coefficients in columns (3) through (5). These findings suggest that only members of monitoring committees influence CEO turnover decisions. In line with this conjecture, the estimates in column (5) indicate that increasing *Monitoring %Worst* by one-standard deviation leads to a 0.7 p.p. increase in the probability of forced turnovers. This evidence indicates that outside directors serving on monitoring committees largely drive our baseline finding of a positive association between *%Worst* and forced CEO turnover.

Next, we examine whether the effect of director-specific benchmarking varies with the number of directorships that outside directors hold. Psychology studies show that people rely on heuristics to reduce effort and save time when performing complex tasks (Shah and Oppenheimer, 2008). If heuristics drive our baseline results, the impact of director-specific benchmarking should be stronger when directors are busier and hence face tighter time constraints.

We evaluate this possibility in Panels B and C of Table 8. Specifically, in Panel B, we divide the sample based on whether the average number of board seats of independent directors, measured at the firm level, is below the median in column (1), above the median in column (2), in the top quartile in column (3), and in the top decile in column (4). The results show that the effect is indeed stronger when independent board members are busier: The coefficient on *%Worst* in column (4) is three times larger than that of column (1) and the difference is statistically significant. The estimates from column (5), where we use the full sample, show that a one-standard deviation increase in the average number of board seats increases turnover-to-*%Worst* sensitivity by 22%.

Panel C reports a similar test at the director level where we split the sample based on whether directors have more or less than three directorships in columns (1) and (2), respectively. The estimate for *%Worst* is statistically and economically larger for directors with more than three directorships. The results in column (3), which are based on the full sample, suggest that an additional directorship doubles the turnover-to-*%Worst* sensitivity. Altogether, the evidence in Panels B and C supports the view that busy directors are more likely to rely on heuristics.

4.4.2 Uncertainty

Because evaluating performance is more complex when there is greater uncertainty about the firm or its CEO, the heuristic-benchmarking view predicts stronger effects under higher uncertainty. To evaluate this, we examine whether director-specific benchmarking is more pronounced when uncertainty about the firm or the CEO's ability is greater.

In the regressions reported in Table 11, we augment our firm-level analyses of forced CEO turnovers in Equation (1) with three different interaction variables aimed at capturing the impact of uncertainty. Specifically, we interact *%Worst* with a dummy variable set to one if the firm's standard deviation of returns is above its industry-median (columns (1) and (2)), with a dummy variable set to one if the firm's analyst forecast error is in the top tercile of its industry (columns (3) and (4)), and with a dummy variable set to one if the firm's analyst forecast dispersion is in the top tercile of its industry (columns (5) and (6)).

The results in Table 11 indicate that when there is more uncertainty about firm performance (or its CEO's ability), the relation between *%Worst* and forced CEO turnover is stronger. This conclusion is supported by the positive and statistically significant coefficients on all interaction terms between firm-level uncertainty and *%Worst*. The increased turnover-to-%Worst sensitivity

under high uncertainty is economically meaningful. The point estimate from column (1) indicates that firms with high stock return volatility have a forced turnover-to-%Worst sensitivity that is about 2 times larger than firms with low stock return volatility.[12] In column (3), firms with high analyst forecast errors exhibit a forced turnover-to-%Worst sensitivity that is three times larger than the sensitivity related to firms with low analyst forecast errors.

In general, the cross-sectional findings on board characteristics and uncertainty support the interpretation of the evidence that individual directors directly influence forced CEO turnovers by heuristically using the performance of their directorship firms as performance benchmarks.

4.5 Firm Performance Following CEO Turnovers

So far, we have shown that director-specific benchmarking affects CEO dismissal. While such benchmarking may reflect directors' reliance on availability heuristics to evaluate CEOs, it could also be explained by rational learning, where directors learn about aspects of CEO ability or behavior not fully reflected in conventional performance metrics. As an additional way to distinguish these possibilities, we examine whether director-specific benchmarking improves firm performance. Prior research often finds improvements in firm performance following forced CEO turnovers (Taylor, 2010; Dasgupta, Li, and Wang, 2018). Building on this evidence, we evaluate post-turnover performance to assess whether dismissals linked to interlocked-firm benchmarking are followed by subsequent performance gains. The rationale is that if interlocked-firm benchmarking reflects rational learning, it should produce efficient dismissals. By contrast, if driven by availability heuristics, such decisions may be biased and yield inefficient outcomes.

[12] A one-standard deviation increase in *%Worst* is related to a forced turnover increase of 1.2 percentage points ((0.665 + 0.535)) for high return volatility firms and of 0.6 percentage points increase for low return volatility firms.

4.5.1 Conditional Tests

We study ex-post firm performance conditional on forced CEO turnover in the regressions reported in Panel A of Table 10. The sample includes one year before and two years after each turnover event. We use four dependent variables to measure firm performance: ROA (columns (1) and (2)), market-to-book ratio (columns (3) and (4)), analyst recommendations (columns (5) and (6)), and an indicator equal to one if analysts downgrade the firm post-turnover (columns (7) and (8)).

We measure *%Worst* over the 12 months trailing each CEO dismissal announcement, and *Post* indicates years after the dismissal. In the odd-numbered columns, the key independent variable is *%Worst* interacted with *Post*, capturing the change in performance after CEO dismissal as *%Worst* increases. We also define two independent variables, *%Worst* $\geq$ 50% and 25% < *%Worst* < *50%*, equal to one if the fraction of independent directors for whom the focal company is their worst-performing directorship is greater than or equal to 50%, or is greater than 25% and lower than 50%, respectively. In the even-numbered columns, the key independent variables are these two indicators interacted with post. For example, %*Worst* $\geq$ *50% x Post* captures the change in performance post firing for firms in which the focal firm is the worst performer for more than half of its independent directors, relative to firms with *%Worst*$\leq$*25%.*

The results indicate that CEO dismissals related to interlocked-firm benchmarking are associated with inferior post-turnover performance. A one-standard deviation increase in *%Worst* is associated with a 0.012 decrease in post-turnover changes in ROA (column 1). The effect is economically sizeable: the decrease is 12.8% relative to the standard deviation of ROA. We find similar evidence with the other measures of post-turnover performance: A one-standard deviation increase in *%Worst* is associated with a 9% larger decline in post-firing market-to-book ratio (column 3), and with a 22% larger decrease in post-turnover analyst recommendations (column

5).[13] Furthermore, a one-standard deviation increase in *%Worst* is associated with an increase of 7.3 p.p. in the likelihood of an analyst downgrade post-CEO dismissal (column 7). The results in the even-numbered columns suggest that these effects are primarily driven by situations in which *%Worst* is greater than or equal to 50% (i.e., higher reliance on interlocked-directorship benchmarking). Table IA8 shows that these results are not sensitive to altering the event window.

The post-turnover performance declines documented above are consistent with directors making suboptimal dismissal decisions based on heuristic benchmarking. An alternative explanation is mean reversion driven by unobserved fundamentals: firms with high *%Worst* may have unobserved characteristics that predict continued poor performance following CEO turnover. To address this issue, we follow Oster (2019) and assess how much stronger selection on unobservables would need to be relative to selection on observables to eliminate our results. In particular, for odd-numbered columns we calculate the sensitivity parameter δ, which compares the coefficient movements and changes in R-squared across two regressions—one that includes only *%Worst*, *Post,* and the interaction *%Worst* × *Post*,[14] and another that includes the full set of control variables used in Column (1).

The results in column (1) show that unobserved selection would need to be more than 4.6 times as strong as selection on observables to fully explain away the estimated effects. In some cases (MTB; Analyst recommendations; Analyst downgrades), unobserved selection would have to operate in the opposite direction of the observed controls to eliminate the relationship. Overall, these results indicate that our baseline findings are unlikely explained by an omitted variable bias.

[13] We calculate the effects relative to the standard deviation of MTB and analyst recommendations, respectively.
[14] We include *Post* and *%Worst* in the baseline and more stringent specification because *%Worst x Post* cannot be interpretated without the other two variables.

4.5.2 Unconditional Tests

Next, we contrast firms that dismiss their CEOs and those that retain them. To do so, we split the sample into three subsamples: (1) *%Worst*≥50%, (2) 50%>*%Worst*>25%, and (3) *%Worst*≤25%. For each group, we propensity-score-match turnover firms (treated) to non-turnover firms (control) in the same industry and year, and with similar pre-turnover performance, following Barber and Lyon (1996). Pre-turnover performance measures include stock returns, ROA, and the market-to-book ratio (MTB). Panel B of Table 10 reports the average treatment effect on the treated (ATT) for post-turnover changes in ROA, MTB, analysts' recommendations, and analyst downgrades.

The results in Panel B of Table 10 show that when CEO turnovers are associated with director-specific benchmarking (*%Worst*≥50%), the change in ROA is 0.025 *lower* for turnover firms than for similar firms that retain their CEO. This difference is 29% compared to the standard deviation of post-turnover changes in ROA. By contrast, when CEO turnover is unlikely to be driven by director-specific benchmarking (*%Worst* ≤ 25%), the change in ROA is 0.013 *higher* for a firm that dismisses its CEO compared to matched retention firms, corresponding to 15% of the standard deviation. Similar patterns emerge using other measures of performance, including Market-to-book, analyst downgrades, and analysts' recommendations, respectively.[15]

The evidence in Table 10 suggests that director-specific performance benchmarking leads to inefficient CEO dismissals. This assessment is based on the deterioration in firm performance relative to (a) other dismissals that are not related to director-specific benchmarking, and (b) other matching firms that retain their CEOs. In fact, dismissals unrelated to director-specific benchmarking exhibit post-turnover improvements in firm performance.

[15] Specifically, across all performance measures, the ATTs indicate that dismissals associated with director-specific benchmarking *(%Worst≥50%)* lead to decreases in performance. For example, looking at firms with *%Worst≥50%* in Panel B, the post-turnover change in *MTB* is 0.197 lower for a firm that dismisses its CEO compared to a similar firm that does not. The difference in the change in MTB between these firms is 26.6% of the standard. Conversely, for firms with *%Worst<25%,* the change in *MTB* is 0.072 higher for a firm that dismisses its CEO compared to a similar firm that retains its CEO. The difference in this case is 9.7% relative to the standard deviation.

4.5.4 Turnover Announcement Returns

To complement the results from our post-turnover performance tests, we assess the efficiency of director-specific benchmarking by plotting market reactions to turnover announcements. Specifically, we calculate cumulative abnormal returns (CARs) around forced turnover announcements using the Fama–French six-factor model, estimated over the 252 trading days ending 31 days before the announcement, requiring at least 120 daily return observations.

Figure 3 graphs the results. As before, we present average CARs for three subsamples: (1) $\%Worst \geq 50\%$, (2) $50\% > \%Worst > 25\%$, (3) $\%Worst \leq 25\%$. Panel A and Panel B show CARs over the [-1,+1] and [-1,+5] windows, respectively. Consistent with Hu, Liu, Liu, Qu, and Zhang (2025) and Desir, Seavey, and Thevenot (2024), the CARs are negative across all buckets, indicating that forced turnovers generally convey bad news. More importantly, the negative reaction is amplified when the dismissal is likely driven by director-specific benchmarking ($\%Worst \geq 50\%$). In Panel B, for example, the CAR around dismissal announcements is –3.4% for high *%Worst* firms compared with –1.0% for low *%Worst* firms ($\%Worst \leq 25\%$), and a one-sided *t*-test comparing the two groups yields a *p*-value of 0.0664. Given that the average market capitalization of a firing firm in our sample is $15.8 billion, this difference implies that heuristic dismissals are associated with an average loss in shareholder value of roughly $378 million ((3.4%-1%)× 15.8 billion).

The event study results, coupled with the evidence from our post-turnover performance tests, suggest that director-specific benchmarking leads to inefficient CEO firings, supporting a behavioral rather than an efficiency-based explanation.

4.6 Labor Market Outcomes

We examine whether director-specific performance benchmarking affects the careers of dismissed CEOs. The empirical design follows a matched-sample difference-in-differences framework that considers changes in the number of CEO board seats surrounding dismissals.[16] For each dismissed (or treated) CEO, we match with replacement up to five non-dismissed (or control) CEOs with the closest propensity scores, requiring the difference in propensity scores to be less than 2.5%. We then estimate the following staggered triple difference-in-differences using a Poisson model: [17]

$$\begin{aligned} \#Board\ Seats_{i,c,t} &= \beta_1 Forced\ CEO\ Turnover_{i,c} \times Post_{c,t} \\ &+ \beta_2 Forced\ CEO\ Turnover_{i,c} \times Post_{c,t} \times High\ \%Worst_{c,j,pre} \\ &+ \beta_3 Post_{c,t} \times High\ \%Worst_{c,j,pre} + \gamma X'_{c,j,pre} \times Post_{c,t} + \alpha_{c,t} + \alpha_{c,i} + \epsilon_{i,c,j,t} \quad (6) \end{aligned}$$

where the subscripts i, c, and t denote CEO i, year t, and cohort c, respectively. We consider an event window of 9 years, covering the 4 years before and 4 years after each CEO dismissal.[18] As such, a cohort comprises all treatment and control firms in the 9-year window surrounding the dismissals in a given year. $\#Board\ Seats_{i,c,t}$ is the number of directorships CEO i from cohort c has in year t. $Forced\ CEO\ Turnover_{i,c}$ indicates whether CEO i from cohort c was dismissed. $Post_{c,t}$ indicates cohort-years after the treated CEO was dismissed. $High\ \%Worst_{c,j,pre}$ is an indicator variable equal to one if the firm's %Worst is above the sample median (20%), measured one year before CEO dismissals. $X'_{c,j,pre}$ is a vector of pre-dismissal firm and CEO attributes. We

[16] To construct a matched sample of dismissed and non-dismissed CEOs, we estimate a probit model in which the dependent variable, Dismissed, is set to one if the CEO is dismissed during the year and zero otherwise. The independent variables include measures of past performance (stock returns, industry returns, ROA) and time-varying attributes: (log of) CEO age, CEO-Chair duality, CEO stock ownership, (log of) board size, and (log of) board size. Using the estimates from the probit model, we calculate annual propensity scores of CEO dismissals.

[17] Because the outcome, #Directorships, is left-censored at zero and skewed, we follow Cohn, Liu, and Wardlaw (2022)'s advice and estimate a Poisson model.

[18] RiskMetrics directorships data cover the period between 1996 and 2021. To ensure there is sufficient observations before and after each dismissal, we restrict the analysis to dismissals that occur between 1999 and 2018.

interact these variables with $Post$ to account for the possibility that dismissed CEOs with certain attributes, such as better performance, obtain more board seats following their dismissal. All the specifications include cohort-year fixed effects ($\alpha_{c,t}$), which subsume the indicator variable $Post_{c,t}$, and cohort-CEO fixed effects ($\alpha_{c,i}$), which absorb the indicator variable $Forced\ CEO\ Turnover_{i,c}$. Standard errors are clustered at the CEO level.[19]

Table 11 reports the results. Column (1) provides estimates from the propensity-score probit model. The variables have the expected signs: poor performance and board independence are positively associated with CEO dismissals. CEOs with greater power, as measured by CEO-Chair duality and large equity stakes, are less likely to be fired. These results are in line with prior findings (e.g., Jenter and Kanaan, 2015; Weisbach, 1988; and Jenter and Lewellen, 2021).

In the remaining columns of Table 11, we study director labor market outcomes for dismissed CEOs. Column (2) reports the baseline specification, whereas column (3) adds more firm-level and CEO-level variables interacted with $Post$. The main takeaways are twofold. First, CEOs dismissed by boards with *low %Worst* experience a 58.7% decline in directorships relative to those not dismissed ($e^{-0.885} - 1$). Second, the decline in board seats is attenuated by roughly 25% for CEOs who are fired by boards with *high %Worst* ($e^{0.223} - 1$). Together, these results indicate that dismissed CEOs face penalties in the director labor market, but these penalties are weaker when dismissals are driven by the directorship benchmarking heuristic. These findings augment recent work on the labor market consequences of forced CEO turnovers for directors (von Meyerinck et al., 2025) and on the role of interlocking directors' career concerns in firm policies (Zhang, 2021).

[19] In Equation (6), β_1 captures the change in directorships after a CEO is fired by a board with low *%Worst* (below the sample median) relative to CEOs who are not fired. The coefficient β_2 captures the change in directorships after a CEO is dismissed by a board with high *%Worst* relative to CEOs dismissed by a board with low *%Worst*. Therefore, β_1+β_2 is the total change in directorships for CEOs fired by a board with high *%Worst* relative to retained CEOs.

The identifying assumption for an unbiased coefficient estimate on *Forced CEO Turnover x Post x High %Worst* is weaker than for the standard DID. It does not require parallel trends in directorships of dismissed and non-dismissed CEO. Rather, it is consistently estimated if the difference in directorships of CEOs dismissed by a board with high- vs. low-%Worst trends similarly to that of non-fired CEOs. While this assumption is untestable, Figure 4 presents an event-study plot where we observe no pre-trends, supporting this assumption.[20]

5. Conclusion

This paper shows that outside directors benchmark the performance of their companies against their interlocking firms. When a company ranks worst compared to director-specific groups of interlocking firms, directors are more likely to attend board meetings, and the CEO is more likely to be dismissed. These effects hold in tight specifications, both at the director and firm levels, which include a wide range of performance measures and control variables, as well as alternating sets of fixed effects. We find corroborating evidence in director-departure tests, falsification tests that reshuffle interlocks, and in a quasi-natural experiment around the financial crisis of 2007-2008. Consistent with biased decision-making driven by the availability heuristic, reliance on a small set of interlocked firms to dismiss CEOs leads to worse performance, as reflected in lower ROA, weaker market-to-book ratios, and analyst downgrades, all preceded by negative investor reactions at the time of dismissal.

As the authority of individual directors over key corporate decisions is difficult to measure and assess, our paper takes a step toward understanding how director characteristics and board composition affect corporate outcomes. Our findings indicate that the network of director

[20] The F-test for whether the pre-dismissal coefficients are jointly zero yields a *p*-value of 0.22.

interlocks plays a vital role in the evaluation and replacement of CEOs. The impact of director-specific performance measures on CEO turnovers not only shows that directors exert considerable influence over important corporate decisions but also sheds light on the heuristics they use to simplify complex tasks, with real and adverse consequences for firm performance and value.

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Figure 1: CEO dismissal by %Worst terciles

This figure reports CEO dismissal rates for low, medium and high levels of *%Worst*, defined as the percent of independent directors for whom the firm is the worst performer among all their directorship firms. Panels A and B present dismissal rates for firms with below- and above-median stock returns, respectively. Panels C and D split the sample around the median return on assets (ROA). Panels E and F show results for firms that underperform or outperform their industry according to the Fama–French 12 industry classification. All variable definitions are provided in the Internet Appendix.

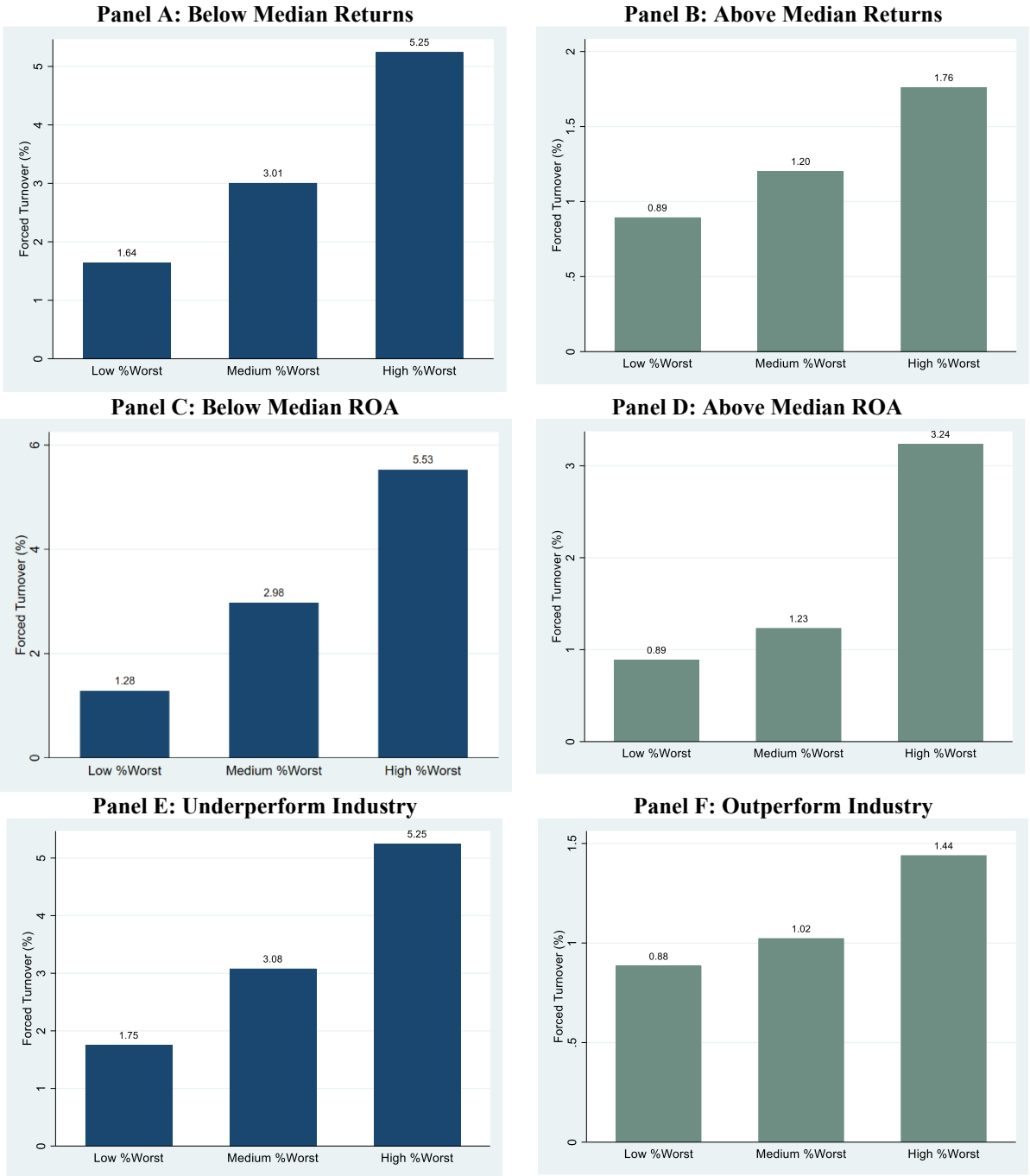


Figure 2: Falsification Tests

This figure presents coefficient estimates from 1,000 placebo regressions that randomly reshuffle director interlocks across firms. In particular, we randomly assign *%Worst* to a different firm within the same industry, year, and size tercile as the focal firm, and then re-estimate the specification from column (5) of Table 3. The dependent variable is an indicator for forced CEO turnovers, and the key independent variable is *%Worst*. We repeat this procedure 1,000 times and plot the estimated coefficients on *%Worst*. The Red horizontal line represents the original coefficient estimate from the specification in column (5) of Table 3. *%Worst* is the percent of independent directors for whom the firm is the worst performer among all their directorship firms. All variable definitions are provided in the Internet Appendix.

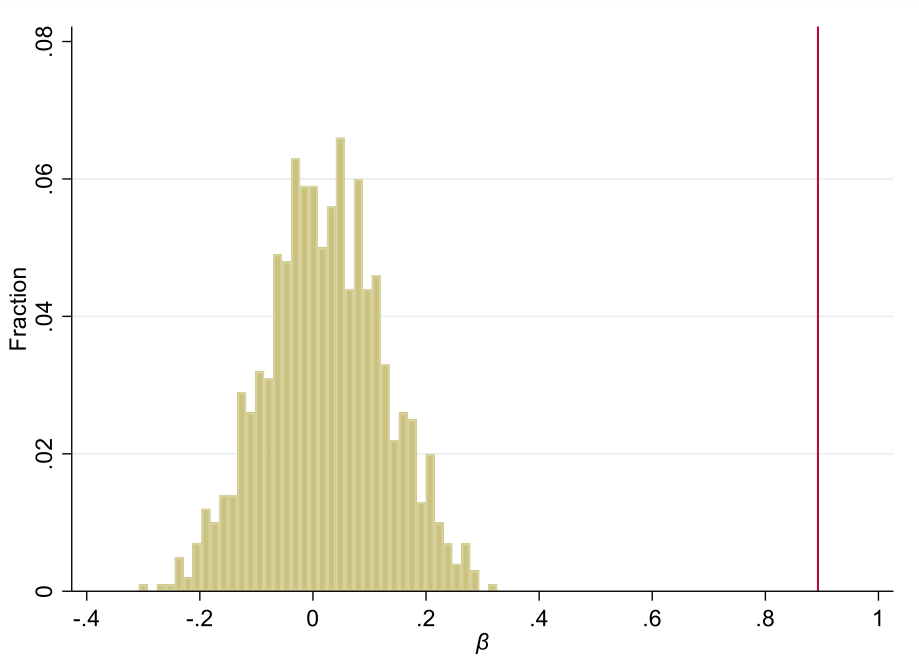
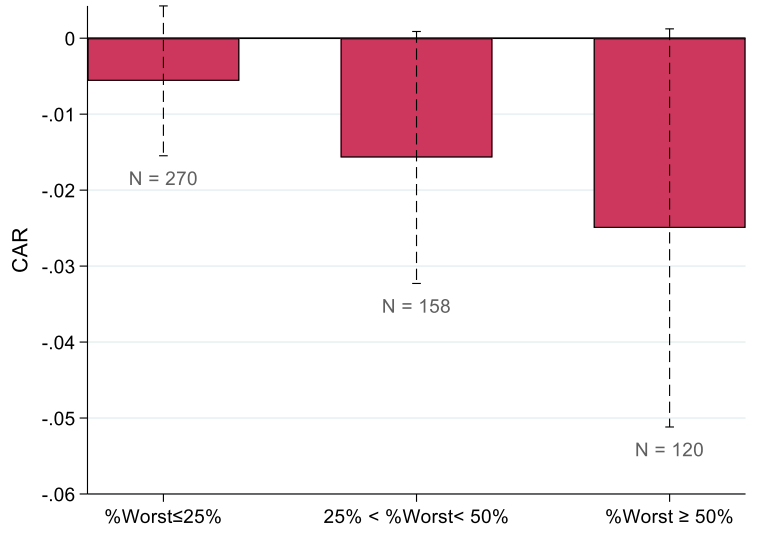


Figure 3: Market reaction to CEO turnover

This figure presents average cumulative abnormal returns (CARs) around forced CEO turnovers for three subsamples sorted on *%Worst* prior to the turnover: (1) *%Worst≥50%*, (2) *50%>%Worst>25%*, and (3) *%Worst≤25%*. *%Worst* is the percent of independent directors for whom the firm is the worst performer among all their directorship firms. Panel A calculates CARs over a [-1, 1] window, whereas Panel B considers a [-1, 5] window. The vertical bars denote 90% confidence intervals, and the number of observations appears below each bar. The CARs are estimated using the Fama–French six-factor model, with parameters obtained from one year (252 trading days) of daily returns ending one month (31 trading days) before the turnover announcement. We require at least 120 valid trading days during the estimation window. All variable definitions are provided in the Internet Appendix.

Panel A: CAR [-1, 1]



Panel B: CAR [-1,5]

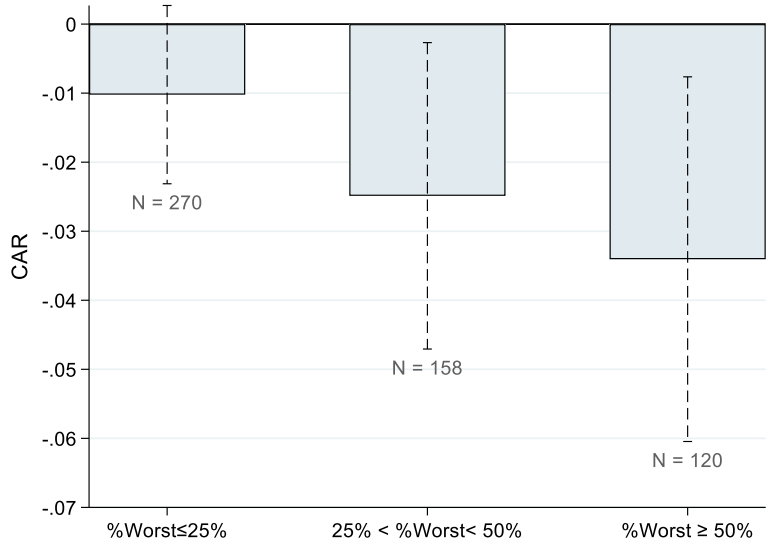


Figure 4: Changes in CEO Directorships surrounding CEO Dismissals

This figure plots coefficient estimates from dynamic difference-in-differences specifications predicting the number of board seats that a CEO holds around CEO dismissals. Specifically, it reports estimates from the following model:

$$\#Board\ Seats_{i,c,t} = \sum_{k=-4,k!=-1}^{4} \delta_k\ Forced\ CEO\ Turnover_{i,c,t} \times High\ \%Worst_{c,j,pre} \times 1(t=k)_{c,t} + \sum_{k=-4,k!=-1}^{4} \eta_k\ Forced\ CEO\ Turnover_{i,c,t} \times 1(t=k)_{c,t} + \gamma X'_{c,j,pre} \times Post_{c,t} + \alpha_{c,t} + \alpha_{c,i} + \epsilon_{i,c,j,t}$$

Where $\#Board\ Seats_{i,c,t}$ is the number of boards that CEO i serves on in year t, $Dimissed_{i,c,t}$ is an indicator that equals 1 if the CEO is forced out, *%Worst* is the percent of independent directors for whom the firm is the worst performer among all their directorship firms, and $1(t=k)_{c,t}$ indicates whether year t in cohort c is equal to k years after the CEO is dismissed. The figure plots the coefficient δ_k. Vertical bars denote 95% confidence intervals. All variable definitions are provided in the Internet Appendix.

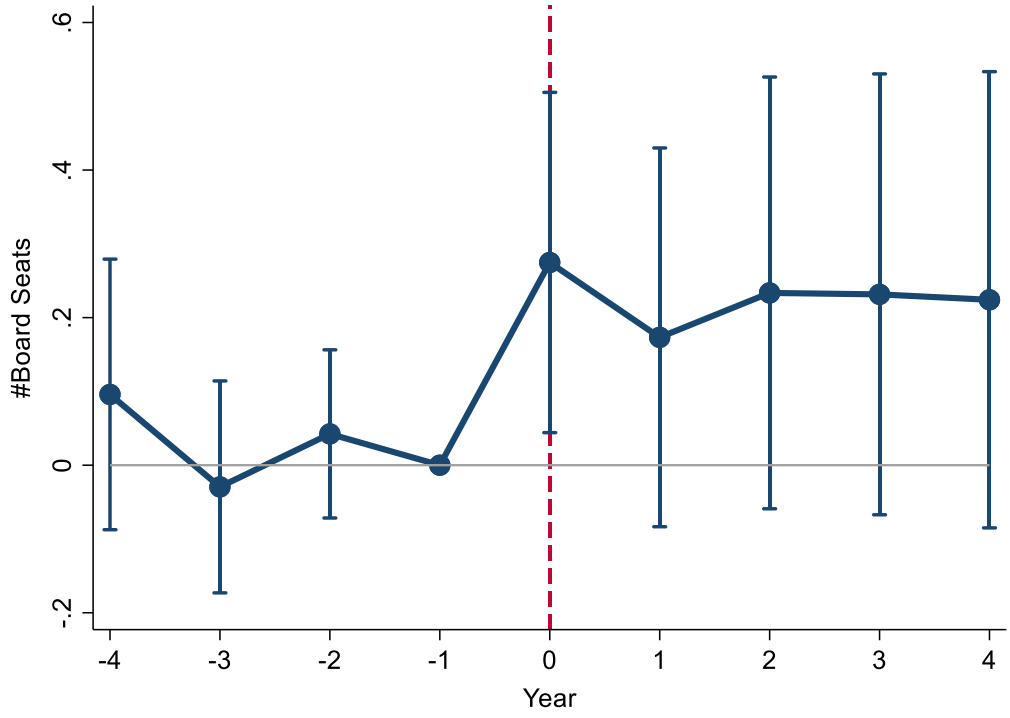


Table 1. Summary Statistics

This table reports summary statistics for directors and their firms from 1997 until 2019. Panel A reports firm-level summary statistics. Panel B reports director-level summary statistics. The director sample is restricted to directors serving on at least two boards in RiskMetrics. All variable definitions are provided in the Internet Appendix.

	Mean	Median	SD.	P10	P25	P75	P90	N
Panel A: Firm-level								
%Worst	0.180	0.143	0.190	0.000	0.000	0.286	0.444	23369
%Best	0.181	0.143	0.191	0.000	0.000	0.286	0.444	23369
Forced CEO turnover (%)	2.508	0.000	15.636	0.000	0.000	0.000	0.000	23369
All turnover (%)	10.681	0.000	30.888	0.000	0.000	0.000	100.000	23369
RET[t]	0.122	0.097	0.394	-0.121	-0.121	0.318	0.584	23369
RET[t-1]	0.143	0.106	0.409	-0.105	-0.105	0.332	0.617	23369
Industry RET[t]	0.185	0.173	0.260	0.037	0.037	0.318	0.481	23369
ROA[t]	0.130	0.124	0.083	0.080	0.080	0.174	0.234	23369
SD RET[t]	0.351	0.300	0.221	0.214	0.214	0.423	0.592	23369
Ln (Asset)	8.197	8.027	1.685	6.946	6.946	9.292	10.479	23369
CEO age	56.191	56.000	6.471	52.000	52.000	60.000	64.000	23369
CEO tenure	7.679	6.000	6.667	3.000	3.000	10.000	16.000	23369
CEO-Chair	0.564	1.000	0.496	0.000	0.000	1.000	1.000	23369
CEO ownership (%)	0.015	0.003	0.045	0.001	0.001	0.008	0.030	23369
Board size	9.767	10.000	2.490	8.000	8.000	11.000	13.000	23369
Board independence	0.760	0.800	0.140	0.667	0.667	0.875	0.900	23369
Busy board	0.200	0.000	0.400	0.000	0.000	0.000	1.000	23369
%Lowest size-rank	0.188	0.167	0.176	0.000	0.000	0.286	0.429	23369
%Highest size-rank	0.173	0.125	0.189	0.000	0.000	0.286	0.444	23369
Avg #Board seats	1.245	1.167	0.417	1.000	1.000	1.455	1.778	23369
%Multiple boards	0.587	0.600	0.221	0.429	0.429	0.750	0.875	22521
Panel B: Director-level								
Best	0.407	0.000	0.491	0.000	0.000	1.000	1.000	59455
Worst	0.406	0.000	0.491	0.000	0.000	1.000	1.000	59455
Large	0.562	1.000	0.496	0.000	0.000	1.000	1.000	59455
Small	0.554	1.000	0.497	0.000	0.000	1.000	1.000	59455
#Pub board seats	3.069	3.000	1.162	2.000	2.000	4.000	5.000	57268
#Board seats	2.430	2.000	0.756	2.000	2.000	3.000	3.000	59455
Tenure	7.519	6.000	5.795	3.000	3.000	11.000	15.000	57257
Director age	62.966	64.000	6.754	59.000	59.000	68.000	71.000	59409
Miss more than 25% of board meetings	1.267	0.000	11.183	0.000	0.000	0.000	0.000	59455

Table 2. Board Meeting Attendance

This table examines the relation between the performance ranking of interlocked firms and board meeting attendance for independent directors. The unit of observation is a director–firm–year triplet, and the sample includes directors serving on at least two boards. The dependent variable equals 100 if a director misses more than 25% of board meetings and zero otherwise. *Best (Worst)* is an indicator variable equal to one if the focal firm's performance is the best (worst) among the director's interlocked firms. *Large (Small)* is an indicator variable equal to one if the focal firm is at least 10% larger (smaller) than the director's smallest (largest) interlocked firm. *Director Tenure* is the number of years that the director served on the board of the focal firm. *Director ownership* is the fraction of the focal firm's shares outstanding owned by the director. All variable definitions are provided in the Internet Appendix. The regressions include director-by-year fixed effects and alternate with respect to firm-by-year fixed effects. Robust standard errors are clustered at the director level and reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Dep. variable	Miss more than 25% of meetings*100				
	(1)	(2)	(3)	(4)	(5)
Worst	-0.214**	-0.603***			-0.482**
	(0.093)	(0.197)			(0.236)
Best			0.237**	0.485**	0.271
			(0.095)	(0.214)	(0.254)
Large	-0.262	-0.148	-0.266	-0.155	-0.154
	(0.166)	(0.245)	(0.166)	(0.245)	(0.245)
Small	0.155	0.559**	0.148	0.551**	0.560**
	(0.167)	(0.235)	(0.166)	(0.235)	(0.235)
Director Tenure	-0.009	-0.008	-0.009	-0.008	-0.008
	(0.013)	(0.018)	(0.013)	(0.018)	(0.018)
Director ownership	-86.715	-60.869	-87.014	-60.933	-60.656
	(52.884)	(65.129)	(53.000)	(65.292)	(65.171)
Director x Year FE	No	Yes	No	Yes	Yes
Firm x Year FE	Yes	Yes	Yes	Yes	Yes
Adj-R-sq	0.083	0.074	0.083	0.074	0.074
Obs	57245	57245	57245	57245	57245
p-value(Best=worst)					0.001
Pr(Miss more than 25% of meetings)					1.1

Table 3. Firm-Level Analyses of Forced CEO Turnovers

This table examines the relation between the performance ranking of interlocked firms and forced CEO turnovers in an annual panel of firms. Columns (1) and (2) report estimates from logit regressions, whereas columns (3)–(9) report OLS estimates. The dependent variable, *Forced CEO Turnover,* equals 100 if the CEO is forced out and zero otherwise. Following, Parrino (1997), a turnover is classified as forced if the press reports that the CEO was fired, forced out, or resigned due to policy differences. All other departures of CEOs older than 60 are voluntary. Departures of CEOs younger than 60 are forced if the press does not report the reason as death, poor health, or if the departure was announced less than six months before it occurred. *%Worst (%Best)* is the percent of independent directors for whom the focal firm is the worst (best) performer among their directorship firms. All variable definitions are provided in the Internet Appendix. Standard errors, reported in parentheses, are clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dep. variable	Forced CEO Turnover								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
%Worst	1.068***	2.194***	0.792***	0.937***	0.893***				0.769***
	(0.216)	(0.374)	(0.143)	(0.158)	(0.170)				(0.151)
%Best						-0.303***	-0.333**	-0.321**	-0.081
						(0.084)	(0.137)	(0.151)	(0.091)
RET[t]	-2.499***	-1.807***	-1.722***	-1.660***	-1.465***	-2.012***	-2.022***	-1.817***	-1.687***
	(0.201)	(0.228)	(0.159)	(0.166)	(0.185)	(0.154)	(0.173)	(0.191)	(0.162)
ROA[t]	-2.401***	-1.225*	-0.646***	-0.262*	-0.859***	-0.623***	-0.248*	-0.845***	-0.642***
	(0.545)	(0.691)	(0.110)	(0.143)	(0.246)	(0.111)	(0.143)	(0.246)	(0.110)
Industry RET[t]	0.903***	0.587***	0.561***	0.443***	0.283*	0.620***	0.463***	0.296**	0.555***
	(0.188)	(0.217)	(0.148)	(0.149)	(0.145)	(0.148)	(0.149)	(0.145)	(0.148)
Avg #Board Seats		0.169		0.147	0.596*		-0.119	0.364	
		(0.302)		(0.287)	(0.359)		(0.287)	(0.355)	
%Single directorship		0.815		0.219	0.568		-0.433	-0.043	
		(0.891)		(0.409)	(0.470)		(0.419)	(0.474)	
RET[t-1]		-0.896***		-0.947***	-0.870***		-0.952***	-0.880***	
		(0.151)		(0.124)	(0.129)		(0.124)	(0.129)	
Interlocked RET[t]		-0.108		-0.294	-0.417		0.261	0.186	
		(0.171)		(0.374)	(0.470)		(0.381)	(0.480)	
SD RET[t]		0.341***		1.735***	1.560***		1.795***	1.604***	
		(0.062)		(0.212)	(0.259)		(0.212)	(0.259)	
ln(Asset)		0.094**		0.400**	-0.319		0.443**	-0.268	
		(0.046)		(0.196)	(0.628)		(0.196)	(0.627)	
ln(CEO age)		-1.228***		-0.335***	-1.016***		-0.330***	-1.013***	
		(0.404)		(0.109)	(0.222)		(0.109)	(0.222)	
ln(CEO tenure)		0.332***		0.635***	2.420***		0.635***	2.421***	
		(0.058)		(0.107)	(0.192)		(0.108)	(0.192)	
CEO-Chair		-0.689***		-1.623***	-2.082***		-1.631***	-2.076***	
		(0.105)		(0.252)	(0.409)		(0.252)	(0.410)	
CEO ownership(%)		-7.753*		-0.400***	-0.467**		-0.394***	-0.464**	
		(4.437)		(0.117)	(0.224)		(0.117)	(0.223)	
ln(board size)		0.562**		0.342**	0.767***		0.339**	0.770***	
		(0.239)		(0.136)	(0.252)		(0.137)	(0.253)	
Board Independence		0.602		0.248	-0.184		0.396*	-0.049	
		(0.673)		(0.206)	(0.295)		(0.205)	(0.293)	
%Lowest Size-Rank		-0.980		-0.263	-0.039		-0.133	0.084	
		(0.625)		(0.256)	(0.314)		(0.257)	(0.315)	
%Highest Size-Rank		-0.730		-0.233	-0.143		-0.175	-0.098	
		(0.639)		(0.255)	(0.309)		(0.257)	(0.310)	
Year FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	Yes	No	No	Yes	No	No
Firm FE	No	No	No	No	Yes	No	No	Yes	No
Model	Logit	Logit	OLS	OLS	OLS	OLS	OLS	OLS	OLS
N	23369	23160	23369	23369	23369	23369	23369	23369	23369
Adj-R-sq			0.020	0.036	0.055	0.019	0.035	0.054	0.020
% (Mean)	19.44	41.19							

Table 4. Director-Level Analyses of Forced CEO Turnovers

This table examines the relation between the performance ranking of interlocked firms and forced CEO turnovers in an annual panel of director-firms. The dependent variable, *Forced CEO Turnover,* equals 100 if the CEO is dismissed and zero otherwise. *Worst* is an indicator variable that equals one if the focal firm is the worst performing firm among a director's interlocked firms. *Best* is an indicator variable that equals one if the focal firm is the best performing firm among a director's interlocked firms. The regressions include all the control variables included in column (5) of Table 3. All variable definitions are provided in the Internet Appendix. Standard errors (in parenthesis) are clustered at the director level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variable	Forced CEO Turnover					
	(1)	(2)	(3)	(4)	(5)	(6)
Worst	1.102***	1.164***	0.941***			
	(0.288)	(0.249)	(0.180)			
Best				0.019	-0.280	-0.198
				(0.323)	(0.329)	(0.305)
Large	0.162	0.227	0.208	-0.378	-0.251	-0.330
	(0.302)	(0.316)	(0.323)	(0.338)	(0.333)	(0.383)
Small	0.208	0.212	0.247	-0.323	-0.247	-0.185
	(0.249)	(0.217)	(0.265)	(0.267)	(0.292)	(0.342)
Director Tenure	-0.013	-0.008	-0.015	-0.009	-0.005	-0.012
	(0.023)	(0.023)	(0.024)	(0.026)	(0.028)	(0.032)
Director ownership	-92.951**	-107.169**	-72.616	-57.308	-62.892	-51.761
	(41.677)	(46.455)	(46.949)	(59.389)	(65.940)	(47.738)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Director x Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	No	Yes	Yes	No	Yes	Yes
Firm FE	No	No	Yes	No	No	Yes
Adj-R-sq	0.038	0.080	0.157	0.035	0.082	0.155
Obs	57245	57245	57245	57245	57245	57245

Table 5. Director Departures

This table investigates the relation between director benchmarking and CEO turnovers before vs. after director departures. The dependent variable, *Forced CEO Turnover,* equals 100 if the CEO is dismissed and zero otherwise. Panel A considers each and every case where a director leaves one or more firms. Panel B focuses on exogenous departures, defined as retiring from the director labor market entirely (i.e., leaving all boards at the age of 65 or older), or departures due to health reasons or death. Columns (1)–(3) examine the six years before the director departs, whereas columns (4)–(6) examine the six years following the departure. In columns (1)-(3), *%Worst Leaver* is the percentage of departing directors for whom the focal firm is the worst-performing among their directorships. In columns (4)-(6), *%Worst Leaver* is calculated as if the departing directors had remained on the board. *Controls* indicates whether the control variables included in column (5) of Table 3 are included. *p-values* from t-tests comparing the coefficients on *%Worst Leaver* between the pre-and post-departure analyses are reported at the bottom of columns (4)–(6). All variable definitions are provided in the Internet Appendix. Standard errors (in parenthesis) are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. Var.	Forced CEO Turnover					
Sample:	Before Departure			After Departure		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: All Departures						
%Worst Leaver	0.896***	0.737***	0.473	-0.006	-0.082	-0.164
	(0.260)	(0.274)	(0.332)	(0.258)	(0.253)	(0.255)
RET[t]	-2.013***	-1.990***	-1.159***	-1.620***	-1.841***	-1.431***
	(0.303)	(0.315)	(0.374)	(0.357)	(0.382)	(0.428)
ROA[t]	-0.690***	-0.213	-1.263*	-0.582**	-0.558*	-1.238**
	(0.250)	(0.320)	(0.653)	(0.243)	(0.293)	(0.586)
Industry Ret[t]	0.696**	0.439	-0.058	0.115	-0.023	-0.641
	(0.271)	(0.282)	(0.321)	(0.469)	(0.465)	(0.429)
R2	0.023	0.034	0.096	0.010	0.028	0.083
N	5928	5928	5928	4109	4109	4109
P-value				0.01	0.03	0.13
				Vs. col (1)	Vs. col (2)	Vs. col (3)
Panel B: Exogenous Departures						
%Worst Leaver	1.032***	1.072***	0.795*	-0.081	-0.113	-0.344
	(0.313)	(0.343)	(0.437)	(0.424)	(0.418)	(0.431)
RET[t]	-0.982**	-0.926*	-0.663	-2.687***	-2.872***	-2.558***
	(0.491)	(0.504)	(0.552)	(0.624)	(0.636)	(0.634)
ROA[t]	-0.331	-0.276	-0.882	-0.562	0.193	-0.362
	(0.326)	(0.499)	(1.177)	(0.490)	(0.662)	(0.919)
Industry Ret[t]	0.723	0.660	0.379	0.140	-0.093	0.403
	(0.467)	(0.457)	(0.444)	(0.656)	(0.648)	(0.610)
R2	0.016	0.019	0.055	0.016	0.047	0.094
N	1972	1972	1972	2108	2108	2108
P-value				0.03	0.03	0.06
				Vs. col (1)	Vs. col (2)	Vs. col (3)
Controls	No	Yes	Yes	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Firm FE	No	No	Yes	No	No	Yes

Table 6. Falsification Tests

This table reports regression estimates from falsification tests that reshuffle interlocked directorates across firms. Panel A tests whether director benchmarking is associated with forced CEO turnovers at other firms in the same industry. The dependent variable, *%Interlock Peer Forced CEO Turnover,* is the fraction of a firm's industry peers that dismiss their CEOs in a given year. %Worst is the percent of independent directors for whom the focal firm is the worst performer among their directorship firms. Panel B tests whether peer firms' director benchmarking is associated with forced CEO turnovers at the focal firm. The dependent variable, *Forced CEO Turnover*, equals 100 if the CEO is dismissed and zero otherwise. Each firm–year observation is matched (with replacement) to a peer firm in the same industry and year with similar characteristics—firm size, lagged stock return, market-to-book ratio, and ROA. To ensure a sufficient number of peer firms, we restrict the sample to industries with more than 15 firms. To ensure match quality, we drop matches where the absolute difference in characteristics between focal and peer firms falls in the top decile. *Peer %Worst* is the percent of independent directors for whom the peer firm is the worst-performing among their directorship firms. *Controls* indicates whether the control variables from Table 3, column (5), are included. All variable definitions are provided in the Internet Appendix. Standard errors (in parenthesis) are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: CEO Turnovers at Industry Peers

Dep. variable	%Interlock Peer Forced CEO Turnover		
	(1)	(2)	(3)
%Worst	-0.015	-0.035	-0.024
	(0.033)	(0.032)	(0.035)
Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	No	Yes	No
Firm FE	No	No	Yes
Adj-R-sq	0.034	0.115	0.094
Obs	23326	23326	23326

Panel B: Peers' Interlocks

Dep. variable	Forced CEO Turnover		
	(1)	(2)	(3)
Peer %Worst	0.062	0.058	0.081
	(0.134)	(0.135)	(0.145)
Year FE	Yes	Yes	Yes
Industry FE	No	Yes	No
Firm FE	No	No	Yes
Adj-R-sq	0.028	0.031	0.059
Obs	13012	13007	13012

Table 7. The Global Financial Crisis

This Table provides estimates from difference-in-differences regressions studying the effect of directors with external board seats at banks around the global financial crisis (Panel A) and the so-called "internet bubble burst" (Panel B). The dependent variable is columns (1)-(2) is *%Worst,* defined as the percent of independent directors for whom the focal firm is the worst performer among their directorship firms. The dependent variable is columns (3)-(4) is *Forced CEO Turnover*, which equals 100 if the CEO is dismissed and zero otherwise. In Panel A, *Bank-director* is an indicator variable equal to one if a firm has a director holding external board seats at banks in 2005. $Post$ is an indicator variable that equals one after 2007 and zero otherwise. In Panel B, the sample is 1997-2003, *Bank-director* is an indicator variable that equals one if a firm has a director holding external board seats at banks in 1999, and $Post$ is an indicator variable that equals one after 2000. All variable definitions are provided in the Internet Appendix. Standard errors (in parenthesis) are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: The Global Financial Crisis				
Dep. variable	%Worst		Forced CEO Turnover	
	(1)	(2)	(3)	(4)
Bank-director x Post	-0.030*	-0.023*	-2.258**	-2.289**
	(0.016)	(0.013)	(0.981)	(0.995)
RET[t]		-0.370***		-4.583***
		(0.018)		(1.202)
ROA[t]		0.043		-22.780**
		(0.086)		(9.854)
Log(AT)		-0.007		-4.096*
		(0.020)		(2.289)
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Adj-R-sq	0.206	0.493	0.138	0.156
Obs	7248	7248	7248	7248
Panel B: The Collapse of the Internet Bubble (Placebo test)				
Dep. variable	%Worst		Forced CEO Turnover	
	(1)	(2)	(3)	(4)
Bank-director x Post	0.023	0.012	-0.721	-1.081
	(0.020)	(0.016)	(1.229)	(1.219)
RET		-0.345***		-3.667***
		(0.019)		(1.357)
ROA		-0.044		-20.272**
		(0.109)		(8.404)
Log(AT)		0.011		1.259
		(0.019)		(1.652)
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Adj-R-sq	0.188	0.512	0.107	0.119
Obs	8608	8608	8608	8608

Table 8. Board Characteristics

This table studies the role of boar characteristics in director benchmarking. The dependent variable, *Forced CEO Turnover,* equals 100 if the CEO is dismissed and zero otherwise. In Panel A, we examine the role of monitoring committees. Monitoring committees include the nominating, compensation, governance, and audit committees. *Monitoring* %Worst is the percent of independent directors serving on monitoring committees for whom the focal firm is the worst performing firm among their directorship firms. *Rest-of-Board %Worst* is defined analogously for all other independent board members. Panels B and C examine board busyness at the firm and director levels, respectively. *%Worst* is the percent of independent directors for whom the focal firm is the worst performing firm among their directorship firms. *Avg #Board Seats* is the average number of directorships of independent board members. *#Board Seats* is the number of directorships for each independent board member. In columns (1) – (4) of Panel B, we split the sample based on *Avg #Board Seats*. In columns (1) and (2), we subsample to firms with *Avg #Board Seats* below and above the sample median, respectively. In columns (3) and (4), we subsample to firms with *Avg #Board Seats* in the top quartile and top decile, respectively. In column (5), we use the full sample. In Panel C, columns (1) and (2), the sample is divided into independent directors with less vs. more than three directorships, respectively. The regressions include all the control variables included in column (5) of Table 3. All variable definitions are provided in the Internet Appendix. Standard errors (in parenthesis) are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: Monitoring Committee

Dep. variable	Forced CEO turnover				
	(1)	(2)	(3)	(4)	(5)
Monitoring %Worst	0.770***	0.782***			0.781***
	(0.158)	(0.172)			(0.171)
Rest-of-board %Worst			0.080	0.048	0.079
			(0.127)	(0.132)	(0.131)
Controls	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	No	Yes	No	No
Firm FE	No	Yes	No	Yes	Yes
Adj-R-sq	0.036	0.055	0.035	0.054	0.055
Obs	23369	23369	23369	23369	23369
p-value of monitoring – rest of the board					0.00

Panel B: Busy Directors – Firm Level

Dep. variable	Forced CEO turnover				
Sample:	Below median <1.17	Above median ≥1.17	Top quartile ≥1.45	Top decile ≥1.78	Full Sample
	(1)	(2)	(3)	(4)	(5)
%Worst	0.586**	0.931***	1.207***	1.681***	0.779***
	(0.297)	(0.226)	(0.318)	(0.549)	(0.177)
%Worst x Avg #Board Seats					0.172
					(0.117)
Year FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Adj-R-sq	0.072	0.070	0.054	0.043	0.056
Obs	11723	11646	6023	2449	23369
P-value: vs column (1)		0.33	0.12	0.03	

Panel C: Busy Directors – Director Level			
Sample:	<=3	>3	Full Sample
Dep. variable	Forced CEO turnover		
	(1)	(2)	(3)
Worst	0.635***	2.200***	0.535***
	(0.192)	(0.709)	(0.205)
Worst x #Board Seats			0.657**
			(0.264)
Large	0.154	1.135	0.209
	(0.323)	(0.904)	(0.292)
Small	0.316	-0.385	0.265
	(0.318)	(0.734)	(0.284)
Tenure	-0.005	-0.046	-0.011
	(0.021)	(0.059)	(0.020)
Director ownership	-96.495*	30.196	-89.000*
	(51.026)	(96.536)	(47.911)
Controls	Yes	Yes	Yes
Director x Year FE	Yes	Yes	Yes
Adj-R-sq	0.038	0.033	0.038
Obs	52491	4754	57245
P-value: vs column (1)		0.03	

Table 9. Uncertainty

This table studies the role of uncertainty in director benchmarking. The dependent variable, *Forced CEO Turnover,* equals 100 if the CEO is dismissed and zero otherwise. *%Worst* is the percent of independent directors for whom the focal firm is the worst performing firm among their directorship firms. We use three measures of uncertainty: (1) *High SD RET*, defined as an indicator variable that equals one if the firm's stock return is above its industry median. Standard deviation of stock returns is calculated based on monthly stock returns over the fiscal year. (2) *High error*, defined as an indicator variable that equals one if the firm's analyst forecasts error is in the top tercile of its industry. (3) *High dispersion*, defined as an indicator variable that equals one if firm's analyst forecasts dispersion is in the top tercile of its industry. The regressions include all the control variables included in column (5) of Table 3. All variable definitions are provided in the Internet Appendix. Standard errors (in parenthesis) are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variable	Forced CEO Turnover					
	(1)	(2)	(3)	(4)	(5)	(6)
%Worst	0.665***	0.597***	0.593***	0.506***	0.745***	0.682***
	(0.173)	(0.183)	(0.164)	(0.180)	(0.181)	(0.195)
%Worst x High SD RET	0.535**	0.607**				
	(0.255)	(0.267)				
%Worst x High error			1.011***	1.187***		
			(0.297)	(0.320)		
%Worst x High dispersion					0.606**	0.556*
					(0.292)	(0.306)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	No	Yes	No
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry x Year FE	No	Yes	No	Yes	No	Yes
Adj-R-sq	0.036	0.056	0.038	0.057	0.036	0.054
Obs	23369	23369	23034	23034	22471	22471

Table 10. Post-Turnover Performance

This table studies firm performance after forced turnovers. Panel A reports estimates from conditional tests that restricts the analysis to a [+2, -1] event window surrounding forced turnovers. The dependent variables are *ROA* (columns (1)–(2)), the *market-to-book ratio* (columns (3)–(4)), *analyst recommendations* (columns (5)–(6)), and an *analyst downgrade* indicator variable (columns (7)–(8)). *%Worst* is the percent of independent directors for whom the focal firm is the worst performing firm among their directorship firms, measured in the year of the firing (event time = 0). $\%Worst \geq 50\%$ indicates whether *%Worst* is at least 50%, and $25\% < \%Worst < 50\%$ is an indicator variable equal to one if *%Worst* is greater than 25% and less than 50%. *Post* is an indicator variable equal to one for years after CEO dismissals and zero otherwise. The regressions include the following control variables: *Stock returns, Industry stock returns, Log CEO tenure, Log CEO age, CEO–chair duality, and Board independence*. δ is the Oster (2019) sensitivity parameter, calculated using two regressions: one that includes only %Worst, Post, and %Worst × Post, and a second that corresponds to the full specification in Column (1), which adds the complete set of control variables. Panel B reports estimates from an unconditional test that compares firm performance across firms that dismiss their CEOs ("treated firms") and those that retain their CEOs ("control firms"). The sample is split into three subsamples based on %Worst: (1) $\%Worst \geq 50\%$, (2) $25 < \%Worst < 50\%$, and (3) $\%Worst \leq 25\%$. For each subsample, treated firms (that dismissed their CEOs) are matched to control firms (that retained their CEOs) in the same industry and year, with similar pre-turnover performance using propensity score matching, and calculate the average change in performance from the year of forced CEO turnover to two years after the turnover. Sub-Panels 1-4 measure firm performance using ROA, the market-to-book ratio (MTB), analyst recommendations, and analyst downgrades, respectively. For each subsample and performance measure, we report the average treatment effect on the treated (ATT). All variable definitions are provided in the Internet Appendix. Standard errors (in parenthesis) are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: Conditional Test

Dep. variable	*ROA*		*MTB*		*Analyst recommendations*		*Analyst downgrade*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
%Worst x Post	-0.012***		-0.086***		-0.102***		0.073***	
	(0.004)		(0.032)		(0.022)		(0.023)	
%Worst > 50% x Post		-0.028***		-0.193**		-0.189***		0.125**
		(0.010)		(0.076)		(0.056)		(0.059)
25%<%Worst<50% x Post		-0.010		-0.127*		-0.078		0.080
		(0.008)		(0.067)		(0.050)		(0.056)
Post	0.006	-0.002	0.074	0.036	0.019	-0.056*	-0.134***	-0.085**
	(0.005)	(0.005)	(0.053)	(0.041)	(0.037)	(0.032)	(0.040)	(0.034)
%Worst	0.004		0.031		0.027		-0.036**	
	(0.004)		(0.039)		(0.019)		(0.016)	
%Worst > 50%		0.009		0.126		0.022		-0.050
		(0.010)		(0.091)		(0.048)		(0.039)
25%<%Worst<50%		0.006		0.057		0.028		-0.023
		(0.008)		(0.089)		(0.042)		(0.035)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R-sq	0.216	0.215	0.278	0.278	0.130	0.125	0.017	0.013
Obs	2089	2089	2082	2082	2076	2076	2030	2030
δ	4.608		-4.404		-3.234		-0.888	

Panel B: Unconditional Test				
(1) ATT $\Delta_{t,t+2}$*ROA*				
	ATT	*p*-value	Treated obs.	Control obs.
$\%Worst \geq 50\%$	-0.025**	0.049	92	167
$50\% > \%Wost > 25\%$	-0.003	0.702	187	345
$\%Worst \leq 25\%$	0.013**	0.024	227	436
(2) ATT $\Delta_{t,t+2}$ *MTB*				
$\%Worst \geq 50\%$	-0.197*	0.070	89	160
$50\% > \%Wost > 25\%$	-0.052	0.438	188	347
$\%Worst \leq 25\%$	0.072	0.244	228	439
(3) ATT $\Delta_{t,t+2}$*Analyst recommendations*				
$\%Worst \geq 50\%$	-0.082	0.245	85	150
$50\% > \%Wost > 25\%$	-0.015	0.775	171	320
$\%Worst \leq 25\%$	0.080*	0.085	209	404
(4) ATT $\Delta_{t,t+2}$ *Analyst Downgrades*				
$\%Worst \geq 50\%$	0.167**	0.015	81	141
$50\% > \%Wost > 25\%$	0.020	0.665	171	320
$\%Worst \leq 25\%$	-0.049	0.245	206	398

Table 11: Director Labor Markets

This table reports estimates from staggered matched difference-in-differences regressions explaining CEOs' directorships surrounding CEO dismissals. Column (1) reports estimates from a probit model in which the dependent variable is *Forced CEO Turnover*, which equals 100 if the CEO is dismissed and zero otherwise, and the independent variables are known determinants of CEO turnovers. We use the estimates from column (1) to calculate propensity scores and match each dismissed CEO to the five closest non-dismissed CEOs, requiring the difference in propensity scores to be lower than 2.5%. Columns (2) and (3) report estimates from matched-sample Poisson specifications in which the dependent variable is the number of board seats that the CEO holds, excluding the focal firm. *Forced CEO Turnover* is an indicator variable that equals one if the CEO was dismissed. *Post* indicates years after the CEO's dismissal. *High %Worst* is an indicator variable that equals one if *%Worst* is above the sample median (20%), measured one year before the year of the CEO's dismissal. *%Worst* is the percent of independent directors for whom the focal firm is the worst performing firm among their directorship firms. The additional controls include *ROA*, *Ln(Age), CEO-Chair, and %Ownership*. All variable definitions are provided in the Internet Appendix. Standard errors clustered at the CEO level are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variables	Forced CEO Turnover	*#Board seats*	
	(1)	(2)	(3)
Forced CEO Turnover x Post		-0.877***	-0.885***
		(0.098)	(0.101)
Forced CEO Turnover x Post x High %Worst		0.207*	0.223*
		(0.117)	(0.120)
Post x High %Worst		0.035	0.037
		(0.036)	(0.036)
Post x RET[t]		0.164**	0.194***
		(0.065)	(0.073)
Post x RET[t-1]		-0.016	-0.058
		(0.047)	(0.047)
RET[t]	-1.041***		
	(0.066)		
RET[t-1]	-0.331***		
	(0.052)		
Industry Ret[t]	0.555***		
	(0.081)		
ROA[t]	-0.883***		
	(0.247)		
Ln(Age)	-0.384**		
	(0.182)		
CEO Chair	-0.245***		
	(0.041)		
%Ownership	-1.582***		
	(0.611)		
Board ind.	0.328**		
	(0.157)		
Ln(Board size)	0.147*		
	(0.086)		
Additional Controls x Post	No	No	Yes
Year FE	Yes	No	No
Cohort x Year FE	No	Yes	Yes
Cohort x Director FE	No	Yes	Yes
N	20413	19746	19746
Model	Probit	Poisson	Poisson

Internet Appendix

How Do Directors Evaluate CEOs Across Multiple Boards?

Appendix Contents:

A. Variable Definitions

Firm characteristics

%Worst = the percentage of independent directors for whom the firm is the worst performer among all their directorship firms.

%Best = the percentage of independent directors for whom the firm is the best performer among all their directorship firms.

Interlocked RET[t] = the equal-weighted stock return of the director-interlocked firms over year t.

%Worst over entire tenure = *%Worst* but computes performance over each director's entire tenure across all directorships.

%Worst Leaver = the percentage of departing independent directors for whom the firm is the worst performer among all directorships.

Forced CEO Turnover = 100 if the CEO is forced out and zero otherwise. Following, Parrino (1997), a turnover is classified as forced if the press reports that the CEO was fired, forced out, or resigned due to policy differences. All other departures of CEOs older than 60 are voluntary. Departures of CEOs younger than 60 are forced if the press does not report the reason as death, poor health, or if the departure was announced less than six months before it occurred.

Turnovers with age < 60 (and < *63*) are indicator variables for CEO departures before age 60 (or 63), excluding cases due to death or health issues.

All Turnover equals one for any CEO turnover (voluntary + forced), excluding health-related or death events.

RET[t]= the firm's buy-and-hold stock return during year t. When there is no forced CEO turnover, stock returns are measured over the current fiscal year. If the current fiscal year overlaps with the announcement of a forced CEO turnover, we instead calculate stock returns over the 12-month period preceding the turnover announcement to avoid attributing performance to the successor CEO.

Industry RET[t] = the value-weighted industry stock return during year t where industry is defined based on the Fama–French 48 classification.

FF48 RET; FF12 RET; SIC3 RET; TNIC RET = the value-weighted industry stock return during year t where industry is defined based on Fama-French 48, Fama-French 12, 3-digit SIC, TNIC-3 classifications, respectively.

FF48 ROA; FF12 ROA; SIC3 ROA; TNIC ROA = industry average ROA during year t where industry is defined based on Fama-French 48, Fama-French 12, 3-digit SIC, TNIC-3 classifications, respectively.

Bottom Decile FF48 RET; Bottom Decile FF12 RET; Bottom Decile SIC3 RET; Bottom Decile TNIC RET = 1 if the focal firm's performance is in the bottom decile of its industry during year t with industry is defined based on Fama-French 48, Fama-French 12, 3-digit SIC, TNIC-3 classifications, respectively.

Worst in FF48 RET; Worst in FF12 RET; Worst in SIC3 RET; Worst in TNIC RET = 1 if the focal firm is the worst performer in its industry during year t with industry is defined based on Fama-French 48, Fama-French 12, 3-digit SIC, TNIC-3 classifications, respectively.

FF48 ROA; FF12 ROA; SIC3 ROA; TNIC ROA = industry average ROA during year t where industry is defined based on Fama-French 48, Fama-French 12, 3-digit SIC, TNIC-3 classifications, respectively.

ROA[t] = operating income before depreciation divided by total assets over year t

SD RET[t] = the annualized monthly standard deviation of stock returns.

Ln(Assets) = the natural logarithm of total assets.

CEO age = the CEO's age

CEO tenure = natural logarithm of years served as CEO for a particular firm

CEO Chair = one when the CEO also serves as board chair.

CEO ownership =the fraction of outstanding shares owned by the CEO.

Board size = the number of directors on the board

Board independence = the percentage of independent directors.

Avg # Board seats= the average number of S&P1500 board seats held by independent directors.

%Single directorship= the fraction of independent directors holding only one board seat at a S&P1500 firm.

%Multiple board (All Public) = the fraction of independent directors with at least two directorships at any public firm.

%Lowest Size-Rank (*%Highest Size-Rank*) = the percentage of independent directors for whom the firm is the smallest (largest) among their directorships, measured by market capitalization.

Bank-director = one if a firm has a director holding external board seats at banks in 2005 and zero otherwise.

Bank = one for depository institutions (SIC between 6000 and 6199) and zero otherwise.

Treatment intensity (Best) = *%Worst*, but for firms that are the worst performer, we subtract the performance of the best-performing directorship before aggregating to the board level.

Treatment intensity (Next Worst) = %Worst, except that when the focal firm is the worst performer, we subtract the performance of the 2nd worst performing directorship from the focal firm's performance before aggregating to the board level.

Analyst Rating = average analyst rating ranging from -1 (best rated ; Strong buy) to -5 (worst rated; sell) at the end of the year

News Sentiment = average news sentiment over the current year

Worst (perf.) = indicates whether the focal firm is the worst performer compared to its performance peers.

Worst (Comp.) = indicates whether the focal firm is the worst performer relative to its compensation peers.

Peer %Worst = the percent of independent directors for whom the peer firm is the worst-performing among their directorship firms

Monitoring %Worst = the percent of independent directors serving on monitoring committees (nominating, compensation, governance, and auditing committees) for whom the focal firm is the worst performing firm among their directorship firms.

Rest-of-Board %Worst = the percent of independent directors who do not serve on monitoring committees (nominating, compensation, governance, and auditing committees) for whom the focal firm is the worst performing firm among their directorship firms.

%Worst > 50% = one if *%Worst* is at least 50%, and zero otherwise

25% < %Worst < 50% = to one if *%Worst* is greater than 25% and less than 50%, and zero otherwise.

High SD RET = an indicator variable that equals one if the firm's stock return is above its industry median.

High error = an indicator variable that equals one if the firm's analyst forecasts error is in the top tercile of its industry.

High dispersion = indicator variable that equals one if firm's analyst forecasts dispersion is in the top tercile of its industry.

Analyst Downgrades = one if average analyst rating declined between t and t-1 and zero otherwise

Post = post periods as defined in each table

$\Delta_{t,t+2}ROA$ = Changes in ROA between t and t+2

$\Delta_{t,t+2}\ MTB$= Changes in MTB between t and t+2

$\Delta_{t,t+2}Analyst\ recommendations$ = Changes between average analyst ratings between t and t+2

$\Delta_{t,t+2}\ Analyst\ Downgrades$ = one if average analyst rating declined between t and t+2 and zero otherwise

CAR[–1,+1] (CAR[–1,+5]) = cumulative abnormal returns over the three (five-day) windows surrounding CEO dismissal announcements.

Director characteristics

Best (Worst)= an indicator variable equal to one if the focal firm's performance is the best (worst) among the director's interlocked firms.

Large (Small)= an indicator variable equal to one if the focal firm is at least 10% larger (smaller) than the director's smallest (largest) interlocked firm.

 # Pub board seats = the number of public company boards a director serves on in a given year

 # Board seats = all board seats in the RiskMetrics database.

Director tenure = the number of years that the director has served on the board of the focal firm

Director ownership = the fraction of the focal firm's shares outstanding owned by the director

Director age = the director's age.

Miss more than 25% meetings = an indicator equal to 100 if directors attending fewer than 75 percent of board meetings in a year for a particular firm.

B. Case Study of AMD

This section describes the case of Advanced Micro Devices (AMD), which illustrates our findings. In July 2008, Dirk Meyer became Chief Executive Officer (CEO) of AMD and led the firm out of financial distress by revamping its product lines, spinning off manufacturing operations, and securing a $1.25 billion settlement in its antitrust suit against rival Intel. Despite these achievements, after markets closed on January 10, 2011, AMD unexpectedly announced Meyer's resignation as CEO. The announcement surprised Wall Street analysts. Stacy Rasgon of Bernstein Research remarked that "the timing [of Meyer's firing] is extremely odd, and it's only going to fuel uncertainty in the stock." Similarly, Patrick Wang, a semiconductor analyst, described the ousting as "shocking." Following the news, Raymond James downgraded AMD from "outperform" to "underperform." By the end of January, AMD had lost nearly 20 percent of its market capitalization. Although AMD's SEC filing characterized the resignation as "a termination of employment without cause," The Wall Street Journal reported that AMD's directors had pushed Meyer out, forcing his abrupt departure.[21]

In this paper, we advance and empirically evaluate a novel proposition: boards rely on director-specific measures, derived from the performance of their interlocked firms, as heuristics when assessing a CEO's performance relative to potential successors. This proposition, and the empirical evidence we present, are consistent with the AMD case described above: at the time of Mr. Meyer's ousting, AMD was the worst performing interlocked directorship for 6 of the board's 7 outside directors.

[21] https://www.wsj.com/articles/SB10001424052748703791904576076241726827256

C. Additional Tables and Figures

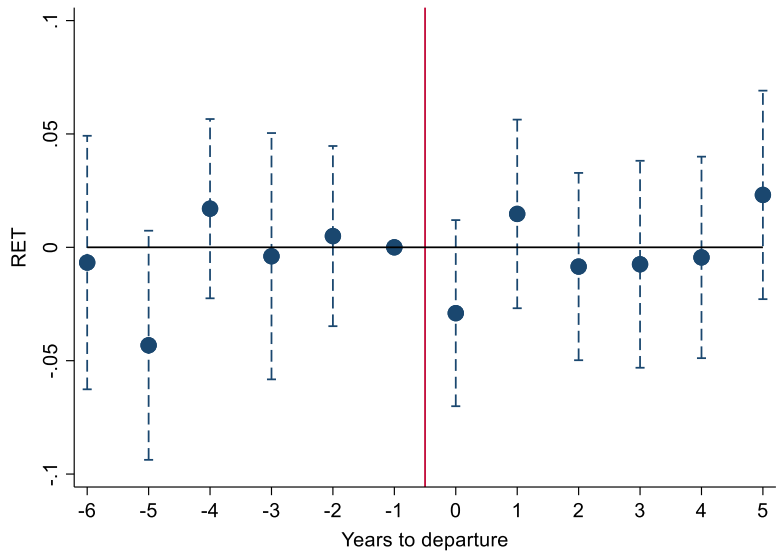
Figure IA1: Performance surrounding exogenous director departures

This figure plots performance of surrounding firms with "exogenous" director departures. Exogenous departures are directors who have multiple directors resigning simultaneously from all of her board seats. We estimate the following model and plot coefficient δ_k:

$$y_{it} = \sum_{k=-6,k!=-1}^{5} \delta_k \times 1(t = k)_{c,t} + \alpha_i + \alpha_t + \epsilon_{it}$$

where $y_{i,t}$is firm performance, measured by *RET[t]* in Panel A and *ROA[t]* in Panel B. The indicator $\mathbf{1}(t = k)_{c,t}$ equals one if year t is $k$years relative to an exogenous director departure. The specification includes firm fixed effects (α_i) to ensure out estimates capture within-firm performance trends, and year fixed effects (α_t), which control for aggregate stock market performance. Vertical bars represent 95% confidence intervals around the estimated coefficients δ_k.

Panel A: RET



Panel B: ROA

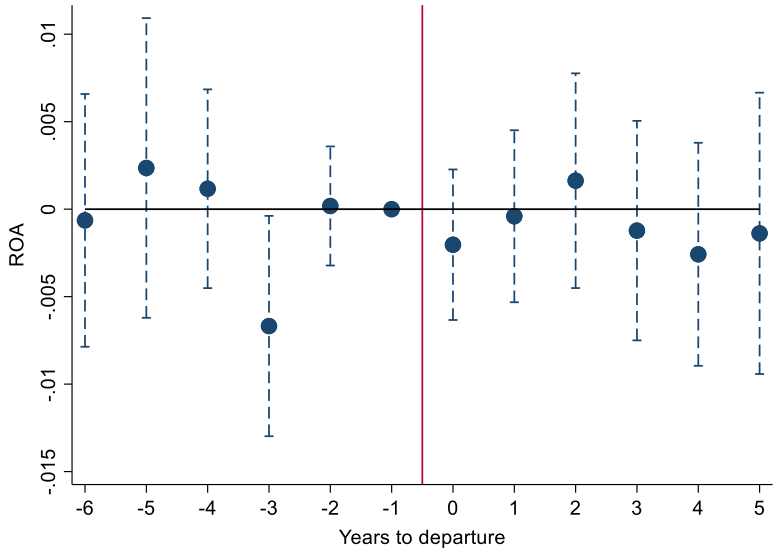


Table IA1. Nonlinear or Poor Performance

This table examines whether director benchmarking predicts forced CEO turnover beyond standard measures of firm performance. The dependent variable, *Forced CEO Turnover,* equals 100 if the CEO is dismissed and zero otherwise. *%Worst* is the percent of independent directors for whom the focal firm is the worst performer among their directorship firms. Column (1) controls for higher-order performance measures. Columns (2)–(7) sequentially add controls for absolute and relative performance, and consider alternative peer definitions. For example, FF48 RET and FF48 ROA represent industry-average stock and accounting performance, respectively, while Bottom Decile FF48 RET (ROA) indicates whether the firm is in the bottom decile of its industry based on stock returns (ROA), and Worst in FF48 RET (ROA) indicates whether the firm is the worst performer in its industry. Column (2) uses the Fama–French 48 industry classification. Column (3) uses the Fama–French 12 classification. Column (4) defines peers using three-digit SIC codes. Column (5) uses product market peers (TNIC–3). Column (6) adds the average analyst rating. Column (7) adds average news sentiment over the current year. Lastly, column (8) includes all the controls from columns (1)–(7). All regressions include the controls from Table 3, column (5), as well as year and firm fixed effects. All variable definitions are provided in the Internet Appendix. Standard errors are clustered at the firm level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Dep. Variable	Forced CEO Turnover							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
%Worst	0.753***	0.805***	0.829***	0.842***	0.865***	0.899***	0.843***	0.802***
	(0.179)	(0.172)	(0.170)	(0.172)	(0.177)	(0.172)	(0.186)	(0.207)
RET[t]	-	-	-	-	-	-	-	-
	1.940***	1.020***	0.906***	1.255***	1.146***	1.452***	1.511***	1.146***
	(0.268)	(0.180)	(0.181)	(0.181)	(0.189)	(0.187)	(0.215)	(0.337)
ROA[t]	-0.710	-0.640**	-0.542**	-	-	-	-	-0.707
				1.050***	0.749***	0.856***	0.802***	
	(0.626)	(0.260)	(0.253)	(0.279)	(0.271)	(0.249)	(0.263)	(0.734)
RET[t]^2	2.768***							1.088**
	(0.474)							(0.516)
RET[t-1]^2	0.691							0.656
	(0.475)							(0.539)
RET[t]^3	-							-0.824*
	1.989***							
	(0.400)							(0.439)
RET[t-1]^3	0.105							0.134
	(0.427)							(0.475)
ROA^2[t]	-1.822							-2.319
	(1.319)							(1.568)
ROA^2[t-1]	-0.234							-0.592**
	(0.265)							(0.274)
ROA^3[t]	2.092**							2.512**
	(0.930)							(1.153)
ROA^3[t-1]	-0.170							-0.018
	(0.257)							(0.264)
FF48 RET		0.128				0.253*	0.298*	-0.054
		(0.147)				(0.146)	(0.176)	(0.249)
Bottom Decile FF48 RET		2.741***						1.639
		(0.705)						(1.040)
Worst in FF48 RET		3.314**						1.668
		(1.685)						(1.966)
FF48 ROA		0.347						-0.037
		(0.225)						(0.398)
Bottom Decile FF48 ROA		1.843**						0.247
		(0.730)						(1.014)
Worst in FF48 ROA		-1.052						3.555*
		(1.527)						(1.986)

FF12 RET			0.059					0.211
			(0.158)					(0.252)
Bottom Decile FF12 RET			3.621***					1.593
			(0.724)					(1.027)
FF12 ROA			0.696**					0.695
			(0.290)					(0.461)
Worst in FF12 RET			8.293**					4.052
			(4.146)					(4.976)
Bottom Decile FF12 ROA			2.013***					0.762
			(0.742)					(1.038)
Worst in FF12 ROA			1.827					-5.849
			(4.148)					(4.366)
SIC3 RET				0.142				-0.123
				(0.131)				(0.175)
Bottom Decile SIC3 RET				0.983				-1.217
				(0.781)				(0.925)
Worst in SIC3 RET				0.831				1.410
				(0.944)				(1.088)
SIC3 ROA				0.462**				0.515*
				(0.201)				(0.263)
Bottom Decile SIC3 ROA				-0.005				-1.715
				(0.859)				(1.052)
Worst in SIC3 ROA				-0.247				1.157
				(0.963)				(1.135)
TNIC RET					0.139			0.279
					(0.146)			(0.199)
Bottom Decile TNIC RET					2.129**			0.503
					(0.867)			(0.988)
Worst in TNIC RET					-0.017			-0.017
					(0.775)			(0.853)
TNIC ROA					0.119			-0.001
					(0.203)			(0.234)
Bottom Decile TNIC RET					1.934*			1.849
					(1.002)			(1.168)
Worst in TNIC ROA					-1.848*			-2.403*
					(1.114)			(1.255)
Analyst Rating						-0.592*		0.003
						(0.327)		(0.378)
News Sentiment							-	-
							0.523***	0.497***
							(0.152)	(0.155)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R-sq	0.061	0.060	0.061	0.057	0.049	0.054	0.057	0.055
Obs	23349	23369	23369	23369	21426	23140	19746	17941

Table IA2. Performance Relative to Industry Peers

This table examines the relation between director benchmarking and external performance benchmarks. The dependent variable, *Forced CEO Turnover,* equals 100 if the CEO is dismissed and zero otherwise. %Worst is the percent of independent directors for whom the focal firm is the worst performer among their directorship firms. Panel A, B, and C consider underperformance and outperformance relative to industry benchmarks according to the Fama–French 12 industry, 2-digit SIC, and 3-digit SIC classification respectively. Columns (1)–(2) measure outperformance and underperformance using stock returns; columns (3)–(4) use return on assets (ROA); and columns (5)–(6) use analyst forecasts. All variable definitions are provided in the Internet Appendix. Standard errors (in parenthesis) are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. Variable	Forced CEO Turnover					
	Stock Returns		ROA		Analyst Forecasts	
Sample:	Outperformer	Underperformer	Outperformer	Underperformer	Outperformer	Underperformer
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Performance vs. Fama French 12 peers						
%Worst	0.354*	1.027***	0.914***	0.750**	0.756***	1.074**
	(0.209)	(0.297)	(0.199)	(0.303)	(0.289)	(0.438)
RET[t]	-0.244	-2.901***	-0.871***	-2.077***	-1.016**	-1.610***
	(0.187)	(0.577)	(0.217)	(0.316)	(0.418)	(0.470)
Adj-R-sq	0.009	0.056	0.035	0.064	0.059	0.048
Obs	11075	11393	12161	10478	6149	6172
Panel B: Performance vs. 2-digit SIC peers						
%Worst	0.430**	0.944***	1.025***	0.544*	1.258***	0.781*
	(0.210)	(0.291)	(0.209)	(0.293)	(0.320)	(0.425)
RET[t]	-0.254	-2.875***	-0.689***	-2.256***	-0.559	-1.841***
	(0.192)	(0.553)	(0.211)	(0.316)	(0.410)	(0.445)
Adj-R-sq	0.043	0.055	0.034	0.064	0.048	0.047
Obs	11205	11248	11917	10725	6118	6178
Panel B: Performance vs. 3-digit SIC peers						
%Worst	0.242	1.066***	0.966***	0.741***	0.871**	1.007**
	(0.172)	(0.286)	(0.235)	(0.263)	(0.349)	(0.417)
RET[t]	-0.479**	-2.476***	-0.917***	-1.872***	-0.811*	-1.579***
	(0.210)	(0.497)	(0.238)	(0.292)	(0.442)	(0.440)
Adj-R-sq	0.009	0.056	0.035	0.064	0.059	0.048
Obs	11075	11393	12161	10478	6149	6172

Table IA3. Performance Relative to Compensation and Performance Peers

This table examines the relation between director benchmarking and performance/compensation peers. Column (1) restricts the sample to firms without performance peers, whereas columns (2)–(3) include only firms that report performance peers. Similarly, column (4) restricts the sample to firms without compensation peers, whereas columns (5)–(6) to firms that report compensation peers. *Worst (perf.)* indicates whether the focal firm is the worst performer compared to its performance peers. *Worst (Comp.)* indicates whether the focal firm is the worst performer relative to its compensation peers. The regressions include the controls from Table 3, column (5). All variable definitions are provided in the Internet Appendix. Standard errors (in parenthesis) are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. Variable	Forced CEO Turnover					
Sample:	No. perf peer	With perf. peer		No comp. peer	With Comp. peer	
	(1)	(2)	(3)	(4)	(5)	(6)
%Worst	0.831***	1.849***	1.721***	0.875***	0.948***	0.866***
	(0.166)	(0.486)	(0.482)	(0.189)	(0.306)	(0.307)
Worst (perf.)			3.405**			
			(1.415)			
Worst (Comp.)						3.017***
						(0.895)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R-sq	0.036	0.031	0.035	0.034	0.039	0.041
Obs	20895	2454	2454	14442	8921	8921

Table IA4. Alternative definitions of CEO turnover

This table repeats the analysis in columns (3)–(5) of Table 3, except that the dependent variable varies across specifications. Columns (1)–(2) use all turnovers excluding departures due to health and CEO deaths as the dependent variable. Columns (3)–(4) restrict the dependent variable to all turnovers involving CEOs younger than 63, again excluding departures due to health and CEO deaths. Control variables indicates whether control variables in column (5) of Table 3 are included. All variable definitions are provided in the Internet Appendix. Standard errors (in parenthesis) are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	All Turnovers		Turnovers w/ age < 63		Turnovers w/ age < 60	
	(1)	(2)	(3)	(4)	(5)	(6)
%Worst	0.896***	0.745**	0.800***	0.880***	0.680***	0.749***
	(0.238)	(0.319)	(0.201)	(0.263)	(0.177)	(0.217)
RET[t]	-2.652***	-2.204***	-2.411***	-1.931***	-2.009***	-1.554***
	(0.274)	(0.321)	(0.237)	(0.277)	(0.212)	(0.249)
ROA	-0.403**	-1.239***	-0.462***	-0.827**	-0.465***	-0.960***
	(0.178)	(0.434)	(0.166)	(0.357)	(0.152)	(0.310)
Industry Ret[t]	1.057***	0.672**	0.998***	0.612**	1.035***	0.574***
	(0.275)	(0.287)	(0.239)	(0.247)	(0.206)	(0.211)
Controls	No	Yes	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	Yes	No	Yes	No	Yes
Adj-R-sq	0.010	0.085	0.012	0.055	0.012	0.062
Obs	23369	23369	23369	23369	23369	23369
Mean		10.60		6.93		4.83

Table IA5. Alternative Measures of Director Benchmarking

Panel A repeats the analysis in columns (3)-(5) Table 3 but replaces *%Worst* with *%Worst over entire tenure*, defined as the fraction of directors for which the focal firm is the worst-performer among their directorship firms with performance measured over the directors' entire tenure at the respective boards. Panel B considers treatment intensity: if the focal firm is the worst performer, we consider the difference in performance between the focal firm and the best or next worst performing director interlock firm. $Treatment\ intensity_{(\mathrm{Best})}$ is the same as *%Worst*, except that when the focal firm is the worst performer, we subtract the performance of the best performing directorship from the focal firm's performance before aggregating to the board level. $Treatment\ intensity_{(\mathrm{NextWorst})}$ is the same as *%Worst*, except that when the focal firm is the worst performer, we subtract the performance of the 2nd worst performing directorship from the focal firm's performance before aggregating to the board level. Control variables indicates whether control variables in column (5) of Table 3 are included. All variable definitions are provided in the Internet Appendix. Standard errors (in parenthesis) are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: Performance measured over directors' entire tenure

	Forced CEO Turnover		
	(1)	(2)	(3)
%Worst over entire tenure	0.603***	0.486***	0.521***
	(0.120)	(0.138)	(0.181)
RET[t]	-2.066***	-2.147***	-1.979***
	(0.148)	(0.152)	(0.165)
ROA[t]	-0.569***	-0.214	-0.785***
	(0.115)	(0.149)	(0.249)
Industry Ret[t]	0.568***	0.442***	0.327**
	(0.151)	(0.153)	(0.149)
Controls	No	Yes	Yes
Year FE	Yes	Yes	No
Industry FE	No	Yes	No
Firm FE	No	No	Yes
Adj-R-sq	0.020	0.035	0.057
Obs	22453	22453	22453

Panel B: Treatment Intensity

	Forced Turnover			
	(1)	(2)	(3)	(4)
$Treatment\ intensity_{(\mathrm{Best})}$	1.350***	1.334***		
	(0.194)	(0.209)		
$Treatment\ intensity_{(\mathrm{NextWorst})}$			1.396***	1.414***
			(0.199)	(0.218)
Controls	Yes	Yes	Yes	Yes
Higher-Order RET	No	Yes	No	Yes
Year FE	Yes	No	Yes	No
Industry FE	Yes	No	Yes	No
Firm FE	Yes	Yes	Yes	Yes
Industry x Year FE	No	Yes	No	Yes
Adj-R-sq	0.038	0.057	0.038	0.057
Obs	23369	23369	23369	23369

Table IA6: Does %Worst Predict Exogenous Departures?

This table tests whether %Worst predicts exogenous director departures, defined as cases in which a director who holds multiple board seats exits the director labor market and is at least 65 years old or departs due to illness or death. Control variables indicates whether the controls listed in Column (5) of Table 3 are included. All variable definitions are provided in the Internet Appendix. Standard errors (in parenthesis) are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variable:	Exogenous Director Departure		
	(1)	(2)	(3)
%Worst	-0.009	-0.011	-0.016
	(0.010)	(0.010)	(0.010)
RET[t]	-0.000	-0.001	-0.002
	(0.004)	(0.004)	(0.004)
ROA[t]	-0.008	-0.008	-0.015
	(0.013)	(0.013)	(0.021)
%Single directorship	-0.074***	-0.075***	-0.080***
	(0.019)	(0.019)	(0.023)
Avg # Board seats	-0.015**	-0.015**	-0.025***
	(0.007)	(0.007)	(0.010)
Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry	No	Yes	No
Firm FE	No	No	Yes
N	24603	24603	24603
Adj-R-sq	0.018	0.018	-0.006

Table IA7. Global Financial Crisis (GFC) Analyses

In Panel A, we study the differential effect of the global financial crisis on the stock returns of banks and non-banks. The outcome variable is stock returns. Bank is an indicator of depository institutions (SIC code between 6000 and 6199). Post indicates years after 2007. Panel B reports estimate from a probit model in which the dependent variable is an indicator variable of whether a firm has a director holding other board seats at banks in 2005, and the independent variables are characteristics likely associated with the dependent variable. We use the estimate to calculate propensity scores and match each firm with bank director to the five closest no bank-director firm, requiring the difference in propensity scores to be lower than 2.5%. In panel C, we evaluate whether firms with and without bank-directors are different along matched variables and firm performance before the financial crisis. All variable definitions are provided in the Internet Appendix. Robust standard errors are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: Stock Returns for Banks and Non-banks Surrounding the GFC

Dep. variable	RET		
	(1)	(2)	(3)
Bank x Post	-0.142***	-0.136***	-0.132***
	(0.044)	(0.038)	(0.042)
Post	-0.087***		
	(0.010)		
Bank	-0.049		
	(0.031)		
Year FE	No	Yes	Yes
Industry FE	No	No	Yes
Firm FE	No	Yes	Yes
Adj-R-sq	0.021	0.270	0.252
Obs	6444	6444	6444

Panel B: Propensity Score Probit Model

Dep. variable	Has bank-director
%Worst	-0.143
	(0.270)
Log(AT)	0.024
	(0.045)
Board Independence	-1.500**
	(0.633)
Avg. #Board Seats	1.726***
	(0.285)
%Single-directorship	0.149
	(0.460)
Log(Board Size)	0.923***
	(0.280)
Obs	911

Panel C: Matched Sample Covariate Balance

	Has Bank-Director	Does not have Bank Director	Difference
RET	0.155	0.167	0.012
Log(AT)	8.428	8.337	-0.091
Board Independence	0.765	0.766	0.001
Board Size	10.132	10.086	-0.046
%Worst	0.217	0.217	0.000
%Single directorship	0.461	0.460	-0.001
Avg #Board seats	1.470	1.449	-0.021

Table IA8. Robustness: Post-Turnover Performance

This table replicates Panel A of Table 10 using alternative event windows surrounding forced CEO turnovers: [-1, +1] (Panel A) and [-1,+3] (Panel B). The dependent variables are ROA (columns (1) and (2)), market-to-book ratio (columns (3) and (4)), analyst recommendations (columns (5) and (6)), and an indicator for whether analyst recommendation decline (columns (7) and (8)). *%Worst* is the fraction of independent directors for whom the focal firm is the worst performing firm among their interlocked directorates, measured at the year of firing (event time = 0). $\%Worst \geq 50\%$ indicates whether *%Worst* is at least 50%, (2) $25\% < \%Worst < 50\%$ is an indicator equal to one if *%Worst* is greater than 25% and less than 50%. *Post* is an indicator equal to one for years after firing and is zero otherwise. The regressions include the following control variables: stock returns, industry stock returns, (log of) CEO tenure, (log of) CEO age, CEO-Chair dummy, and board independence. All variable definitions are provided in the Internet Appendix. Standard errors (in parenthesis) are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: Event window [-1,+1]

Dep. variable	*ROA*		*MTB*		*Analyst recommendations*		*Analyst downgrade*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
%Worst x Post	-0.013***		-0.093***		-0.082***		0.087***	
	(0.004)		(0.032)		(0.022)		(0.027)	
%Worst > 50% x Post		-0.028***		-0.194**		-0.144***		0.133*
		(0.010)		(0.078)		(0.056)		(0.069)
25%<%Worst<50% x Post		-0.013		-0.135**		-0.053		0.083
		(0.008)		(0.065)		(0.046)		(0.066)
Post	0.003	-0.005	0.054	0.008	-0.028	-0.093***	-0.078	-0.013
	(0.006)	(0.005)	(0.051)	(0.039)	(0.037)	(0.031)	(0.049)	(0.042)
%Worst	0.005		0.038		0.025		-0.045***	
	(0.004)		(0.040)		(0.019)		(0.016)	
%Worst > 50%		0.011		0.142		0.016		-0.068*
		(0.010)		(0.094)		(0.048)		(0.039)
25%<%Worst<50%		0.005		0.058		0.029		-0.029
		(0.008)		(0.092)		(0.042)		(0.036)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R-sq	0.217	0.215	0.263	0.262	0.151	0.147	0.030	0.024
Obs	1654	1654	1645	1645	1644	1644	1602	1602

Panel B: Event window [-1, +3]								
Dep. variable	*ROA*		*MTB*		*Analyst recommendations*		*Analyst downgrade*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
%Worst x Post	-0.011***		-0.083***		-0.099***		0.041**	
	(0.003)		(0.031)		(0.021)		(0.020)	
%Worst > 50% x Post		-0.026***		-0.193**		-0.186***		0.066
		(0.009)		(0.077)		(0.055)		(0.052)
25%<%Worst<50% x Post		-0.010		-0.133*		-0.100**		0.069
		(0.008)		(0.069)		(0.051)		(0.049)
Post	0.006	-0.000	0.089*	0.055	0.041	-0.024	-0.131***	-0.109***
	(0.005)	(0.004)	(0.054)	(0.043)	(0.036)	(0.031)	(0.033)	(0.030)
%Worst	0.003		0.023		0.026		-0.032**	
	(0.004)		(0.038)		(0.019)		(0.016)	
%Worst > 50%		0.007		0.111		0.020		-0.040
		(0.010)		(0.090)		(0.048)		(0.039)
25%<%Worst<50%		0.005		0.052		0.029		-0.023
		(0.008)		(0.088)		(0.042)		(0.034)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R-sq	0.219	0.218	0.287	0.286	0.106	0.101	0.013	0.012
Obs	2491	2491	2484	2484	2469	2469	2417	2417