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Directors: Older and Wiser, or Too Old to Govern?

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Keywords: boardroom aging, older directors, board monitoring, board advising, agency problems

JEL Classifications: G34, G32, M43

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1. Introduction

The past two decades have witnessed drastic changes to the composition of corporate boards of directors. Several rounds of major corporate governance reforms and the rise of institutional shareholder activism have enhanced director independence, qualifications and accountability.[1] These changes also significantly increased the time demands and responsibilities of independent directors, which undercuts the incentives of active senior corporate executives, the most sought-after candidates, to serve on outside boards.[2] Faced with a reduced supply of willing executives as well as heightened pressure to find qualified independent directors, firms are increasingly relying on pools of older director candidates.[3] As a result, boards of U.S. public corporations have become notably older in recent years. For example, during the period of 1998 to 2014, the median age of independent directors at large U.S. firms rose from 60 to 64. More importantly, the percentage of firms with a majority of independent directors who are 65 or older has nearly doubled from 26% to 50% over this same time period (see Table 1).

The trend in boardroom aging raises the critical issue of whether older independent directors are as effective as younger ones, which indeed is a serious concern for many institutional investors and governance practitioners.[4] Thus, it is important to understand the consequences of this trend for board performance. Unfortunately, director age has rarely been a focal point in studies of corporate boards, so we have very limited and inconclusive evidence on its impacts.[5] In this study, we seek to fill this gap in the literature.

We begin by examining the performance of older independent directors relative to their younger counterparts. We then examine if, and how, the proportion of older independent directors on a firm's

[1] These reforms and regulations include the 2002 Sarbanes-Oxley Act, the 2003 NYSE/Nasdaq listing standards change, the 2009 SEC rule on proxy disclosure enhancements, and the 2010 Dodd-Frank Act.
[2] According to Spencer Stuart, only about 1/3 of active CEOs in S&P500 companies sit on any outside boards in 2017, compared to about 50% ten years earlier, and the percentage of new independent directors who are active CEOs, board chairs, presidents, COOs, and vice board chairs, declined from 41% in 2002 to 18% in 2017.
[3] This is reflected in firms' recruitment and retention of older directors. For example, the percentage of newly appointed independent directors who are at least 65 years old doubled from 10% in 1998 to 20% in 2014 (based on the authors' analysis of S&P1500 firms; see Figure 3). The mandatory retirement age for directors has also been rising, with 42% of S&P500 companies setting it at 75 or older, compared to only 11% in 2007 (Spencer Stuart).
[4] "The One Place It's OK to Be Old Is in the Boardroom", August 21, 2015, Bloomberg.com.
[5] Please see our discussion of the related literature on pages 6–7.

board impacts overall board performance measured along multiple dimensions. Finding answers to these questions is not straightforward as there can be both benefits and costs associated with having older independent directors on the board.

On the one hand, older independent directors can offer valuable expertise to firms because of their accumulated business experience and professional connections gained over their long careers. Therefore, they can be better equipped to understand the opportunities and challenges faced by firms and to leverage their knowledge and network connections to advise management on important strategic decisions. In fact, these benefits are reportedly behind some companies' decisions to retain older directors on their boards and to lift or waive the mandatory retirement age requirements for directors. In addition, because older directors are likely to no longer have full-time executive positions, they potentially have more time to devote to their board duties.

On the other hand, there are reasons to suspect that older independent directors could undermine board effectiveness. From an incentive perspective, older directors can expect fewer opportunities in the director labor market as they approach normal retirement age, so their expected payoff from future directorships may no longer outweigh the costs they must incur to build and maintain their reputations. Thus, older directors may have greater incentives to either enjoy the quiet life or seek to maximize current incomes by accepting additional board seats without expending much incremental effort to fulfill their director duties. These director incentives can lead to weaker board effectiveness.[6]

In addition, long-standing research in psychology documents that as people age, their energy, physical health, and mental acumen gradually decline (Horn (1968), Fair (1994, 2004), Salthouse (2000), and Schroeder and Salthouse (2004)). Aging also adversely affects memory and attention spans, leading to erosion in general intelligence (Lindenberger and Baltes (1994), Baltes and Lindenberger (1997), Rönnlund, Nyberg, Bäckman, and Nilsson (2005), and Schaie (2005)). Older individuals are also less effective at processing and integrating new information (Spaniol and Bayen (2005)). While older independent directors may well be in the upper tail of their age group in terms of intellectual

[6] A counter argument could be that directors approaching the end of their careers in the directorial labor market may work harder to protect their legacy. It is ultimately an empirical question how directors' career horizons affect their incentives.

ability, these general physiological factors can still hinder their ability to continue to meet the heavy demands of boardroom duties. Older independent directors may also lack the energy to keep abreast of the latest industrial advances or the ability to recognize new opportunities created by recent technological innovations. Thus, they may not be able to provide needed management oversight or offer timely advice to managers.

Supporting these arguments, shareholders have often expressed serious concerns about boardroom aging. For example, in 2010 two prominent activist investors, Relational Investors LLC and the California State Teachers' Retirement System, together launched a proxy contest at Occidental Petroleum Corp, partly because Occidental waived its mandatory retirement age rule for two directors.[7] In early 2015, Coca-Cola announced the retirement of two longtime directors, James D. Robinson III, 79 years old, and Peter V. Ueberroth, 77 following pressure from shareholders concerned about the company missing its revenue growth targets.[8]

To shed new light on the potential costs and benefits associated with boardroom aging, we examine the behavior of older independent directors at the individual level and then relate their prominence on boards to key corporate policies and overall firm performance. We define an independent director as an "older independent director" (OID) if he or she is at least 65 years old.[9] In robustness analysis, we use age 70 as a cutoff and obtain similar results. To measure the extent of boardroom aging, we construct a variable, *OID %*, as the fraction of all independent directors who are OIDs. Unlike the average director age measure used in most of the prior literature, our measure is less influenced by outliers, and more importantly, it directly captures the right tail of the director age distribution, which is much more affected by the recent boardroom aging trend. Also, unlike much of the prior literature, we focus solely on the directors most responsible for monitoring, namely the independent directors.

Examining a large sample of S&P 1500 firms over the period of 1998-2014, we find pervasive evidence of boardroom aging. The median independent director age increases monotonically from 60 in 1998 to 64 in 2014, but more strikingly, the percentage of independent directors who are 65 or older

[7] "Funds Seek Occidental Seats", August 2, 2010, The Wall Street Journal.
[8] "Two Coca-Cola Directors to Retire Amid Board Renovation", February 19, 2015, The Wall Street Journal.
[9] We explain the rationale for using age 65 as our primary cut-off point in Section 2.

rises from 33% in 1998 to 50% in 2014 (see Table 1). These changes are not caused by changes in S&P 1500 index composition, because both the incumbent firms in the index and new additions to the index show similar board aging trends (see Figure 1). During our sample period, boards also grow older in all 12 Fama-French industries and in subsamples stratified based on a variety of firm characteristics. Given these strong trends in board aging, we need to understand their implications for board governance.

Our first line of analysis evaluates individual director performance by comparing board meeting attendance records, major board committee assignments, and shareholder support in board elections between older and younger independent directors. Controlling for a battery of director and firm characteristics as well as director, year, and industry fixed effects, we find that OIDs exhibit poorer board attendance records and are less likely to serve as a member or a chair of more important and time-consuming board committees. These results suggest that OIDs are either less able or less willing to fulfill their board duties. Consistent with this interpretation, we find that OIDs are more likely to receive a negative recommendation from the Institutional Shareholders Services (ISS) and garner significantly less shareholder support at annual board elections.

We next conduct firm-level analysis of how OIDs affect a number of major corporate policies. The results are more nuanced. On the one hand, we find evidence consistent with OIDs displaying weaker monitoring. Specifically, firms with a larger proportion of OIDs on their boards exhibit stronger empire building tendencies in that they make less profitable acquisitions that generate lower shareholder returns. We also find that OIDs are associated with significantly lower CEO turnover-performance sensitivity, suggesting that OIDs are more lenient or less willing to discipline poorly performing CEOs. Furthermore, as the percentage of OIDs on corporate boards rises, excess CEO compensation increases, and this relationship is driven by the cash component of CEO pay, rather than the performance-sensitive equity-based portion. Finally, a greater proportion of OIDs on corporate boards is also associated with lower financial reporting quality, measured either by performance-adjusted abnormal accruals or by the likelihood of financial statement misrepresentation.

Consistent with the above evidence of monitoring deficiencies, we find that on average, firm performance is significantly lower when firms have a greater fraction of OIDs on their boards. We also

confirm that this relation is not driven by reverse causality, i.e., poorly performing firms appointing disproportionally more OIDs to their boards or major shareholders proposing OID appointments to turn around poorly performing firms.

Counterbalancing some of these results, we also uncover evidence that OIDs can provide valuable advisory services to some firms. In particular, we find for corporate acquisitions that when acquirer OIDs have prior general acquisition experience or work experience in the target's industry, the relation between OIDs and acquirer announcement returns becomes either significantly positive or at least non-negative. The previously documented negative relation between OIDs and acquirer returns is confined to OIDs without either type of experience. In addition, we find in a separate subsample of firms with high advisory needs that the relation between OIDs and firm performance is no longer significantly negative, and in some cases, becomes significantly positive. These results suggest that at key board decision points, OIDs experience and networks can provide valuable counsel to senior management.

Identification is a key consideration in our empirical analysis. We undertake a number of strategies to address this issue. First, we control for a wide array of director, CEO, and firm characteristics, including (i) director busyness, tenure, equity ownership, co-option, gender and ethnic diversity,[10] (ii) CEO and top management team age, and (iii) firm age and growth opportunities, etc. This is to ensure that our results are not the artifact of other board attributes, a trend towards more diversity on corporate boards over our sample period, aging of the CEO and management team, or the endogenous matching between OIDs and firms in particular stages of their life cycles.

Second, we include firm and director-fixed effects wherever applicable to control for unobservable time-invariant firm and director attributes. Third, we employ an instrumental variable regression approach where we instrument for the presence of OIDs on a firm's board by a measure of the local supply of younger director candidates in the firm's headquarters state. The motivation for the instrument is that firms are likely to have more OIDs on their boards when they face a shortage of younger director

[10] Our results are robust to controlling for board ethnic diversity, which is defined as the Herfindahl index of director ethnicity, However, it is not included in the reported model specifications because information on the variable is missing for about 30% of our sample. Our results are also robust to controlling for an aggregate board diversity index that is equal to the average of standardized gender diversity and ethnic diversity measures.

candidates located nearby. Fourth, we exploit a regulatory shock to firms' board composition created by the 2003 revisions to the NYSE/Nasdaq listing standards, which require firms' boards to have a majority of independent directors. We show that firms that were non-compliant with the new rule experienced a significantly larger increase in the percentage of OIDs over the 2000-2005 period than compliant firms. A major reason for the difference is that noncompliant firms appointed more OIDs to comply with the new listing standards.[11] Using a firm's noncompliance status as an instrument for the change in the percentage of OIDs on the firm's board, we find that firm performance deteriorates after noncompliant firms increase OID board representation.

Lastly, we undertake three separate event studies of the announcements of mandatory director retirement age changes, OID appointments, and OID deaths. The event study approach has the advantage of concentrating on very short periods in time where new information about OID representation on the board is released and where shareholder reactions are observable. We find that the stock market reacts negatively to firms appointing OIDs and increasing the mandatory director retirement age, while it reacts positively to OID deaths, indicating that on average shareholders view OIDs skeptically.

Despite our multi-pronged approach to tackling the endogeneity issue, we acknowledge that it is virtually impossible to completely rule out the possibility that any firm outcome and performance results can be driven at least partially by some omitted variables. For example, managers who are incompetent, poorly governed, or intent on extracting large private benefits may choose to keep or install more OIDs on their boards. Yet, even these alternative explanations are predicated on the notion that managers believe that OIDs on average are weaker monitors. It is also worth noting that our analysis of individual director behavior and shareholder voting outcomes is not subject to similar omitted variable concerns.

Our research provides the first investigation of the recent trend in boardroom aging at large U.S. corporations and its impacts on director behavior and board effectiveness. We present the first comprehensive set of evidence on both the costs and benefits associated with OIDs. Despite the pronounced pattern of boardroom aging in recent years, director age has rarely been a focal point in

[11] This issue is discussed in more detail in section 4.6.2.

studies of corporate boards. Even those studies that do touch upon it have not subjected it to rigorous econometric treatment needed for drawing causal inferences. Furthermore, in contrast to our study, the evidence in the extant literature is both fragmented in terms of board effectiveness measures studied and decidedly mixed in its conclusions.

Prior research by Core, Holthausen, and Larcker (1999) analyzes a sample of 495 observations for 205 U.S. firms from 1982 to 1984 and document a positive relation between CEO compensation and the proportion of older outside (independent and gray) directors on a board. In a more recent and larger sample of S&P 1500 firms from 1998 to 2013, Dou, Sahgal, and Zhang (2015) find no significant relation between mean independent director age and CEO compensation, the probability of financial restatements, or acquisition returns. In other work, Minnick and Zhao (2009) show that the mean age of independent director is associated with a higher likelihood of option backdating, while Cai and Sevilir (2012) find that the mean age of acquirer directors is positively related to acquirer announcement returns. With respect to firm performance, Faleye (2007) finds that mean director age has a negative relation with Tobin's Q, but Francis, Hasan, and Wu (2012) report that it has a positive relation with firm stock returns. Further complicating the interpretation of these mixed findings, some prior studies construct their average age measure using all directors (Faleye (2007), Cai and Sevilir (2012), and Francis et al. (2012)), while other studies focus on either outside directors (Core et al. (1999)) or independent directors (Minnick and Zhao (2009) and Dou et al. (2015)).[12]

We differ from these prior studies in several key dimensions. First, we construct a measure that more effectively captures the presence of OIDs on corporate boards by focusing on the right tail of the director age distribution. Second, we examine a broader set of corporate policy and outcome variables. This dual approach allows us to portray a more complete picture of the consequences of the growing phenomenon of boardroom aging at large U.S. corporations. Third, we develop our hypotheses while recognizing that boardroom aging can have both costs and benefits, which can vary across directors and across firms. Fourth, we present the first empirical evidence on the types of OIDs who should be

[12] As we discuss in Section 2, some prior evidence on director age may be contaminated by errors in the director age information in the widely used ISS (formerly IRRC or RiskMetrics) database.

especially valuable advisors to firms and the types of firms that can especially benefit from the presence of OIDs. Finally, we subject our results concerning the impact of OIDs to multiple identification strategies, which bolsters our confidence in the study's causal inferences.

As the debate over director age limits continues in the news media and among activist shareholders and regulators, our findings offer important and timely policy guidance. Specifically, for companies considering lifting or waiving mandatory director retirement age requirements to lower the burden of recruiting and retaining experienced independent directors, our evidence should give them pause. Similarly, while recent corporate governance reforms and the rise in shareholder activism have made boards, and especially independent directors, more accountable for managerial decisions and firm performance, these changes may have created an unintended consequence of raising the burdens on independent directors and thus shrinking the supply of independent director candidates who are active managers. This has led firms to tap deeper into the pool of older director candidates, which our analysis shows can undermine the very objectives that corporate governance reforms seek to accomplish. Interestingly, in the last few years, boardroom aging appears to have slowed down, as more firms respond to institutional investors' call for reinvigorating the board by appointing first-time directors with non-CEO experience, who tend to be younger.[13] This latest trend is consistent with institutional investors and firms recognizing the patterns we uncover regarding the monitoring deficiencies of OIDs.

2. Sample Construction

Our initial sample includes the universe of firms in the Institutional Shareholder Services (ISS, formerly RiskMetrics or IRRC) database during the 1998-2014 period.[14] The sample period begins in 1998 because prior to 1998 important director information such as director shareholdings and the number of outside board seats is largely missing from ISS. We then merge the ISS sample with the COMPUSTAT and CRSP databases to obtain financial and stock returns data. We remove dual class firms where board monitoring is unlikely to matter given insiders' disproportionate control of voting

[13] Please see 2019 U.S. Spencer Stuart Board Index.
[14] Firms in the ISS database are current and past members of the S&P 1500 index.

rights.[15] We also remove observations with incomplete data on key financial or governance variables.

While analyzing the ISS database, we discovered pervasive errors in director age information starting from year 2006. What alerted us to these errors is that from 2005 to 2006 the median director age rose by three years based on the ISS information, but from 2006 to 2007, it did not increase at all. We also noticed that for directors who entered the database in 2006 or later, their age in the ISS database is often different from the firm's proxy statement, with the difference typically ranging from one to three years. We manually checked the director age information for a random sample of firms prior to 2006 and did not discover any errors. Therefore, for the 2006-2014 period, we verified and corrected all directors' age information in the ISS database based on firm proxy statements. For directors who entered the ISS database prior to 2006, we used their pre-2006 age information to determine their correct age in the later years. All of our analysis is based on corrected director age information.

We define an independent director as an "older independent director" (OID) if she is at least 65 years old. Our choice is based on two considerations. First, the Federal Interagency Forum on Aging-Related Statistics (https://agingstats.gov) defines older Americans as those age 65 or above. Second, the cognitive aging literature shows that declines in physical and cognitive functions are commonly detected among older adults, especially after age 65. For example, studies using longitudinal data provide evidence that episodic and semantic memory performance remains relatively stable until about 60–65 and after that, it declines sharply (Rönnlund et al. (2005) and Schaie (2005)).

Figure 1 shows the overall time trend for the percentage of OIDs. To examine whether the trend of board aging over our sample period is due to changing firm composition, we also separately report the change in the board's OID percentage for firms that are incumbent members of S&P 1500 index as of the beginning of our sample period and new entrants to the index. We observe that both incumbent firms and new entrant firms exhibit a similar trend over time towards older boards. Figure 2 further shows that over our sample period, independent directors are also older at the time of their initial board appointments. The average (median) age of independent directors at their initial appointments increased from 55 in 1998 to 59 in 2014. Similarly, Figure 3 shows that the percentage of newly appointed

[15] Our results are robust to excluding firms with insider equity ownership above 50%.

independent directors who are at least 65 years old doubled over our sample period, rising from 10% in 1998 to 20% in 2014. These patterns clearly indicate that the board aging trend is not simply due to directors growing older as firms age.

Next, we compare the personal attributes of older and younger independent directors in Panel A of Table 2. We find that OIDs are older at their initial appointment dates, more likely to be retired, and less likely to be a sitting CEO or senior executive of another firm. They hold more board seats,[16] have longer tenure, and are less likely to be co-opted, i.e., initially appointed under the current CEO. They also have lower share ownership, are less likely to be blockholders, and more likely to be former firm employees, but these differences, albeit statistically significant, are quite small in size.

Panel B of Table 2 presents summary statistics of key financial, governance and outcome variables of our sample firms. All continuous variables are winsorized at their 1st and 99th percentiles to reduce the influence of outliers. Alongside director age, a closely related issue that has also triggered debate is director tenure. Longer-serving board members may accumulate more experience and knowledge about the firms, but they can also become less independent from firm management.[17] As director age and tenure are often positively correlated, it is important that we isolate the effects of director age. For this purpose, we control for either an independent director's tenure or the percentage of independent directors who have at least 15 years of board tenure at a firm, depending on whether the analysis is at the director level or the firm level.[18] We further control for CEO age and firm age (as a proxy for a firm's life cycle) in our analysis given that they may also be related to director age.[19]

3. Analysis of Board Meeting Attendance, Board Committee Service, and Director Elections

In this section, we conduct director-level tests to assess whether OIDs actively participate in the governance of firms and contribute to more effective boards. Specifically, we compare board meeting

[16] This can be an indicator of either greater director busyness or more connections and experience.
[17] Dou, Sahgal, and Zhang (2015) find that independent directors with extended tenure are associated with stronger monitoring and better governance outcomes. Huang and Gillary (2018) find an inverted U-shaped relation between board tenure and firm performance and governance outcomes.
[18] Results are robust to replacing the 15-year cutoff with a 10-year cutoff.
[19] Our results are robust to controlling for the average age of named executives in Execucomp instead of CEO age.

attendance records of older and younger independent directors, their frequency of serving on time-consuming committees and taking on time-intensive committee chair positions, and the extent to which they receive shareholder support in director elections.

3.1. Board Meeting Attendance

Board behavior is largely unobservable, but publicly listed firms in the U.S. are required to disclose a director's board meeting attendance record in their annual proxy filings. The level of disclosure is limited to whether a director attended less than 75% of board meetings during a fiscal year. We obtain the board meeting attendance information from the ISS database for all independent directors.

We estimate a linear probability model where the dependent variable, *Attend_less75_pct*, is equal to one if an independent director attended less than 75% of a firm's board meetings in a given year, and zero otherwise. The key explanatory variable is an indicator variable that equals to one if a director is 65 or older and is zero otherwise. We control for a large array of director attributes and firm financial and governance characteristics as well as director, year, and industry (Fama-French 48) fixed effects.[20] Standard errors are adjusted for heteroscedasticity and director-level clustering.

This model specification focuses on within-director variations and sharpens the identification of our analysis. The coefficient on the *OID* indicator can be interpreted as capturing the change, if any, in a director's board meeting attendance behavior when she reaches the age-65 threshold. Given that only 1.4% of director-firm-year observations in our sample are associated with poor attendance, within-director variation in board meeting attendance behavior is even more limited, which should bias against our finding any significant evidence.

Column (1) of Table 3 presents the regression results. We find that the coefficient on the *OID* indicator is positive and significant, suggesting that older directors have significantly worse board meeting attendance records compared to when they are younger. Economically, the coefficient implies that the probability of an independent director aged 65 or older missing more than 25% of board

[20] The very large number of director fixed effects necessitates the use of the linear probability model. Our results are robust to controlling for industry-year paired fixed effects throughout the study.

meetings is 0.3 percentage points higher than that of the same independent director aged 64 or younger. This effect is economically meaningful given the unconditional probability (1.4%) of a director missing more than 25% of board meetings in a year in our sample. For the director-level controls, we observe that independent directors who are current CEOs of other firms are significantly more likely to miss board meetings. For the firm-level controls, we find that directors in smaller firms or firms with higher Tobin's Q or larger boards are more likely to miss board meetings. Given the importance of board meetings as a mechanism for outside directors to participate in a firm's governance, our results indicate that older independent directors exhibit deficiencies in fulfilling their duties and contribute to weaker board effectiveness.

3.2. Board Committee Services

Another measure of a director's contribution of time and energy to board duties is her involvement in major board committees. Therefore, we investigate whether there are any differences between older and younger independent directors with respect to their membership and chairmanship on major committees overseeing matters related to audit, compensation, nominating and governance. Toward that end, we construct two measures at the director-firm-year level. One is a count variable equal to the number of these major committees a director serves on in a given firm-year, and the other is a binary variable that is equal to one if a director chairs at least one of these major committees in a given firm-year. Since the audit and compensation committees are generally considered to involve more time-consuming duties, we create two more variables based on a director's membership and chairmanship on at least one of these two committees.

We regress these four variables against the *OID* indicator while controlling for a number of director and firm characteristics as well as director, industry, and year fixed effects. The coefficient estimates are reported in columns (2) - (5) of Table 3. We find that the coefficient on the *OID* indicator is insignificant in column (2) and significantly negative in columns (3), (4), and (5). These results suggest that once directors turn 65, while they do not reduce the overall number of committees they sit on, they become less likely to serve on the audit and compensation committees. They are also less likely to chair

any committee, especially the more time-intensive audit and compensation committees. In terms of economic significance, the coefficient of *OID* in column (5) is -0.018, which represents a 7.5% decrease in the probability of being a chair of either the audit or compensation committee. This magnitude is economically meaningful given the unconditional probability is 24% for our sample. Taken together, the results in Table 3 are consistent with OIDs being less likely to hold committee chair positions or serve on the relatively time-intensive audit and compensation committees.

3.3. Shareholder voting at director elections

Given the above evidence on OIDs' board meeting attendance and committee services, a natural question is how shareholders perceive their contribution to corporate governance. We examine this issue by analyzing the extent to which shareholders support older versus younger independent directors at annual board elections. Toward that end, we construct a variable, *%Withheld*, for each director candidate that is equal to (shares voted against + shares voted abstain)/(shares voted for + shares voted against + shares voted abstain). To control for factors that can lead to shareholder dissent at the firm-year level, we follow Aggarwal, Dahiya, and Prabhala (2019) and de-mean *%Withheld* by subtracting the average value of *%Withheld* across all director candidates up for election in each firm-year.[21] The key explanatory variable is the OID indicator. The control variables include director characteristics used in the board meeting attendance and committee service regressions. We also control for Institutional Shareholder Services (ISS) voting recommendations for or against director candidates. Specifically, we construct a variable *ISS against* that is equal to one if ISS recommends a "withhold", "against", or "no" vote for the director, and zero otherwise.

We estimate OLS regressions of the de-meaned *%Withheld* and report the results in Table 4. In columns (1)-(3), we find that the OID indicator has significantly positive coefficients, suggesting that all else being equal, OIDs receive significantly less shareholder support than their younger counterparts at the same firm in the same year. Results are robust even with controls for director fixed effects. In term of economic significance, the percentage of dissenting votes for OIDs is about 0.5% higher than

[21] Our results are robust to alternatively controlling for firm and year fixed effects.

that for non-OIDs. While this is not a large number in absolute terms, it is substantial considering the small cross-sectional variation in dissenting votes typically received by directors, where the mean (median) *%Withheld* is only 4% (2%) in our sample.

In columns (4)-(6), we augment the regressions by controlling for ISS recommendations. The percentage of dissenting votes for a director is significantly higher with a negative ISS recommendation. More importantly for our purpose, the coefficient on the *OID* indicator remains positive and significant, suggesting that OIDs facing higher dissenting votes does not merely reflect shareholders' passive adherence to ISS recommendations.

In columns (7)-(9), we examine the determinants of the ISS recommending against voting for a director candidate. The dependent variable is *Excess ISS against*, which is defined as the *ISS against* for the director minus the firm-level average *ISS against* for the year. We find a significantly positive coefficient for the OID indicator. This implies that the ISS is significantly more likely to recommend that shareholders vote against OIDs. Overall, our findings in this section show that both shareholders and proxy advisory services believe that on average OIDs are less effective board members, which is consistent with our earlier evidence that OIDs have poorer board meeting attendance and are less likely to serve as a chair or member on key board committees.

4. Older Independent Directors and Corporate Policies and Performance

To shed more light on the impact of OIDs on board effectiveness, we relate their presence to major corporate decisions in several key areas, including mergers and acquisitions, CEO turnovers, CEO compensation, and financial reporting. We also evaluate the overall effect of OIDs on firm performance, measured by return on assets (ROA) and Tobin's Q. A potential concern with these lines of analysis is the issue of endogeneity. More specifically, the presence of OIDs is likely to be determined by factors related to both demand for and supply of OIDs and these factors could also be related to the outcome variables we examine.

We take multiple approaches to address the endogeneity concerns. First, we include an exhaustive set of control variables in our regressions, including many important aspects of corporate governance,

managerial incentives, CEO age, and CEO quality, as well as a firm's growth opportunities and age as proxies for a firm's life cycle.[22] To account for time-invariant unobservable firm characteristics that could drive the relation between OIDs and corporate outcome measures, we also control for firm-fixed effects wherever feasible. Second, we use a two-stage least square (2SLS) framework in which we instrument for the presence of OIDs with the supply of younger director candidates in a firm's headquarters state. Third, we exploit a quasi-natural experiment that produces a plausibly exogenous shock to some firms' demand for OIDs and relate the resulting change in OID presence on boards to changes in firm performance around the shock. Fourth, we conduct event studies of OID appointments, OID deaths, and changes in firm policies governing mandatory director retirement age.

4.1. Analysis of Corporate Acquisition Decisions

Acquisitions are among the largest investments ever made by firms. As such, boards play a major role in devising, evaluating, and ultimately approving firm acquisition strategies. While acquisitions can generate shareholder value by combining firms with potential synergies, a nontrivial proportion of them are value destroying and appear to be manifestations of agency problems (e.g., Moeller, Schlingemann, and Stulz (2005), Harford and Li (2007), and Masulis, Wang, and Xie (2007)). We hypothesize that the monitoring deficiency of OIDs allows managers to engage in more empire-building acquisitions at the expense of shareholders. To test this conjecture, we assess the performance of firm acquisition decisions in relation to the presence of OIDs.

We obtain 3,643 acquisitions made by firms in our sample during the sample period drawn from the SDC database. For each acquisition, we require that (i) the deal is completed, (ii) the disclosed deal value is above $1 million and represents at least 1% of the acquirer's equity market capitalization, as measured on the 11th trading day prior to the announcement date, (iii) the acquirer controls less than 50% of target shares prior to transaction and owns 100% of target shares afterwards, and (iv) the acquirer has financial data available from COMPUSTAT, governance data available from ISS for the

[22] We use a logarithmic transformation of firm age since the coefficient of raw firm age cannot be estimated in regressions with both year and firm fixed effects due to multicollinearity. Our results are robust to including firm age squared as an additional control variable.

year prior to the acquisition announcement, and stock return data available from CRSP for the period from the 210th trading day prior to deal announcement to the 2nd trading day after the deal announcement.

We measure a firm's acquisition performance by its stock's cumulative abnormal return (CAR) over the 5-day window (-2, 2), where day 0 is the announcement date obtained from the SDC. The CAR is computed based on a standard one-factor market model, whose coefficients are estimated using daily stock returns over the period (-210, -11) with the daily market return represented by the CRSP value-weighted return. The average 5-day CAR for acquirers is 0.229% and the median is 0.101%.

We next regress the acquirer's CAR against the percentage of OIDs on its board, while controlling for a battery of firm financial and governance variables and deal characteristics. The results reported in Table 5 show that the coefficient on *OID %* is negative and statistically significant across both model specifications, even after we include firm fixed effects to control for time-invariant firm attributes. Depending on the model used, a one-standard-deviation increase in the *OID %* is associated with a decrease in acquirer CAR of 0.45 to 0.72 percentage points, equivalent to $41.9 million to $67.0 million loss in shareholder value for the average acquirer in our sample. Our findings indicate that firms with greater OID representation on their boards tend to make acquisitions that generate lower shareholder value,[23] which supports our conjecture that boards with more OIDs are less effective at reining in CEO empire building activities.

4.2. Analysis of CEO Turnover Decisions

CEO retention or replacement is another major board decision that indicates monitoring effectiveness. A board's ability to stay informed about managerial decision making and its readiness to replace managers when necessary provide powerful ex ante incentives for CEOs to act in shareholders' best interests. We examine whether the presence of OIDs affects a board's effectiveness in disciplining poorly performing managers.

We obtain data on forced CEO turnovers during the period of 1998 to 2007 from Jenter and Kanaan

[23] Dou et al. (2015) use the average age of independent directors as a control variable and find no significant relation to acquirer announcements returns.

(2015). Merging these data with our sample yields a total of 309 forced CEO turnovers, which translate into a 2.4% unconditional probability of forced CEO turnover in a given firm-year. We estimate a probit model where the dependent variable is equal to one if a firm experiences a forced CEO turnover in the year and zero otherwise. There are two key explanatory variables. One is firm performance, and the other is an interaction term between firm performance and the *OID %*. We use a firm's industry-adjusted return on assets (ROA) over the previous fiscal year as our primary performance measure.[24] Alternatively, we use a firm's market-adjusted stock returns over the previous fiscal year and obtain similar results.[25] We control for a number of other corporate governance variables as well as their interaction terms with firm performance. In addition, we control for firm fixed effects in some model specifications to focus on within-firm time-series variation. A cost of this approach is that it removes observations associated with firms having no forced CEO departures during our entire sample period, substantially reducing the sample size.

Table 6 presents the regression results for forced CEO turnovers. The coefficient estimate of the standalone firm performance measure is always negative across all model specifications. More importantly, the coefficient of the interaction term between firm performance and *OID %* is always positive and statistically significant, suggesting that CEO turnover-performance sensitivity is weaker when firms have a higher percentage of OIDs on their boards. To evaluate the economic impact, we calculate the change in the implied probability of CEO forced turnovers when firm performance changes from the 25th percentile to the 75th percentile level (the interquartile range). Using column (1) as an example, if all independent directors on the board are under 65, i.e., the *OID %* is equal to zero, the change in the implied probability of forced CEO turnover is 1.1%. When all the independent directors are aged 65 or above, i.e., the *OID %* is equal to one, the change in the implied probability of CEO forced turnover declines to only 0.8%. The difference between the implied probability changes is economically meaningful given the unconditional probability of forced CEO turnover is 2.4%. Overall, the evidence in this section is consistent with the interpretation that OIDs reduce board effectiveness in

[24] We obtain similar results using the raw ROA.
[25] Stock returns incorporate investors' belief about the probability of future CEO turnovers and thus may introduce a look-ahead bias (Weisbach (1988)).

disciplining poorly performing managers.

4.3. Analysis of CEO Compensation

Setting CEO pay is one of the most important decisions a board makes. To the extent that ineffective monitoring by OIDs allows for more self-serving managerial behavior, we expect firms with more OIDs to pay CEOs more, but at the same time, require less CEO risk bearing in terms of pay sensitivity to shareholder wealth. To test this proposition, we obtain CEO compensation data from ExecuComp. We remove firm-year observations in which CEOs are in office for under one year, since the compensation received by these CEOs is for a partial fiscal year. Given that CEO pay is under the direct purview of compensation committees, we focus particularly on the compensation committee's composition. We construct a variable, *Compensation committee OID %*, that is defined as the percentage of independent directors on the compensation committee who are 65 or older.

Table 7 presents the regression results. The dependent variables are the level of CEO total compensation in columns (1)-(3), the percentage of cash in CEO total pay (cash intensity) in columns (4)-(6), and the percentage of equity in CEO total pay (equity intensity) in columns (7)-(9). Results in column (1) suggest that after controlling for other known determinants of CEO pay, firms with a higher proportion of OIDs on their boards pay CEOs more. Based on the coefficient estimate of *OID %*, a one-standard deviation rise in the *OID %* on the board is associated with a 3.8% increase in CEO pay.

Turning to CEO pay structure, we find that CEOs at these firms receive a higher percentage of pay in the form of cash (column (4)) and a lower percentage of pay in the form of equity (column (7)), indicating that higher pay is not compensation for higher CEO risk bearing. Our inferences remain the same when we use percentage of OIDs on the compensation committee as our key explanatory variable in columns (2), (5), and (8) and even when we include firm-fixed effects in columns (3), (6), and (9).

For robustness, we use the delta of CEO compensation as an alternative pay-performance sensitivity measure. Following Core and Guay (2002), we compute delta as the change in the dollar value of a CEO's total portfolio of stocks and options for a 1% increase in stock price. In untabulated results, we find that the OID percentages on a firm's board and its compensation committee are associated with a

significantly lower CEO delta. Overall, the evidence in this section shows that boards with more OIDs are associated with significantly higher CEO pay and a pay structure composed of more cash and less equity. These findings are consistent with OIDs undermining the effectiveness of board governance in motivating CEOs through financial contracting.

4.4. Analysis of Earnings Management and Financial Restatements

Boards are responsible for overseeing and ensuring the quality of firm financial reporting. In this section, we examine the relation between OIDs and a firm's propensity to manipulate earnings. To the extent that OIDs are associated with monitoring deficiencies, we expect their presence to be associated with less reliable financial reporting. Given the importance of the audit committee in monitoring a firm's financial reporting, we construct a variable, *Audit committee OID %*, that is defined as the percentage of independent directors on the audit committee who are 65 or older.

Our first measure of financial reporting quality is the performance-adjusted discretionary accruals measure of Kothari, Leone, and Wasley (2005), computed as the difference between a firm's total accruals and the fitted normal accruals estimated from a modified Jones (1991) model. Our second measure of financial reporting quality is an earnings restatement indicator. We obtain a sample of restatements from the Audit Analytics (AA) restatements database. The AA database covers all SEC registrants who disclose a financial restatement in their electronic filings. AA defines a restatement as a revision of a previously filed financial statement due to an error, fraud, or GAAP principle misapplication. The database excludes revisions due to mergers and acquisitions or accounting principle changes such as the adoption of SFAS 123R. From the AA database, we identify the beginning and end dates of the misreporting period. If multiple filings are related to the same underlying misstatement, we consider them as a single restatement observation. Following Hennes, Leone, and Miller (2008), we further classify restatements as irregularities (intentional misreporting) or accounting errors (unintentional misreporting).[26]

[26] Hennes et al. (2008) classify a restatement as irregularity driven if it satisfies one of the following three criteria: (i) variants of the words ''irregularity'' or ''fraud'' were explicitly used in restatement announcements or relevant filings in the four years around the restatement; (ii) the misstatements led to a SEC or DOJ investigation; or (iii)

We regress the two measures of financial reporting quality against the proportion of OIDs and report the results in Table 8. We find that firms with a higher percentage of OIDs on their boards or audit committees are associated with a significantly higher level of discretionary accruals and a significantly higher likelihood of earnings restatements (columns 1, 2, 4, and 5). These results continue to hold when we control for firm fixed effects (columns 3 and 6) and when we focus on restatements due to accounting irregularities (columns 7-9). The average marginal effect of *Audit committee OID %* in column (8) is 0.014, suggesting that a one-standard-deviation increase in the OID percentage on the audit committee is associated with a 0.43 percentage point increase in the probability of intentional misreporting. This is an economically meaningful magnitude given that the unconditional probability of intentional misreporting for our sample is only 4%. Overall, the evidence in this section suggests that OIDs weaken board oversight of a firm's financial reporting, allowing managers to engage in more aggressive earnings manipulations.

4.5. Analysis of Firm Performance

The collective results up to this point portray a consistent picture that OIDs provide inadequate management oversight and contribute to poorer managerial incentives and greater agency problems. We next examine how the presence of OIDs is related to overall firm performance. Based on the evidence documented for specific corporate policies, we expect to find that firm performance is negatively related to the proportion of OIDs on boards. We test this prediction by estimating regressions of firm performance, measured by either a firm's ROA or Tobin's Q.

Table 9 presents the regression results. The associations between *OID %* and the two performance measures are negative and statistically significant, even when we control for firm fixed effects. Using the coefficient estimates from column (1) and (3), we find that a one-standard-deviation increase in *OID %* is associated with a 0.4 percentage point decline in ROA and a 0.04 decline in Tobin's Q. With respect to other governance variables, consistent with prior literature, we find that firms with larger and

independent investigations were launched by boards of directors of the restating firms. We use three variables from the AA database that correspond to the above three criteria.

busier boards are associated with worse firm performance (Yermack (1996) and Fich and Shivdasani (2006)), and director ownership has an inverse U-shaped relation with firm performance (Morck, Shleifer, and Vishny (1988) and Kim and Lu (2011)).

While a firm fixed effects specification ensures that the negative relation between OIDs and firm performance is not driven by unobservable time-invariant firm characteristics, another endogeneity related concern is reverse causality. For instance, as part of their turnaround efforts, poorly performing firms could appoint more OIDs (either voluntarily or at the behest of activist shareholders) to tap into their potentially greater experience, networks or reputation. In this scenario, poor performance leads to a high percentage of OIDs on boards rather than the other way around.

To address this reverse causality possibility, we examine new independent director appointments of firms stratified by prior firm performance. We define good (poor) performers as firms whose ROA is in the top (bottom) tercile of each industry-year cohort. In unreported results, we find that compared to good performers, poor performers are more likely to appoint more independent directors in the next year, but they are equally likely to appoint a larger number of younger and older independent directors. Therefore, the negative relation between OID presence and firm performance is unlikely to be driven by poorly performing firms subsequently appointing disproportionately more OIDs.

In a related test, we examine OID equity ownership in firms to gauge the extent to which they are appointed to boards of poorly performing firms to act as representatives of major shareholders to monitor managers and engineer corporate turnaround. Examining the aggregate equity ownership of all OIDs at a firm, we find that it averages 0.4% in our sample. In addition, at the individual director level, only 11.3%, 2.1%, 1.1%, or 0.25% of OIDs hold more than 0.1%, 0.5%, 1%, or 5% of a firm's equity ownership, respectively. Given the typical miniscule equity ownership held by OIDs, an overwhelming majority of them do not appear to be affiliated with blockholders. Our results are also robust to removing OIDs with at least 0.1% equity ownership.

4.6. Additional Identification Strategies

So far, we have relied on firm-fixed effect regressions to control for time-invariant firm attributes

to mitigate concerns about omitted variables. However, this approach does not account for the influence of time-varying omitted variables. Therefore, we use several additional identification strategies to further alleviate such endogeneity concerns.

4.6.1. The Instrumental Variable Approach

We first employ a two stage least squares (2SLS) regression framework in which we instrument for the presence of OIDs on a firm's board by the supply of younger director candidates in the firm's local director labor market. Knyazeva, Knyazeva, and Masulis (2013) argue and show that because of the higher board participation costs faced by candidates located further away from firms, the local supply of directors significantly affects a firm's ability to hire qualified independent directors. Therefore, we posit that firms are more likely to tap into the pool of older directors when there is less supply of younger candidates locally. Since a firm's headquarters location is generally determined early in its life and rarely changes (Pirinsky and Wang (2006)), we consider the supply of younger directors in the vicinity of a firm as a plausibly exogenous source of variation.[27] We recognize that no formal econometric tests exist for testing the validity of the exclusion restriction. However, to the extent that younger director candidates are more diverse in gender or ethnicity, we do control for board gender diversity, which can help minimize other potential channels through which a younger local director pool might affect firm outcomes.

To measure the local supply of younger director candidates, we take the logarithmic transformation of the number of directors aged below 65 at all other public firms headquartered in the same state scaled by the same total number of public firms in the state.[28] In constructing this instrument, we exclude firms in the same 4-digit SIC industry as the focal firm because a firm is unlikely to invite directors of its direct competitors to join its board due to antitrust and competitive considerations.

[27] Information on firms' historical headquarters state is from the WRDS's SEC Analytics Suite database, which records the location of firms' historical headquarters based on their 10-K filings. Our results are robust to excluding firms that changed their headquarters state during the sample period.

[28] We focus on existing director candidates since half of all new independent director appointments are existing directors, which is more than three times the next largest category of independent director candidates. On average, independent directors have 0.8 existing directorships at the time of their appointments.

We estimate 2SLS regressions for each of the firm outcome variables examined in previous sections. In the first stage estimation, the dependent variable is the percentage of OIDs on a firm's board, and the key explanatory variable is the instrument, the local supply of younger director candidates. Table A2 in the Appendix presents the first-stage regression results. Consistent with our expectation, the coefficient of the local supply of younger directors is negative and statistically significant at the 1% level, supporting the instrument's strength and relevance. The Cragg-Donald Wald F-statistic is close to 400, easily rejecting the null hypothesis of a weak instrument.

Table 10 presents key coefficient estimates from the second-stage regressions. All the results from previous sections continue to hold. Specifically, the coefficient of *OID %* remains significantly negative in regressions of acquirer returns, CEO equity intensity, and firm performance, and significantly positive in regressions of CEO total compensation and cash pay, discretionary accruals, and earnings restatements. In the CEO turnover regressions, the coefficients of the interaction terms between *OID %* and two firm performance metrics remain significantly positive. Thus, we conclude that our findings are robust to endogeneity correction based on this instrumental variable approach.[29]

4.6.2. A Quasi-Natural Experiment

To further establish a causal relationship between OIDs and firm performance, we exploit changes to the NYSE and Nasdaq listing rules in 2003 as a quasi-natural experiment. Exogenous shocks to the composition of corporate boards rarely exist, but the NYSE and Nasdaq rule changes provide an ideal setting. Previous studies have used the same regulatory shock to examine the effect of board independence on CEO compensation (Chhaochharia and Grinstein (2009)), corporate transparency (Armstrong, Core, and Guay (2014)), and CEO monitoring (Guo and Masulis (2015)).

Responding to a number of major U.S. corporate governance scandals, the United States Congress passed the Sarbanes-Oxley Act in 2002 and concurrently the NYSE and Nasdaq made major listing rule changes in 2003, with the intent of strengthening the independent oversight of corporate boards. In

[29] To the extent that large firms tend to have high national or international visibility and are less constrained by the local director labor market in their director recruitment, we exclude from our analysis firms in the top quartile based on their market capitalization as a robustness. We find that our results continue to hold.

particular, the NYSE and Nasdaq issued a regulation in 2003 that required listed firms to have a majority of independent directors on their boards. Firms compliant with the regulation prior to the issuance were not affected. Only noncompliant firms were forced to increase their percentage of independent directors. Noncompliant firms could meet the requirements by recruiting new directors to the boards. To the extent that there was a shortage of qualified candidates due to the sudden exogenous increase in demand for independent directors, noncompliant firms were likely to view recently retired officers and directors of other firms as a logical source of director talent. Therefore, they may experience an increase in OID representation on their boards. Our empirical strategy is to use a firm's noncompliant status to instrument for the change in the percentage of OIDs on the firm's board and then relate the change in the OID percentage to the change in firm performance.

Following Chhaochharia and Grinstein (2009) and Guo and Masulis (2015), we use the period between 2000 and 2005 as our event window. We choose 2000 as the benchmark year to ensure that our event window begins before the new regulation could be reasonably anticipated. We choose 2005 as the end of our event window as firms have to comply with the new listing rule by that year.[30] We define compliant firms as those that had a majority of independent directors on their boards in 2000. Firms that do not satisfy the above criteria are classified as noncompliant. For robustness, to ensure that the compliant and non-compliant firms are similar, we match each compliant firm with a non-compliant firm from the same industry and with the closest firm size (measured by the market value of equity). Our results continue to hold.

To assess the impact of this regulatory shock, we estimate the change in *OID %* separately for compliant firms and noncompliant firms. In a univariate comparison, we find that noncompliant firms and compliant firms had similar levels of *OID %* in 2000 (31.8% for noncompliant firms and 30.6% for compliant firms). However, noncompliant firms increased their *OID %* by 5.97 percentage points (almost 20% on a relative scale) over the event window, while compliant firms experienced a much

[30] Specifically, firms with unitary boards were required to comply with the regulation by the earlier of: (1) the firm's first annual shareholder meeting after January 15, 2004; or (2) October 31, 2004. Firms with classified boards were required to comply with the regulation by their first annual meeting after January 15, 2005, but no later than December 31, 2005 (Chhaochharia and Grinstein (2009) and Armstrong et al. (2014)).

smaller increase of 1.74 percentage points (about 6% on a relative scale), where the difference is statistically significant at the 5% level. A major reason behind the larger rise in *OID %* at noncompliant firms is that they appointed significantly more OIDs during this period to comply with the new listing standards. Indeed, the percentage of OIDs among newly appointed independent directors at non-compliant firms increased from 10% to 15% (by 50% on a relative scale), while it held steady at about 10% at compliant firms.

We next proceed to estimate 2SLS regressions of firm performance using a firm's noncompliance status to predict the change in its OID percentage. We use model specifications similar to those in Table 9, except that we measure all variables as changes over the event window 2000-2005. We instrument for *Change in OID %* with *Noncompliance,* an indicator variable that equals one if the firm's board structure was not complaint with the new rule in 2000 and zero otherwise.

Table 11 presents the second-stage estimation results. The dependent variable is *Change in ROA* in column (1) and *Change in Tobin's Q* in column (2). The instrumented version of *Change in OID %* has a negative and statistically significant coefficient in both columns.[31] These results reinforce our findings in Tables 9 and 10 that firm performance decreases with the percentage of OIDs on the board.

4.6.3. Event Studies of Director Retirement Policy Changes, OID Appointments, and OID Deaths

In this section, we take a model-free approach to examine OIDs' net impact on firm value. Specifically, we conduct three separate event studies to gauge the stock price reactions to the announcements of (1) firms changing their director retirement policies, (2) firms appointing OIDs, and (3) the deaths of OIDs.

4.6.3.1. Announcements of Director Retirement Policy Changes

To construct the sample for this analysis, we gather information on director retirement policy changes from the Capital IQ Key Development Database. Specifically, we conduct a keyword search

[31] To the extent that large firms face fewer constraints in their recruitment of independent directors to comply with the new regulation, we exclude them from our analysis and find that our results continue to hold.

on “Age”, “Director” and “Retire”. The search returns 208 news articles. We read each article and remove irrelevant news, duplicate news, news where we cannot identify the direction of the change in retirement age, and news about companies that do not have stock return data available from CRSP. We confirm the changes in bylaws by checking firms’ SEC filings. We identify 91 retirement policy changes that can potentially increase a board’s OID representation. After removing contaminated announcements, the “clean” sample contains 59 retirement policy change announcements.[32] Table A3 in the Appendix provides details on the full and clean samples.

We measure the announcement-period cumulative abnormal returns (CAR) over a 3-day event window (-1, 1) with event date 0 being the announcement date. Abnormal returns are computed based on the coefficients of a standard one-factor market model estimated using daily stock returns over the 200-day window (-210, -11) and the CRSP value-weighted return as the market return. The results are reported in Panel A of Table 12. The mean CAR is -0.62% and the median is -0.69%, both statistically significant. The effect is equivalent to a $44.1 - $48.7 million loss in shareholder value for the average event firm in our sample. This suggests that on average shareholders view director mandatory retirement age increases as value destroying.

During our keyword and news search, we also identify 5 events that decrease the mandatory retirement age, 2 events that impose a mandatory retirement age, and 1 event that eliminates the board's discretion to waive the mandatory retirement age. Although the number of these events is too small for formal statistical testing, it is worth noting that the stock market reacts positively to these 8 director-age-decreasing events, with an average CAR of 0.98%. The effect is equivalent to a $91.3 million gain in shareholder value for the average event firm in our sample.

4.6.3.2. Announcements of OID Appointments

To construct the sample of OID appointment announcements, we gather information from the ISS database on independent directors who were 65 or older when they joined the board. We then identify

[32] We exclude announcements contaminated by events such as the annual general meetings, director appointments, earnings announcements, dividend declaration and other bylaws changes.

the first public disclosure dates of these appointments by manually searching news articles in Factiva. If the announcement dates cannot be located in Factiva, we use the dates recorded in the Capital IQ Key Development Database. The sample construction is described in Table A4 of the Appendix. There are 1,127 appointments in total. We remove director appointments that coincide with annual shareholder meetings because these director announcements are contaminated by other information disclosed in proxy statements. We further remove appointments contaminated by confounding events such as multiple appointments of directors, executive turnovers, and announcements of dividends, repurchases, earnings, and mergers and acquisitions (see Table A4 in the appendix for a complete list of these events). Our final sample contains 676 uncontaminated appointment announcements.

We estimate the appointing firms' cumulative abnormal returns (CAR) over a 3-day event window centered on the appointment announcement date and report the results in Panel B of Table 12. We find that the mean and median CARs are -0.20% and -0.22%, both statistically significant. This evidence suggests that the stock market holds a skeptical view of OIDs and reacts negatively to their appointments. The effect is equivalent to a $21.7 - $23.9 million loss in shareholder value for the average appointing firm in our sample.

4.6.3.3. Announcements of OID Deaths

OID deaths afford a relatively exogenous setting to study the shareholder value impact of OIDs. We begin by undertaking keyword searches in Capital IQ and Factiva for director deaths.[33] We only retain the deaths of independent directors by using the information from ISS and Audit Analytics to identify inside and gray directors. We then search Factiva, FactSet, and Edgar for the earliest news releases of independent director deaths and excluded announcements contaminated by material firm news releases. We find that most initial announcements overlap with firm 8-K filings about director deaths and that abnormal daily trading volume is also concentrated in the two trading days following the 8-K filing dates. Director deaths most frequently occur the day before the 8-K filings. We obtain

[33] We also consult Table C1 in Fedaseyeu, Linck, and Wagner (2018). We wish to thank Hannes Wagner and his co-authors for sharing their director deaths data with us to check for missing independent director deaths.

106 OID death announcements and 27 non-OID death announcements that are free of confounding events in our sample.[34] The sample construction is described in Table A5 of the Appendix.

We find that the announcements of OID deaths generate significantly positive abnormal stock returns. The mean and median CARs over a 3-day event window beginning on the date of the firm's 8-K filing announcing a director's death are 1.41% and 0.54% (*p*-values: 0.04 and 0.02). In contrast, the mean and median CARs around the announcements of non-OID deaths are negative, albeit insignificant, which is consistent with Nguyen and Nielsen (2010). The differences in announcement CARs between OID and non-OID deaths are statistically significant at the 5% level.[35] These results suggest that investors react favorably to these unexpected departures of OIDs and are consistent with the negative stock market reactions to OID appointments.

5. **Advisory Benefits of Older Independent Directors**

In this section, we go beyond the average negative effect of OIDs documented above and explore whether at least some OIDs can provide valuable advisory benefits to firms. We focus primarily on the expertise of OIDs and on economic settings where firms have greater need of board expertise and advice.

First, we differentiate among OIDs by whether they have specialized experience pertinent to firms' acquisition decisions. In particular, we identify OIDs with prior acquisition experience or work experience in a target's industry. OIDs with such experiences should be able to provide more valuable counsel on these M&A transactions and help acquirers generate higher shareholder value. We define an OID as having acquisition experience if she has participated in at least one acquisition made by another public company where she served as a director or a senior executive during the prior 10 years. We defined an OID as having target industry experience if she previously served as a director or a senior executive at another firm in the same three-digit SIC industry as the target over the prior 10 years.[36] We obtain director experience from ISS and executive experience from ExecuComp.

[34] Very few director death announcements include the naming of replacement directors and our results are invariant to including these cases.
[35] We find qualitatively similar results using the earliest news date of director deaths and their board affiliations.
[36] The results are robust if we use two-digit or four-digit SIC codes to define target industry experience.

We re-estimate acquirer return regressions after decomposing *OID %* into two separate variables, *Inexperienced OID %* and *Experienced OID %*, based on an OID's prior acquisition experience or target industry experience. Panel A of Table 13 presents the results. We find that OIDs with prior acquisition experience are unrelated to acquirer returns, possibly because the benefits of their better advice offset the costs from their poorer monitoring. On the other hand, OIDs with target industry experience significantly increase acquirer returns, suggesting that the benefits from their advice outweigh the costs of their monitoring deficiencies. Finally, OIDs with neither type of experience continue to exhibit a significantly negative association with acquirer returns.[37]

Next, we investigate the possibility that firms under certain circumstances may benefit from OIDs. To the extent that OIDs are more experienced and can provide more seasoned opinions and advice to management, they may be able to make positive contributions to firms that are in greater need of board advice. We exploit import tariff cuts as a quasi-natural experiment that substantially heightens the product market competition of our sample firms. Import tariff cuts lower the cost of foreign rivals entering U.S. product markets, and as a result, increase the competitive pressure on U.S. firms in impacted industries. The experience and advice from OIDs may be especially valuable to firms as they adapt to a different and more challenging industry landscape.

We use the U.S. import tariff data compiled by Feenstra (1996), Feenstra, Romalis, and Schott (2002), and Schott (2010).[38] The tariff data are only available for manufacturing industries from 1998 to 2005 in our sample period. For each year and each three-digit SIC industry, we compute the tariff rate as the duties collected by U.S. Customs divided by the custom value of imports. Similar to prior studies, e.g., Fresard (2010) and Valta (2012), we define a tariff cut in terms of the deviations of the yearly changes in industry tariffs from their median level. Specifically, a tariff cut occurs in an industry-year when the industry experiences a negative tariff change that is two times larger than the median change of the industry's tariff during the sample period. We exclude tariff cuts followed by equivalent tariff raises over the subsequent two years. We then construct an indicator *Tariff Cut*, which is equal to

[37] The results on target industry experience are robust to excluding intra-industry acquisitions based on three-digit SIC codes.

[38] The tariff data are available at http://faculty.som.yale.edu/peterschott/sub_international.htm.

one if a firm's industry experiences a tariff cut in a particular year and zero otherwise. We repeat the firm performance regressions with the inclusion of *Tariff Cut* and its interaction term with the *OID %*.

Panel B of Table 13 presents the results. Consistent with prior research on tariff cuts, the coefficient on *Tariff Cut* is negative and statistically significant in both the *ROA* and *Tobin's Q* regressions, suggesting that following tariff cuts, firm performance deteriorates due to increased product market competition. More importantly, the coefficient on the interaction term between *OID %* and *Tariff Cut* is positive and statistically significant for both firm performance measures, indicating that the presence of OIDs is beneficial when firms face more intense product market competition.[39] This finding is consistent with OIDs using their experience to help firms better cope with heightened challenges in their competitive environment.

We also explore whether firms with certain characteristics benefit more from the OIDs' advisory services. Following Coles, Daniel, and Naveen (2008) and Field, Lowry, and Mkrtchyan (2013), we consider several types of firms that potentially have greater needs for board advice: firms operating in highly volatile industries, younger firms, firms with higher sales growth, and firms with multiple business segments. Our rational is that firms in highly volatile industries need to contend with unpredictable operating environments, and decision making is made more difficult by rapidly evolving industry landscapes. Similarly, young and fast growing firms often face uncertain futures and changing business conditions, and their managers may be inexperienced in dealing with many of the challenges and therefore they can greatly benefit from OID advice. Firms operating in multiple industry sectors usually have more complex business operations and could benefit from OIDs' extensive experience.

For each industry, we compute the industry-level volatility as the average standard deviation of annual stock returns of all firms in the industry. We define firm age as the number of years that a firm exists in Compustat and sales growth as the annual growth rate of sales. We obtain a firm's number of business segments from Compustat. Using these variables, we construct two indicators, *Low advisory need* and *High advisory need*. The indicator *High advisory need* is equal to one if (1) a firm's industry

[39] The results are qualitative similar if we define a tariff cut in alternative ways, such as using three times the median change as the cutoff, using two (or three) times the median reduction as the cutoff and using four-digit SIC code industries.

volatility is above the median of all industries; or (2) a firm's age is below the annual median; or (3) a firm's sales growth is above the annual median; or (4) a firm has more than one business segment, and zero otherwise. The *Low advisory need* indicator is equal to one minus *High advisory need*. We re-estimate firm performance regressions and separately interact *OID %* with these two indicators. We also control for a firm's advisory needs in these regressions.[40]

Panel C of Table 13 reports the results. We find across all four measures of firm advisory needs that the negative and significant relation between OID presence and firm performance only exists among firms with low advisory needs. For firms with high advisory needs, there is no significant relation between firm performance and OID presence per se. However, the difference in the coefficients of the two interactions is statistically significant across all specifications.[41] These results suggest that in firms with greater needs for board advice, OIDs do not harm performance.

Finally, we differentiate between busy and non-busy OIDs, where an OID is defined as busy if she holds three or more directorships (Fich and Shivdasani (2006)).[42] Having multiple board seats can be an indicator of higher-quality directors, who can potentially provide greater advisory benefits to firms. However, serving on multiple boards also limits the time and resources that directors have to meet their responsibilities on each board, which could exacerbate the monitoring deficiencies of OIDs.

We re-estimate the firm performance regressions after decomposing the key variable *OID %* into two components: *Busy OID %* and *Non-busy OID %*.[43] Panel D of Table 13 presents the regression results. We find that the coefficients of both *Busy OID %* and *Non-busy OID %* are significantly negative,[44] suggesting that our results are not driven by busy OIDs. Moreover, the coefficients of *Busy OID %* are significantly more negative than those of *Non-busy OID %*. This evidence does not support

[40] Note that for the industry volatility analysis, the control variable *Advisory need* is absorbed as it is constant for individual industries.
[41] The results are robust to alternatively using the 75th percentile of industry volatility, firm age, sales growth, and the number of different 2-digit SIC segments to divide firms into high- and low-advisory need groups.
[42] The results remain qualitatively the same if we use two or four directorships to define busy directors.
[43] Given that the variable *Busy OID %* is highly correlated with the existing control variable *Busy board*, we remove *Busy board* from the regressions. The results are robust if we control for the busyness of younger directors, measured as the percentage of below-65 independent directors who hold three or more directorships.
[44] The lone exception is that the coefficient of *Non-busy OID %* is insignificant in the ROA regression with firm fixed effects.

the view that busy OIDs are on average of higher quality and thus, provide more valuable advisory services. Instead, it suggests that the deficiencies associated with OIDs are compounded when they become overly busy.

In sum, our analysis in this section uncovers interesting cross-sectional variations in the relation between OIDs and firm performance. While the presence of OIDs on average has a negative impact due to their monitoring deficiencies, it is important to recognize that they can also bring valuable advisory benefits to firms when they can provide specialized experience to the board or advice to firm management especially at firms with particular needs for this advice.

6. Conclusion

We explore the implications of older independent directors for board effectiveness and corporate governance. Evidence from our director and firm level analyses suggests that older independent directors are associated with both monitoring deficiencies and advisory benefits. With respect to monitoring deficiencies, we find that older independent directors are more likely to miss board meetings, less likely to be a member or chair of important board committees, and less likely to receive strong shareholder support at annual board elections. Their presence on corporate boards is associated with worse acquisition decisions, lower CEO turnover-performance sensitivity, higher CEO compensation and lower pay-performance sensitivity, and poorer financial disclosure. On average, a greater representation of older independent directors on corporate boards is negatively associated with firm performance. Investors tend to react negatively to firm policy changes that increase the mandatory director retirement age and firm appointments of older independent directors. On the other hand, the sudden deaths of OIDs generate positive stock market reactions.

On the other hand, consistent with their advisory value, we find that older independent directors can improve firms' acquisition decisions when they have prior acquisition experience or professional experience in the target's industry. In addition, their effect on firm performance can sometimes become significantly positive when managers are in greater need of board advice.

In sum, our study sheds light on the recent board aging phenomenon in the U.S. and its impact on

boards' ability to fulfill their monitoring and advising functions. As such, it carries important economic messages for both firms' director recruitment efforts and any future governance reforms and regulations that may alter the availability and characteristics of qualified director candidates.

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Figure 1. Overall Time Trend of Older Independent Directors

This figure shows the average percentage of older independent directors (*OID %*) for our sample firms by year. OIDs are defined as independent directors who are at least 65 years old. *OID %* is defined as the percentage of a firm's independent directors who are at least 65 years old. In addition to the full sample, we separately examine firms that are incumbent members of the S&P 1500 indices and firms that are new entrants to the indices. We define new entrant firms as firms that appeared in the sample for no more than two years.

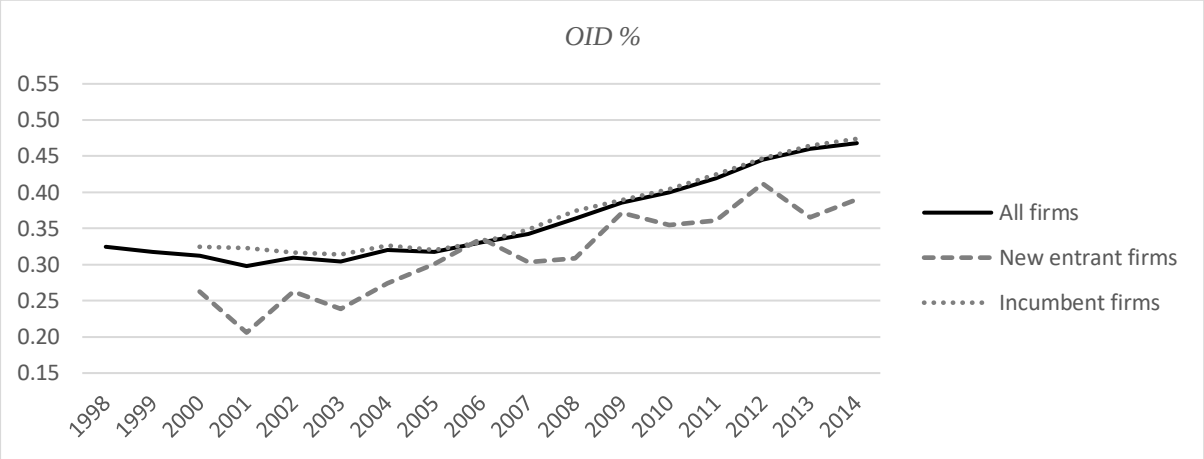

Figure 2. Time Trend of Independent Director Age at Initial Appointment

This figure shows the average and median age of independent directors at the time of their initial appointments by year. The sample includes all new appointments of independent directors.

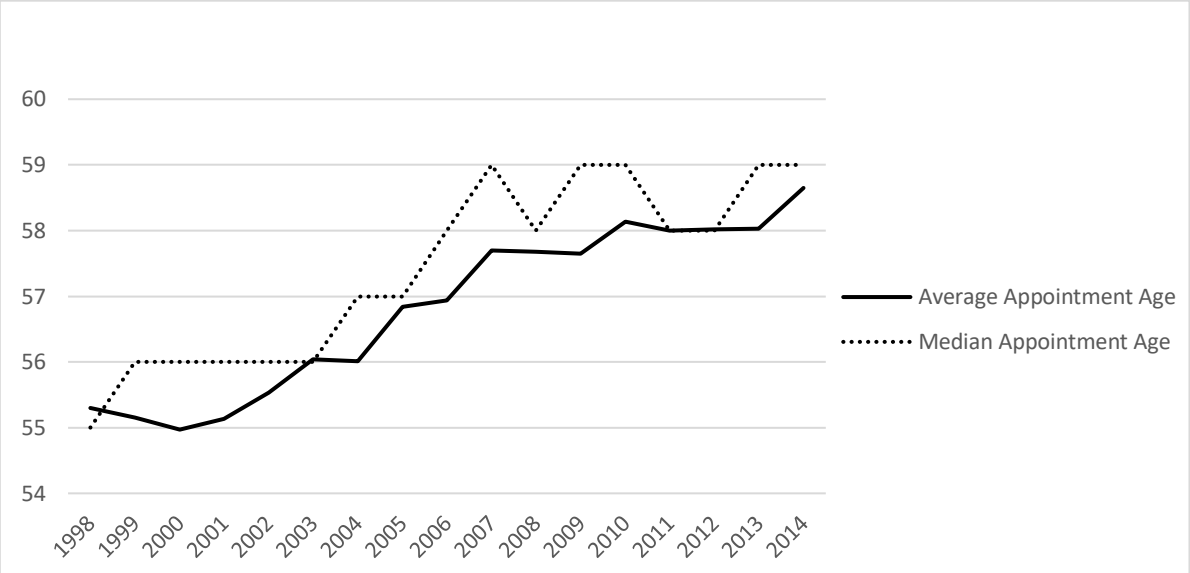

Figure 3. Time Trend of the Percentage of Older Independent Directors at Appointments

This figure shows the percentage of independent directors who are at least 65 years old at their initial appointments by year. The sample includes all new appointments of independent directors.

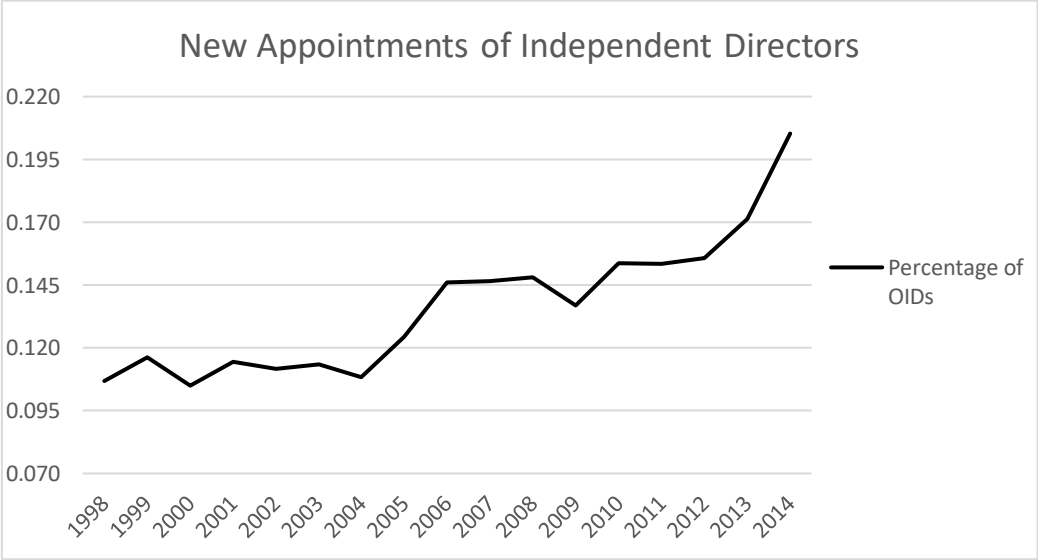

Table 1. Time Trends of Independent Director Age and the Frequency of Older Independent Directors

This table reports the annual mean and median of *independent director age* at the director level, and the percentage of older independent directors (*OID %*) and the instance of *OID majority* at the firm level. OIDs are defined as independent directors who are at least 65 years old. *OID %* is defined as the percentage of a firm's independent directors who are at least 65 years old. *OID Majority* is an indicator variable equal to one if at least 50% of a firm's independent directors are 65 or older, and zero otherwise.

	Independent director age			*OID %*			*OID Majority (0/1)*	
Year	N (# of directors)	Mean	Median	N (# of firms)	Mean	Median	Mean	Median
1998	9,393	59.98	60	1,409	0.324	0.333	0.266	0.000
1999	9,711	60.02	60	1,437	0.317	0.300	0.260	0.000
2000	9,359	59.89	60	1,409	0.311	0.286	0.255	0.000
2001	9,650	59.74	60	1,438	0.298	0.267	0.248	0.000
2002	8,311	60.16	61	1,264	0.310	0.286	0.245	0.000
2003	8,802	60.26	61	1,274	0.304	0.286	0.233	0.000
2004	8,977	60.51	61	1,288	0.319	0.300	0.243	0.000
2005	8,987	60.62	61	1,295	0.319	0.300	0.248	0.000
2006	8,979	60.85	61	1,272	0.332	0.333	0.259	0.000
2007	9,600	61.03	62	1,289	0.343	0.333	0.275	0.000
2008	10,658	61.32	62	1,363	0.365	0.364	0.319	0.000
2009	10,175	61.71	62	1,306	0.387	0.375	0.346	0.000
2010	10,335	62.06	63	1,305	0.401	0.400	0.381	0.000
2011	10,285	62.35	63	1,306	0.421	0.400	0.416	0.000
2012	10,448	62.67	64	1,308	0.447	0.444	0.466	0.000
2013	10,689	62.85	64	1,310	0.460	0.444	0.483	0.000
2014	10,602	63.01	64	1,296	0.469	0.500	0.501	1.000
Total	164,961	61.18	62	22,569	0.360	0.333	0.319	0.000

Table 2. Summary Statistics of Independent Director Attributes and Firm Characteristics

Panel A reports the summary statistics (mean values) of independent director attributes, with column (1) for independent directors below 65 years old and column (2) for those aged 65 or above. The last two columns show the simple mean-comparison tests between the two groups of independent directors. Superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively. Panel B reports the summary statistics for key firm characteristics, governance characteristics and outcome variables. Detailed definitions of all variables are in Appendix Table A1.

Panel A. Summary Statistics (mean values) of Independent Directors				
	(1) Non-OIDs	(2) OIDs	(2) - (1)	
	Age<65	Age≥65	Difference	*t*-stat
Age	56.530	69.250	12.720***	(480.00)
Retired	0.213	0.433	0.220***	(85.72)
Age at appointment	50.620	58.340	7.720***	(220.00)
Tenure	5.918	10.800	4.882***	(160.00)
Coopted	0.502	0.331	-0.171***	(-68.39)
Ownership	0.200%	0.187%	-0.013%***	(-3.18)
Blockholder	0.009	0.006	-0.003***	(-6.51)
No. of board seats	1.913	2.025	0.112***	(18.91)
Financial expertise	0.237	0.241	0.004	(1.55)
Former employee	0.002	0.003	0.002***	(6.07)
CEO of other firms	0.153	0.037	-0.116***	(-73.75)
Executive of other firms	0.196	0.073	-0.123***	(-68.03)

Panel B. Summary Statistics of Sample Firms						
Variable	N	Mean	Std.	P25	Median	P75
Firm characteristics						
ROA	22,569	0.127	0.091	0.073	0.122	0.176
Tobin's Q	22,569	1.853	1.162	1.127	1.455	2.102
Log market cap	22,569	7.679	1.571	6.583	7.547	8.676
R&D	22,569	0.037	0.075	0.000	0.000	0.032
Volatility	22,569	0.117	0.053	0.080	0.106	0.141
Firm age	22,569	27.558	16.873	13.000	22.000	42.000
CEO quality	22,569	0.508	1.926	-0.084	0.268	0.798
CEO age	22,569	55.880	7.001	51.000	56.000	60.000
Ave executive age	22,569	52.495	4.258	49.750	52.500	55.200
Governance characteristics						
OID %	22,569	0.360	0.309	0.200	0.333	0.500
E-index	22,569	2.471	1.425	1.000	2.000	4.000
Board size	22,569	9.405	2.555	8.000	9.000	11.000
Board independence	22,569	0.728	0.155	0.636	0.750	0.857
Board ownership	22,569	0.070	0.108	0.010	0.027	0.075
Duality	22,569	0.562	0.496	0.000	1.000	1.000
Busy board	22,569	0.249	0.221	0.000	0.222	0.400
ID-blockholder	22,569	0.041	0.199	0.000	0.000	0.000
Long-tenured ID %	22,569	0.139	0.176	0.000	0.100	0.250
Cooption	22,569	0.455	0.367	0.122	0.500	0.800
Gender diversity	22,569	0.107	0.0942	0.000	0.111	0.1667
Outcome variables						
Attend_less75_pct	149,558	0.014	0.117	0.000	0.000	0.000
Number of committee memberships	149,558	1.838	1.104	1.000	2.000	3.000
Committee chairman	140,980	0.310	0.462	0.000	0.000	1.000
Audit and compensation committee member	149,558	0.186	0.389	0.000	0.000	0.000
Audit or compensation committee chairman	140,980	0.240	0.427	0.000	0.000	0.000
%Withheld	49,695	0.047	0.076	0.009	0.021	0.047
ISS against	50,047	0.048	0.214	0.000	0.000	0.000
Acquirer CAR	3,643	0.002	0.718	-0.033	0.001	0.037
Forced turnover	12,382	0.027	0.161	0.000	0.000	0.000
Total compensation	20,220	8.124	1.012	7.423	8.157	8.841
Cash intensity	20,220	0.374	0.267	0.164	0.294	0.521
Equity intensity	20,220	0.453	0.269	0.268	0.500	0.659
Discretionary accruals	17,870	0.000	0.047	-0.024	0.000	0.025
Restatement	22,569	0.090	0.287	0.000	0.000	0.000
Irregularity	22,569	0.050	0.218	0.000	0.000	0.000

Table 3. Regressions of Independent Directors' Board Meeting Attendance, Committee Membership and Chairmanship

This table reports regression analysis of board meeting attendance, board committee membership and chairmanship. The sample is restricted to independent directors. Each observation is a director-firm-year. The dependent variable for column (1) is *Attend_less75_pct*, an indicator equal to one if an independent director attended less than 75% of a firm's board meetings in a year, and zero otherwise. The dependent variable for column (2) is the number of committee memberships on the audit committee, compensation committee, nominating committee and governance committee. The dependent variable for column (3) is an indicator variable equal to one if a director is the chairman of any committee, and zero otherwise. The dependent variable for column (4) is an indicator variable equal to one if a director sits on either the audit committee or the compensation committee, and zero otherwise. The dependent variable for column (5) is an indicator variable equal to one if a director is the chairman of the audit committee or the compensation committee, and zero otherwise. Column (2) estimates a Poisson count regression. Columns (1) and (3)-(5) estimate a linear probability model. In parentheses are *t*-statistics based on standard errors adjusted for heteroskedasticity and director-level clustering. Superscripts ***, **, and * denote significance at 1%, 5%, and 10%.

	(1) *Attend_less75_pct*	(2) *Number of committee memberships*	(3) *Committee chairman*	(4) *Audit or compensation committee member*	(5) *Audit or compensation committee chairman*
Director characteristics					
OID	0.003**	0.005	-0.013***	-0.008**	-0.018***
	(2.01)	(0.70)	(-3.03)	(-2.13)	(-4.55)
Number of board seats	0.001	0.005	0.008***	0.003**	0.010***
	(1.57)	(1.54)	(3.99)	(2.02)	(5.19)
CEO director	0.005***	0.036***	-0.019***	-0.002	-0.020***
	(2.69)	(4.35)	(-3.81)	(-0.59)	(-4.57)
Ownership	-0.130	-0.058	0.298	-0.505***	0.027
	(-1.54)	(-0.12)	(1.34)	(-2.79)	(0.13)
Tenure	0.001	0.008***	0.015***	0.001**	0.010***
	(0.14)	(6.11)	(32.89)	(2.04)	(24.75)
Coopted	0.002	-0.017*	0.001	-0.005	0.002
	(1.03)	(-1.88)	(0.29)	(-1.36)	(0.41)
Firm characteristics					
Log market cap	-0.005***	-0.020***	-0.004*	-0.003**	0.001
	(-5.86)	(-4.09)	(-1.94)	(-1.96)	(0.00)
ROA	-0.004	0.082*	0.098***	0.014	0.082***
	(-0.37)	(1.93)	(3.41)	(0.56)	(3.13)
Tobin's Q	0.002***	0.008**	-0.007***	0.007***	-0.006***
	(2.79)	(2.08)	(-3.49)	(3.88)	(-3.55)
R&D	-0.001*	-0.003*	0.001	-0.001	0.001
	(-1.89)	(-1.74)	(0.04)	(-0.93)	(0.22)
Volatility	-0.006	-0.085	-0.098**	0.081**	-0.042

	(-0.45)	(-0.99)	(-2.34)	(2.30)	(-1.11)
Log firm age	0.001	-0.007	-0.017***	0.013***	-0.004
	(0.81)	(-0.59)	(-3.84)	(3.52)	(-1.01)
Log CEO age	0.003	0.036	-0.008	0.065***	0.009
	(0.68)	(1.38)	(-0.56)	(5.76)	(0.73)
CEO quality	-0.001	-0.003***	-0.001	0.001	-0.001*
	(-1.52)	(-2.93)	(-1.31)	(0.22)	(-1.90)
E-index	0.001	0.001	0.001	-0.006***	-0.001
	(0.48)	(0.46)	(1.16)	(-5.83)	(-0.07)
Board size	0.001***	-0.027***	-0.014***	-0.020***	-0.012***
	(3.71)	(-14.55)	(-16.28)	(-27.88)	(-15.71)
Board independence	0.014**	-0.252***	-0.153***	-0.316***	-0.151***
	(2.31)	(-9.25)	(-10.43)	(-25.81)	(-11.32)
Board ownership	0.001	-0.022	0.002	0.029	0.025
	(0.03)	(-0.43)	(0.09)	(1.44)	(1.16)
Duality	-0.002	0.010*	-0.009***	-0.005*	-0.003
	(-1.46)	(1.79)	(-2.93)	(-1.85)	(-1.19)
Busy board	-0.001	0.085***	-0.063***	0.014	-0.047***
	(-0.17)	(2.97)	(-4.49)	(1.20)	(-3.74)
ID-blockholder	0.001	0.043***	0.029***	0.022***	0.026***
	(0.18)	(2.62)	(3.23)	(2.95)	(3.23)
Long-tenured ID %	0.002	-0.036*	-0.077***	-0.007	-0.045***
	(0.51)	(-1.78)	(-7.31)	(-0.80)	(-4.69)
Cooption	0.001	0.019	-0.019***	0.005	-0.007
	(0.24)	(1.61)	(-3.04)	(0.95)	(-1.21)
Gender diversity	-0.002	-0.079*	0.052**	-0.044***	0.031*
	(-0.30)	(-1.87)	(2.50)	(-2.59)	(1.66)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Director fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
N	149,558	149,558	140,980	149,558	140,980

Table 4. Regressions of Shareholder Votes in Independent Director Elections

This table reports regression analysis of shareholder votes in director elections. The sample is restricted to independent directors. Each observation is a director-firm-year. The dependent variable for columns (1)–(6) is *Excess %Withheld*, defined as *%Withheld* in excess of the average value of *%Withheld* across all directors in each firm-year. *%Withheld* is the sum of shares voted against and shares voted abstain, scaled by all shares voted. The dependent variable for columns (7)–(9) is *Excess ISS against*, defined as *ISS against* in excess of the average value of *ISS against* across all directors in each firm-year. *ISS against* is an indicator equal to one if ISS recommends a withhold, against, or no vote for the director, and zero otherwise. Linear probability models are estimated. In parentheses are *t*-statistics based on standard errors adjusted for heteroskedasticity and director-level clustering. Superscripts ***, **, and * denote significance at 1%, 5%, and 10%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			Excess %Withheld					*Excess ISS against*	
OID	0.005***	0.002**	0.002*	0.005***	0.002*	0.004***	0.003*	0.004*	0.007**
	(6.80)	(2.19)	(1.69)	(7.22)	(1.85)	(3.91)	(1.75)	(1.89)	(2.18)
ISS against				0.085***	0.085***	0.089***			
				(35.69)	(35.90)	(35.22)			
Number of board seats		0.003***	0.001		0.003***	0.001		0.002*	0.001
		(3.87)	(0.98)		(4.02)	(0.96)		(1.89)	(0.29)
CEO director		0.008***	0.003**		0.004***	0.001		0.026***	0.017***
		(5.80)	(2.46)		(3.45)	(0.12)		(4.98)	(3.40)
Ownership		0.097***	-0.006		0.076**	-0.027		0.115	0.217
		(2.85)	(-0.07)		(2.57)	(-0.37)		(1.18)	(0.95)
Tenure		0.001***	0.001***		0.001***	0.001***		0.001*	0.001***
		(15.13)	(9.19)		(15.37)	(11.81)		(1.79)	(3.29)
Coopted		-0.001	0.001		0.001*	0.001*		0.002	0.001
		(-0.26)	(0.98)		(1.83)	(1.85)		(1.13)	(0.02)
Director fixed effects	No	No	Yes	No	No	Yes	No	No	Yes
N	49,695	49,695	46,993	49,695	49,695	46,993	50,047	50,047	47,353

Table 5. Regressions of Acquirer Returns

This table reports the OLS regression analysis of acquirer returns. The dependent variable is the cumulative abnormal returns over the 5-day window (-2, 2), where day 0 is the announcement date of the acquisition. In parentheses are *t*-statistics based on standard errors adjusted for heteroskedasticity and firm-level clustering. Superscripts ***, **, and * denote significance at 1%, 5%, and 10%.

	(1)	(2)
OID %	-0.015***	-0.024***
	(-3.07)	(-2.78)
Relative deal size	-0.016*	-0.015
	(-1.93)	(-1.25)
Public target	-0.018***	-0.020***
	(-5.33)	(-4.43)
Private target	-0.005	-0.003
	(-1.52)	(-0.73)
% Deal value paid by cash	0.001	0.001
	(1.12)	(1.59)
Tender offer	0.006	0.007
	(1.26)	(0.96)
Hostile deal	-0.021*	-0.017
	(-1.73)	(-1.18)
Diversifying deal	-0.004*	-0.002
	(-1.73)	(-0.40)
Log market cap	-0.003***	-0.002
	(-4.33)	(-0.55)
ROA	-0.058***	0.009
	(-4.02)	(0.24)
Tobin's Q	0.004***	0.006**
	(2.97)	(2.27)
R&D	-0.081***	0.043
	(-4.80)	(0.78)
Volatility	0.037	0.118
	(1.15)	(1.65)
Log firm age	0.002	0.008
	(0.89)	(0.49)
Log CEO age	0.001	0.028
	(0.10)	(1.59)
CEO quality	-0.001	0.001
	(-0.61)	(0.58)
E-index	-0.001*	-0.004**
	(-1.71)	(-2.57)
Board size	-0.001	0.001
	(-1.04)	(0.47)
Board independence	0.006	0.033
	(0.51)	(1.06)

Board ownership	0.018	0.020
	(0.74)	(0.29)
Duality	-0.004	-0.004
	(-1.22)	(-1.04)
Busy board	0.006	0.010
	(0.88)	(0.77)
ID-blockholder	-0.006	-0.003
	(-1.29)	(-0.21)
Long-tenured ID %	0.010	0.002
	(1.38)	(0.18)
Cooption	0.003	-0.014
	(0.78)	(-1.55)
Gender diversity	-0.004	-0.010
	(-0.28)	(-0.33)
Industry fixed effects	Yes	No
Firm fixed effects	No	Yes
Year fixed effects	Yes	Yes
N	3,643	3,643
Adjusted R^2	0.082	0.160

Table 6. Regressions of Forced CEO Turnovers

This table reports the regression analysis of CEO turnover. The dependent variable is *Forced turnover*, an indicator equal to one if a firm experiences a forced CEO turnover, and zero otherwise. *Performance* is measured by the *industry-adjusted ROA* in columns (1)-(2) and the *market-adjusted stock returns* in columns (3)-(4). Columns (1) and (3) estimate a Probit regression, and columns (2) and (4) estimate a conditional Logit regression. In parentheses are *t*-statistics based on standard errors adjusted for heteroskedasticity and firm-level clustering. Superscripts ***, **, and * denote significance at 1%, 5%, and 10%.

	(1)	(2)	(3)	(4)
	Industry-adjusted ROA		*Market-adjusted stock return*	
OID %	-0.128	0.841	-0.093	0.670
	(-0.67)	(0.65)	(-0.67)	(1.04)
Performance	-3.561*	-2.812	-0.873	-0.340
	(-1.67)	(-1.05)	(-1.32)	(-1.11)
*OID % * Performance*	2.914**	8.288*	0.703**	1.495**
	(2.04)	(1.84)	(2.14)	(2.07)
Log market cap	0.010	-0.545***	-0.018	-0.849***
	(0.38)	(-2.63)	(-0.66)	(-3.85)
Tobin's Q	-0.085**	-0.110	-0.147***	-0.101
	(-2.28)	(-0.62)	(-3.92)	(-0.55)
R&D	-1.107**	-3.584	-0.339	0.035
	(-2.20)	(-1.02)	(-0.74)	(0.01)
Volatility	1.174*	-1.539	2.044***	-1.813
	(1.81)	(-0.43)	(3.21)	(-0.57)
Log firm age	-0.003	-0.253	-0.001	-0.398
	(-0.06)	(-0.23)	(-0.03)	(-0.36)
Log CEO age	-0.239	0.165	-0.267	0.451
	(-1.17)	(0.20)	(-1.32)	(0.52)
CEO quality	0.003	0.041	-0.002	0.017
	(0.19)	(0.97)	(-0.11)	(0.42)
E-index	-0.012	-0.047	-0.010	-0.039
	(-0.52)	(-0.33)	(-0.45)	(-0.28)
*E-index * Performance*	-0.198	0.903	0.012	-0.135
	(-1.13)	(0.95)	(0.23)	(-1.03)
Board size	0.011	0.059	0.019	0.080
	(0.80)	(0.89)	(1.52)	(1.25)
*Board size * Performance*	-0.059	-0.475	0.001	0.055
	(-0.57)	(-1.18)	(0.01)	(0.75)
Board independence	0.248	-0.817	0.116	-0.458
	(1.22)	(-1.00)	(0.59)	(-0.56)
*Board independence * Performance*	2.931	-10.453	-0.130	0.696
	(1.64)	(-1.51)	(-0.32)	(0.56)
Board ownership	-0.657*	-2.144	-0.609*	-1.124
	(-1.72)	(-1.10)	(-1.71)	(-0.81)

*Board ownership * Performance*	-2.631	-26.710*	-2.088***	-4.202*
	(-0.95)	(-1.85)	(-2.61)	(-1.75)
Duality	-0.241***	-0.544**	-0.201***	-0.476**
	(-4.16)	(-2.53)	(-3.56)	(-2.24)
*Duality * Performance*	-0.176	-1.872	-0.202	-0.265
	(-0.35)	(-1.32)	(-1.55)	(-0.77)
Busy board	0.120	0.517	0.180	0.546
	(0.91)	(0.86)	(1.40)	(0.94)
*Busy board * Performance*	-0.342	-1.548	0.364	0.962
	(-0.34)	(-0.43)	(1.43)	(1.29)
ID-blockholder	0.105	0.440	0.079	0.482
	(0.71)	(0.77)	(0.54)	(0.92)
*ID-blockholder * Performance*	0.925	4.932	0.299	0.263
	(0.83)	(1.12)	(0.82)	(0.26)
Long-tenured ID %	-0.205	0.148	-0.215	0.141
	(-1.19)	(0.19)	(-1.30)	(0.18)
*Long-tenured ID % * Performance*	-0.994	1.729	-0.373	-0.104
	(-0.69)	(0.35)	(-0.97)	(-0.12)
Cooption	0.284***	-1.226***	0.339***	-1.136***
	(2.84)	(-3.20)	(3.43)	(-3.07)
*Cooption * Performance*	-0.168	2.247	-0.249	-0.415
	(-0.20)	(0.70)	(-1.18)	(-0.75)
Gender diversity	-0.071	-1.652	0.077	-1.442
	(-0.20)	(-0.98)	(0.22)	(-0.88)
*Gender diversity * Performance*	-3.309	2.193	1.087	2.770*
	(-1.15)	(0.21)	(1.42)	(1.65)
Industry fixed effects	Yes	No	Yes	No
Firm fixed effects	No	Yes	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	12,382	2,369	12,382	2,336

Table 7. Regressions of CEO Compensation

This table reports the OLS regression analysis of CEO compensation. The dependent variable for columns (1)-(3) is *Total compensation,* the natural logarithm of the dollar value of the CEO's total annual compensation. The dependent variable for columns (4)-(6) is *Cash intensity*, the proportion of total annual CEO compensation that comes from cash. The dependent variable for columns (7)-(9) is *Equity intensity*, the proportion of total annual CEO compensation that comes from option grants and stocks. In parentheses are *t*-statistics based on standard errors adjusted for heteroskedasticity and firm-level clustering. Superscripts ***, **, and * denote significance at 1%, 5%, and 10%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Total compensation			*Cash intensity*			*Equity intensity*		
OID %	0.124***			0.026*			-0.029**		
	(2.63)			(1.83)			(-2.18)		
Compensation committee OID %		0.088***	0.046**		0.025**	0.022**		-0.024**	-0.023*
		(2.79)	(2.29)		(2.43)	(2.15)		(-2.12)	(-1.73)
Log market cap	0.429***	0.430***	0.230***	-0.058***	-0.058***	-0.035***	0.054***	0.054***	0.042***
	(32.07)	(31.97)	(9.21)	(-15.59)	(-15.42)	(-4.48)	(14.61)	(14.45)	(4.87)
ROA	1.097***	1.095***	0.502***	-0.124***	-0.122***	-0.056	0.148***	0.145***	0.118**
	(6.38)	(6.33)	(3.63)	(-2.63)	(-2.61)	(-1.09)	(2.84)	(2.77)	(2.30)
Stock return	0.223***	0.223***	0.167***	-0.034***	-0.033***	-0.021***	0.017***	0.017***	0.009
	(13.04)	(13.15)	(11.00)	(-6.36)	(-6.36)	(-4.24)	(3.04)	(3.00)	(1.62)
Tobin's Q	0.076***	0.076***	0.076***	-0.016***	-0.016***	-0.018***	0.020***	0.020***	0.022***
	(5.15)	(5.03)	(5.49)	(-4.44)	(-4.49)	(-4.41)	(4.43)	(4.43)	(4.82)
R&D	1.082***	1.073***	-0.152	-0.372***	-0.369***	-0.058	0.513***	0.515***	0.138
	(4.82)	(4.76)	(-0.49)	(-5.83)	(-5.76)	(-0.57)	(7.77)	(7.77)	(1.25)
Volatility	1.303***	1.287***	-0.143	-0.321***	-0.322***	-0.171**	0.360***	0.363***	0.139
	(5.19)	(5.20)	(-0.49)	(-4.72)	(-4.75)	(-2.06)	(5.15)	(5.21)	(1.53)
Log firm age	0.018	0.017	-0.052	0.016***	0.016***	0.060***	-0.030***	-0.030***	-0.099***
	(0.98)	(0.92)	(-0.76)	(2.89)	(2.92)	(2.65)	(-5.01)	(-5.02)	(-3.89)
Log CEO age	-0.141	-0.141	-0.171*	0.118***	0.117***	0.075**	-0.182***	-0.187***	-0.173***
	(-1.47)	(-1.49)	(-1.75)	(4.91)	(4.88)	(2.39)	(-6.56)	(-6.77)	(-4.98)
CEO quality	0.008	0.007	0.003	-0.001	-0.001	0.000	0.002	0.002	0.000

	(1.62)	(1.61)	(0.97)	(-0.99)	(-0.95)	(0.15)	(1.12)	(1.14)	(0.25)
E-index	0.039***	0.037***	0.029***	-0.013***	-0.013***	-0.004	0.010***	0.010***	0.003
	(5.20)	(4.96)	(3.36)	(-6.04)	(-5.95)	(-1.52)	(4.47)	(4.32)	(0.93)
Board size	0.009	0.009	0.001	-0.002	-0.002	-0.001	0.002	0.002	0.000
	(1.56)	(1.46)	(0.24)	(-1.08)	(-1.11)	(-0.36)	(0.95)	(1.01)	(0.18)
Board independence	0.278***	0.267***	0.218***	-0.118***	-0.124***	-0.062**	0.088***	0.091***	0.040
	(3.33)	(3.23)	(2.60)	(-4.77)	(-5.05)	(-2.17)	(3.36)	(3.48)	(1.36)
Board ownership	-0.909***	-0.869***	-0.690***	0.303***	0.291***	0.204***	-0.313***	-0.305***	-0.182***
	(-5.58)	(-5.34)	(-4.61)	(6.60)	(6.33)	(3.54)	(-6.84)	(-6.54)	(-3.21)
Duality	0.104***	0.104***	0.026	-0.010*	-0.012*	-0.004	0.003	0.004	0.003
	(4.88)	(4.89)	(1.37)	(-1.76)	(-1.95)	(-0.63)	(0.51)	(0.64)	(0.39)
Busy board	0.163***	0.162***	0.011	-0.047***	-0.048***	-0.015	0.040***	0.040***	0.008
	(3.60)	(3.59)	(0.26)	(-3.62)	(-3.71)	(-1.00)	(2.80)	(2.79)	(0.46)
ID-blockholder	0.091*	0.082*	0.057	-0.029*	-0.028*	-0.016	0.037**	0.037**	0.025
	(1.94)	(1.73)	(1.26)	(-1.86)	(-1.78)	(-0.96)	(2.28)	(2.25)	(1.52)
Long-tenured ID %	-0.148**	-0.137**	-0.041	0.071***	0.065***	0.037*	-0.038**	-0.041**	-0.035*
	(-2.40)	(-2.29)	(-0.76)	(3.84)	(3.59)	(1.94)	(-2.04)	(-2.18)	(-1.78)
Cooption	-0.008	-0.011	-0.101***	-0.028***	-0.029***	-0.005	0.022**	0.022**	0.013
	(-0.21)	(-0.30)	(-2.80)	(-2.92)	(-2.98)	(-0.39)	(2.09)	(2.02)	(0.98)
Gender diversity	0.089	0.084	-0.001	0.016	0.018	0.037	-0.017	-0.013	-0.037
	(0.77)	(0.73)	(-0.01)	(0.52)	(0.57)	(0.92)	(-0.50)	(-0.37)	(-0.85)
Industry fixed effects	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Firm fixed effects	No	No	Yes	No	No	Yes	No	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	20,220	20,220	20,220	20,220	20,220	20,220	20,220	20,220	20,220
Adjusted R^2	0.542	0.541	0.763	0.341	0.337	0.588	0.302	0.298	0.562

Table 8. Regressions of Earnings Management and Restatements

This table reports the regression analysis of earnings management and restatements. The dependent variable for columns (1)-(3) is *Discretionary accruals*, the performance-adjusted discretionary accruals. The dependent variable for columns (4)-(6) is *Restatement*, an indicator equal to 1 if the firm subsequently restated the financial statements for that fiscal year. The dependent variable for columns (7)-(9) is *Irregularity*, an indicator equal to 1 if the firm subsequently restated the financial statements for that fiscal year and the restatement is classified as irregularity. Columns (1)-(3) estimate an OLS regression. Columns (4), (5), (7), and (8) estimate a Probit regression and columns (6) and (9) estimate a conditional Logit regression. In parentheses are *t*-statistics based on standard errors adjusted for heteroskedasticity and firm-level clustering. Superscripts ***, **, and * denote significance at 1%, 5%, and 10%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Discretionary accruals			*Restatement*			*Irregularity*		
OID %	0.006***			0.192***			0.078*		
	(2.72)			(2.66)			(1.90)		
Audit committee OID %		0.004***	0.003**		0.134***	0.565***		0.155***	0.548**
		(2.67)	(1.98)		(2.64)	(2.91)		(2.62)	(2.31)
Log market cap	-0.001	-0.001	0.002	0.000	-0.000	0.024***	0.004	0.004	0.025***
	(-0.10)	(-0.02)	(1.55)	(0.02)	(-0.09)	(2.75)	(1.45)	(1.34)	(3.47)
ROA	-0.034***	-0.034***	0.017	-0.162***	-0.162***	-0.149**	-0.110***	-0.108***	-0.082
	(-3.89)	(-3.91)	(1.55)	(-3.29)	(-3.28)	(-2.40)	(-2.79)	(-2.72)	(-1.58)
Tobin's Q	0.002***	0.002***	0.002**	-0.004	-0.004	-0.004	-0.001	-0.001	-0.003
	(3.21)	(3.13)	(2.46)	(-1.17)	(-1.07)	(-0.85)	(-0.10)	(-0.03)	(-0.76)
R&D	-0.049***	-0.049***	0.028	-0.155**	-0.146**	-0.279**	-0.118*	-0.107*	-0.129
	(-5.12)	(-5.06)	(1.33)	(-2.14)	(-2.03)	(-2.39)	(-1.90)	(-1.74)	(-1.29)
Volatility	-0.045***	-0.045***	0.005	0.223**	0.216**	-0.075	0.301***	0.295***	0.064
	(-4.01)	(-4.00)	(0.33)	(2.53)	(2.47)	(-0.54)	(4.00)	(3.94)	(0.52)
Log firm age	0.002**	0.002**	0.007*	0.001	0.001	-0.045	-0.001	-0.001	-0.026
	(2.56)	(2.54)	(1.66)	(0.19)	(0.21)	(-1.25)	(-0.24)	(-0.18)	(-0.92)
Log CEO age	0.004	0.004	-0.006	-0.017	-0.019	-0.003	-0.041	-0.041	-0.029
	(0.89)	(0.92)	(-1.05)	(-0.53)	(-0.61)	(-0.06)	(-1.58)	(-1.63)	(-0.75)
CEO quality	-0.001*	-0.001*	-0.001**	0.003**	0.003*	0.001	0.002*	0.002*	0.001
	(-1.83)	(-1.80)	(-2.06)	(2.02)	(1.93)	(0.82)	(1.89)	(1.79)	(0.77)

E-index	0.001	0.001	-0.001	-0.005**	-0.005**	0.002	-0.004**	-0.004**	0.001
	(0.86)	(0.88)	(-0.54)	(-2.17)	(-2.15)	(0.34)	(-2.28)	(-2.24)	(0.01)
Board size	-0.001*	-0.001*	-0.001*	-0.002	-0.002	0.001	0.001	0.001	0.001
	(-1.89)	(-1.82)	(-1.72)	(-0.89)	(-0.85)	(0.21)	(0.29)	(0.34)	(0.37)
Board independence	-0.005	-0.004	-0.004	-0.058*	-0.057*	-0.100***	-0.030	-0.028	-0.061**
	(-1.22)	(-1.09)	(-0.73)	(-1.95)	(-1.91)	(-2.72)	(-1.19)	(-1.11)	(-2.02)
Board ownership	-0.002	-0.002	0.017*	-0.006	-0.009	0.003	-0.006	-0.009	0.029
	(-0.26)	(-0.27)	(1.75)	(-0.15)	(-0.23)	(0.04)	(-0.21)	(-0.29)	(0.54)
Duality	-0.001	-0.001	-0.001	-0.005	-0.006	0.011	-0.001	-0.001	0.014**
	(-0.19)	(-0.21)	(-0.26)	(-0.80)	(-0.85)	(1.29)	(-0.21)	(-0.26)	(2.05)
Busy board	-0.002	-0.002	0.001	-0.012	-0.013	-0.028	-0.023*	-0.025*	-0.036**
	(-0.89)	(-0.89)	(0.05)	(-0.69)	(-0.78)	(-1.38)	(-1.72)	(-1.80)	(-2.24)
ID-blockholder	-0.001	-0.001	-0.002	-0.019	-0.018	-0.011	0.002	0.003	-0.001
	(-0.43)	(-0.44)	(-0.74)	(-1.30)	(-1.28)	(-0.53)	(0.19)	(0.20)	(-0.04)
Long-tenured ID %	0.001	0.002	0.001	-0.002	-0.006	0.001	-0.002	-0.003	-0.005
	(0.40)	(0.74)	(0.26)	(-0.12)	(-0.31)	(0.02)	(-0.10)	(-0.20)	(-0.23)
Cooption	0.001	0.001	-0.001	-0.032***	-0.033***	-0.013	-0.022**	-0.022**	-0.007
	(0.86)	(0.81)	(-0.05)	(-2.63)	(-2.73)	(-0.75)	(-2.15)	(-2.22)	(-0.44)
Gender diversity	-0.009*	-0.010*	0.001	0.013	0.018	-0.083	-0.008	-0.006	-0.062
	(-1.72)	(-1.90)	(0.02)	(0.32)	(0.46)	(-1.45)	(-0.27)	(-0.19)	(-1.33)
Industry fixed effects	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Firm fixed effects	No	No	Yes	No	No	Yes	No	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	17,870	17,870	17,870	22,569	22,569	8,177	22,569	22,569	4,239

Table 9. Regressions of Firm Performance

This table reports the OLS regression analysis of firm performance. The dependent variable is a firm's *ROA* in columns (1) and (2) and *Tobin's Q* in columns (3) and (4). In parentheses are *t*-statistics based on standard errors adjusted for heteroskedasticity and firm-level clustering. Superscripts ***, **, and * denote significance at 1%, 5%, and 10%.

	(1)	(2)	(3)	(4)
	ROA		*Tobin's Q*	
OID %	-0.014***	-0.005**	-0.143**	-0.153***
	(-2.81)	(-2.04)	(-2.19)	(-2.69)
Log market cap	0.018***	0.024***	0.282***	0.262***
	(15.64)	(14.08)	(18.91)	(11.85)
R&D	-0.311***	-0.240***	1.691***	-1.148*
	(-10.80)	(-5.90)	(4.75)	(-1.77)
Volatility	-0.270***	-0.020	-0.576	1.763***
	(-9.08)	(-0.73)	(-1.48)	(4.34)
Log firm age	-0.013***	-0.005	-0.224***	-0.518***
	(-5.23)	(-0.72)	(-6.82)	(-4.71)
Log CEO age	0.001	0.010	-0.271**	0.059
	(0.12)	(1.16)	(-2.17)	(0.48)
CEO quality	0.002***	0.001	0.027***	0.004
	(5.11)	(1.17)	(4.13)	(0.74)
E-index	-0.001	-0.001	-0.013	0.010
	(-0.52)	(-0.87)	(-1.20)	(0.84)
Board size	-0.005***	-0.001***	-0.080***	-0.040***
	(-8.96)	(-3.05)	(-10.85)	(-5.65)
Board independence	-0.012	-0.005	-0.198*	-0.168*
	(-1.31)	(-0.64)	(-1.65)	(-1.73)
Board ownership	0.087**	0.035	1.704***	0.566
	(2.39)	(1.13)	(3.56)	(1.24)
Board ownership^2	-0.139**	-0.073	-2.616**	-0.918
	(-2.02)	(-1.28)	(-2.57)	(-1.18)
Duality	-0.006***	-0.004**	-0.064**	-0.051**
	(-2.83)	(-2.49)	(-2.32)	(-2.26)
Busy board	-0.028***	-0.010**	-0.289***	-0.081
	(-5.21)	(-2.34)	(-4.08)	(-1.35)
ID-blockholder	0.014**	0.008*	0.109	0.080
	(2.04)	(1.82)	(1.44)	(1.62)
Long-tenured ID %	0.024***	-0.003	0.358***	0.019
	(3.23)	(-0.62)	(3.41)	(0.24)
Cooption	0.002	0.001	-0.044	-0.002
	(0.52)	(0.37)	(-0.95)	(-0.06)
Gender diversity	-0.002	0.005	-0.068	-0.049
	(-0.14)	(0.40)	(-0.37)	(-0.29)
Industry fixed effects	Yes	No	Yes	No
Firm fixed effects	No	Yes	No	Yes

Year fixed effects	Yes	Yes	Yes	Yes
N	22,362	22,362	22,393	22,393
Adjusted R^2	0.333	0.754	0.322	0.737

Table 10. Regressions with Instrumental Variable for Younger Local Director Candidates

This table presents excerpts of the second-stage estimation results of instrumental variable regressions of all the firm outcome variables. The first stage regression results are in Appendix Table A2. We estimate two-stage least square (2SLS) regressions in columns (1), (4)-(6), (7), (10), and (11), and Probit regressions with instrumental variables using the maximum likelihood estimation in columns (2), (3), (8) and (9). In columns (2) and (3), *performance* is measured by the industry-adjusted ROA and market-adjusted stock returns, respectively. The control variables are omitted for brevity. In parentheses are *t*-statistics based on standard errors adjusted for heteroskedasticity and firm-level clustering. Superscripts ***, **, and * denote significance at 1%, 5%, and 10%.

	(1)			
	Acquirer CAR			
OID %	-0.127*			
	(-1.77)			
Control variables	Yes			
Industry and year fixed effects	Yes			
N	3,643			
	(2)	(3)		
	Forced turnover			
OID %	-0.464***	-0.514		
	(-3.33)	(-1.61)		
*OID % * Performance*	11.396**	2.072***		
	(2.20)	(3.12)		
Control variables	Yes	Yes		
Industry and year fixed effects	Yes	Yes		
N	12,382	12,382		
	(4)	(5)	(6)	
	Total compensation	*Cash intensity*	*Equity intensity*	
Compensation committee OID %	0.345**	0.097*	-0.104*	
	(2.00)	(1.69)	(-1.79)	
Control variables	Yes	Yes	Yes	
Industry and year fixed effects	Yes	Yes	Yes	
N	20,220	20,220	20,220	
	(7)	(8)	(9)	
	Discretionary accruals	*Restatement*	*Irregularity*	
Audit committee OID %	0.028**	1.225***	1.016*	
	(2.01)	(3.49)	(1.96)	
Control variables	Yes	Yes	Yes	
Industry and year fixed effects	Yes	Yes	Yes	
N	17,870	22,569	22,569	
	(10)	(11)		
	ROA	*Tobin's Q*		
OID %	-0.036**	-0.414*		
	(-1.99)	(-1.83)		
Control variables	Yes	Yes		
Industry and year fixed effects	Yes	Yes		
N	22,362	22,393		

Table 11. 2SLS Regressions of Firm Performance: Evidence from a Regulatory Shock

This table presents the second-stage estimation results of instrumental variable regressions of firm performance around the NYSE and Nasdaq regulation issuance in 2003. The sample is restricted to firms that are listed on NYSE or Nasdaq. The specifications are similar to those in the firm performance regressions in Table 9 except that all the variables are measured as changes over the event period 2000-2005. The dependent variable is the change in *ROA* for column (1) and the change in *Tobin's Q* for column (2). We define compliant firms as firms that had a majority of independent directors on the board in 2000 and noncompliant firms as the rest of firms. We instrument *Change in OID %* with *Noncompliance,* an indicator variable that equals one if the firm was noncompliant and zero otherwise. The coefficients of *Noncompliance* in the first-stage regressions are reported in the bottom. In parentheses are *t*-statistics based on standard errors adjusted for heteroskedasticity and firm-level clustering. Superscripts ***, **, and * denote significance at 1%, 5%, and 10%.

	(1) *Change in ROA*	(2) *Change in Tobin's Q*
Change in OID %	-0.214**	-1.720**
	(-2.00)	(-2.11)
Change in Log market cap	0.038***	0.991***
	(7.81)	(12.43)
Change in R&D	-0.500***	-2.113
	(-3.94)	(-1.10)
Change in Volatility	-0.083	1.892
	(-0.99)	(1.41)
Change in Log firm age	0.008	-0.914***
	(0.43)	(-2.80)
Change in Log CEO age	0.006	0.904
	(0.11)	(0.82)
Change in CEO quality	0.003*	0.004
	(1.78)	(0.16)
Change in E-index	0.004	0.008
	(0.94)	(0.12)
Change in Board size	-0.002**	-0.025
	(-2.00)	(-1.18)
Change in Board independence	0.024*	-0.131
	(1.72)	(-0.41)
Change in Board ownership	0.189**	-0.459
	(2.41)	(-0.31)
Change in Board ownership^2	-0.255*	-1.527
	(-1.94)	(-0.57)
Change in Duality	-0.007	0.088
	(-0.99)	(0.62)
Change in Busy board	-0.000	-0.078
	(-0.00)	(-0.39)
Change in ID-blockholder	-0.008	0.324
	(-0.54)	(1.11)
Change in Long-tenured ID %	0.015	0.965
	(0.35)	(1.07)
Change in Cooption	-0.005	0.388
	(-0.28)	(1.03)
Change in Gender diversity	-0.008	-0.434
	(-0.15)	(-0.37)
Noncompliance in first-stage	0.084***	0.086***
	(2.75)	(2.85)
Industry fixed effects	Yes	Yes
N	926	926

Table 12. Event Studies

This table presents three event studies. Panel A reports the announcement returns of firms' director retirement policy changes. The details of the retirement policy change sample are described in Appendix Table A3. Panel B reports the announcement returns of old independent director appointments. The detailed construction of the OID appointment announcement sample is described in Appendix Table A4. Panel C reports the announcement returns of independent director deaths based on 8-K filing dates. Observations are excluded if the interval between the filing date and the director death date exceeds 20 trading days. The detailed construction of the independent director death sample is described in Appendix Table A5. Mean and median CARs are based on 3-day announcement-period cumulative abnormal returns with event date 0 being the announcement date. Abnormal returns are computed based on the coefficients of a standard one-factor market model estimated using daily stock returns over the 200-day window (-210, -11) and the CRSP value-weighted return as the market return. *P*-values are based on *t*-statistics for mean CARs and Wilcoxon signed-rank tests for median CARs.

Panel A: Announcement Effects of Director Retirement Policy Changes		
	Full sample	Clean sample
Mean CAR	-0.907%***	-0.620%**
p-value	(0.001)	(0.023)
Median CAR	-0.764%***	-0.685%***
p-value	(0.001)	(0.001)
N	91	59

Panel B: Announcement Effects of Old Independent Director Appointments			
	Full sample	Non-proxy sample	Clean sample
Mean CAR	-0.205%**	-0.187%*	-0.197%*
p-value	(0.023)	(0.065)	(0.078)
Median CAR	-0.229%***	-0.212%**	-0.217%**
p-value	(0.008)	(0.035)	(0.042)
N	1,127	973	676

Panel C: Announcement Effects of Independent Director Deaths			
	OID sample	Non-OID sample	Difference
Mean CAR	1.409%**	-1.909%	3.318%**
p-value	(0.036)	(0.184)	(0.028)
Median CAR	0.541%**	-1.260%	1.800%**
p-value	(0.024)	(0.195)	(0.042)
N	106	27	

Table 13. Advisory Benefits of Old Independent Directors

This table reports analysis of the advisory benefits of OIDs. In Panel A, an OID is defined as having acquisition experience if she has participated in at least one acquisition made by another firm where she served as a director or an executive during the previous 10 years. An OID is defined as having target industry experience if she has previously served as a director or an executive at another firm in the same 3-digit SIC industry as the acquisition target. In Panel B, *Tariff Cut* is an indicator equal to one if a firm's industry experiences a tariff cut that year and zero otherwise. In Panel C, *industry volatility* is defined as the average standard deviation of annual stock returns for all firms in the industry. *Log firm age* is defined as the logarithm of the number of years that a firm exists in Compustat. *Sales growth* is defined as the annual growth rate of sales. *Number of segments* is the number of business segments reported in Compustat. The indicator *High advisory need* is equal to one if (1) a firm's industry volatility is above the median of all industries; or (2) a firm's age is below the annual median; or (3) a firm's sales growth is above the annual median; or (4) a firm has more than one business segment, and zero otherwise. The *Low advisory need* indicator is equal to one minus *High advisory need*. In Panel D, an OID is defined as busy if she holds 3 or more directorships in public firms. In parentheses are *t*-statistics based on standard errors adjusted for heteroskedasticity and firm-level clustering. Superscripts ***, **, and * denote significance at 1%, 5%, and 10%.

Panel A. Regressions of Acquirer Returns: OID Experience		
Definition of experience:	Acquisition experience	Target industry experience
Inexperienced OID %	-0.022***	-0.014***
	(-3.42)	(-2.95)
Experienced OID %	0.001	0.023***
	(0.10)	(4.42)
Difference in coefficients	-0.023**	-0.037***
	(-2.20)	(-4.93)
Control variables	Yes	Yes
Industry and year fixed effects	Yes	Yes
N	3,643	3,643
Adjusted R^2	0.062	0.057

Panel B. Regressions of Firm Performance: Import Tariff Cuts				
	ROA		*Tobin's Q*	
OID %	-0.016**	-0.011*	-0.045	-0.367*
	(-2.06)	(-1.67)	(-0.38)	(-1.84)
Tariff Cut	-0.006*	-0.015*	-0.294**	-0.248**
	(-1.76)	(-1.80)	(-2.27)	(-2.15)
*OID % * Tariff Cut*	0.032*	0.048**	0.316**	0.412**
	(1.74)	(2.24)	(2.35)	(2.15)
Control variables	Yes	Yes	Yes	Yes
Industry and year fixed effects	Yes	No	Yes	No
Firm and year fixed effects	No	Yes	No	Yes
N	3,895	3,895	4,153	4,153
Adjusted R^2	0.358	0.691	0.565	0.699

Panel C. Regressions of Firm Performance: Firms' Advisory Need

Proxy for advisory need:	*Industry volatility*				*Log firm age*			
	ROA		*Tobin's Q*		*ROA*		*Tobin's Q*	
*OID % * Low advisory need*	-0.023***	-0.010***	-0.214***	-0.206***	-0.024***	-0.009***	-0.212***	-0.217***
	(-4.20)	(-3.79)	(-3.81)	(-3.86)	(-6.90)	(-2.74)	(-2.89)	(-2.90)
*OID % * High advisory need*	0.014	0.019***	0.055	-0.015	-0.004	0.004	-0.013	-0.049
	(1.42)	(3.43)	(0.36)	(-0.19)	(-1.18)	(0.88)	(-0.22)	(-0.30)
Advisory need					-0.013***	-0.009*	-0.131***	-0.466***
					(-8.04)	(-1.94)	(-4.20)	(-4.06)
Difference in coefficients	-0.037***	-0.029***	-0.269***	-0.191***	-0.020***	-0.013***	-0.199**	-0.168*
	(-3.34)	(-4.91)	(-3.79)	(-3.10)	(-4.63)	(-2.97)	(-2.23)	(-1.74)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry and year fixed effects	Yes	No	Yes	No	Yes	No	Yes	No
Firm and year fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
N	22,362	22,362	22,393	22,393	22,362	22,362	22,393	22,393
Adjusted R^2	0.309	0.713	0.333	0.720	0.301	0.672	0.676	0.688

Proxy for advisory need:	*Sales growth*				*Number of segments*			
	ROA		*Tobin's Q*		*ROA*		*Tobin's Q*	
*OID % * Low advisory need*	-0.034***	-0.014***	-0.321***	-0.202***	-0.015***	-0.011**	-0.248**	-0.308***
	(-6.45)	(-3.23)	(-4.94)	(-3.26)	(-2.66)	(-2.39)	(-2.60)	(-3.22)
*OID % * High advisory need*	0.004	0.007	0.014	-0.087	0.001	0.001	-0.014	-0.034
	(0.72)	(1.57)	(0.16)	(-1.41)	(0.19)	(0.11)	(-0.20)	(-0.56)
Advisory need	-0.013***	-0.009	0.033	0.029	-0.015***	-0.013***	-0.310***	-0.226***
	(-5.12)	(-1.15)	(1.11)	(1.17)	(-5.16)	(-4.48)	(-5.88)	(-4.54)
Difference in coefficients	-0.038***	-0.021***	-0.335***	-0.115***	-0.016**	-0.012**	-0.234**	-0.274***
	(-11.61)	(-8.49)	(-7.79)	(-3.14)	(-2.46)	(-2.15)	(-2.08)	(-2.88)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry and year fixed effects	Yes	No	Yes	No	Yes	No	Yes	No
Firm and year fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
N	22,362	22,362	22,393	22,393	22,362	22,362	22,393	22,393
Adjusted R^2	0.337	0.729	0.318	0.724	0.534	0.723	0.395	0.706

Panel D. Regressions of Firm Performance: OID Busyness				
	ROA		*Tobin's Q*	
Busy OID %	-0.039***	-0.014***	-0.355***	-0.327***
	(-5.51)	(-3.57)	(-4.59)	(-3.85)
Non-busy OID %	-0.013**	-0.001	-0.136**	-0.122**
	(-2.35)	(-0.17)	(-2.20)	(-2.20)
Difference in coefficients	-0.026***	-0.013***	-0.219***	-0.205*
	(-3.48)	(-3.19)	(-2.83)	(-1.70)
Control variables	Yes	Yes	Yes	Yes
Industry and year fixed effects	Yes	No	Yes	No
Firm and year fixed effects	No	Yes	No	Yes
N	22,362	22,362	22,393	22,393
Adjusted R^2	0.323	0.713	0.408	0.704

Appendices

Table A1. Variable Definitions

Variable	Definition
Firm characteristics	
ROA	Ratio of operating income before depreciation to total assets. (source: Compustat)
Tobin's Q	Ratio of market value of assets to book value of assets. (source: Compustat)
Log market cap	The natural logarithm of the market value of equity. (source: Compustat)
R&D	Ratio of research and development expenses to net sales. (source: Compustat)
Volatility	Standard deviation of monthly stock returns during the last five fiscal years. (source: CRSP)
Log firm age	The natural logarithm of the number of years that a firm exists in Compustat. (source: Compustat)
CEO quality	Industry-adjusted operating income growth over the 3 years. (source: Compustat)
CEO age	The age of the CEO. (source: Execucomp)
Ave executive age	The average age of the executive team. (source: Execucomp)
Governance characteristics	
OID %	The number of independent directors aged 65 or above divided by the total number of independent directors. (source: ISS)
Local pool of OIDs	Top 5 senior officers and directors, who are at least 65 years old, at other S&P 1500 firms with headquarters within 100 miles of the subject firm's headquarters. (source: Execucomp and ISS)
E-index	The Bebchuk et al. (2009) entrenchment index of six takeover defenses. (source: ISS)
Board size	The number of directors sitting on the board. (source: ISS)
Board independence	The percentage of directors who are independent. (source: ISS)
Board ownership	The aggregate percentage of shares owned by all directors. (source: ISS)
Duality	An indicator equal to one if CEO is also the chairman of the board, and 0 otherwise. (source: ISS)
Busy board	The percentage of independent directors who hold 3 or more directorships of public firms. (source: ISS)
ID-blockholder	An indicator equal to one if at least one independent director is a blockholder and 0 otherwise. Blockholders are investors with at least 5% share ownership in the firm. (source: ISS)
Long-tenured ID %	The percentage of independent directors who have at least 15 years of tenure. Tenure is measured as the number of years between current year and the year when the director's board service began. (source: ISS)
Cooption	The percentage of independent directors who are appointed after the current CEO assumes office. (source: Execucomp and ISS)
Gender diversity	The percentage of female directors on the board. (source: ISS)
Outcome variables	
Attend_less75_pct	An indicator equal to one if an independent director attended less than 75% of a firm's board meetings, and zero otherwise. (source: ISS)
Number of committee memberships	The number of committee memberships on the audit committee, compensation committee, nominating committee and governance committee. (source: ISS)
Committee chairman	An indicator variable equal to one if a director is the chairman of any committee, and zero otherwise. (source: ISS)
Audit or compensation committee member	An indicator variable equal to one if a director sits on the audit committee or the compensation committee, and zero otherwise. (source: ISS)
Audit or compensation committee chairman	An indicator variable equal to one if a director is the chairman of the audit committee or the compensation committee, and zero otherwise. (source: ISS)
%Withheld	The sum of shares voted against and shares voted abstain, scaled by all shares voted. (source: ISS)
ISS against	An indicator equal to one if ISS recommends a withhold, against, or no vote for the director, and zero otherwise. (source: ISS)

Acquirer CAR	Cumulative abnormal returns over the 5–day window (-2, 2), where day 0 is the announcement date. To calculate expected returns, we estimate a market model using the value-weighted market return over the 200-day period (-11, -210). (source: SDC and CRSP)
Forced turnover	An indicator equal to one if a firm experiences a forced CEO turnover, and zero otherwise. (source: Factiva)
Total compensation	The natural logarithm of the dollar value of the CEO's total annual compensation. (source: Execucomp)
Cash intensity	The proportion of total annual CEO compensation that comes from cash. This is the amount of total current compensation (salary and bonus) scaled by total compensation. (source: Execucomp)
Equity intensity	The proportion of total annual CEO compensation that comes from option grants and stocks. This is the value of annual option awards plus the value of annual stock grants scaled by total compensation. (source: Execucomp)
Discretionary accruals	Performance-adjusted discretionary accruals, defined as the residual from a modified Jones model (Jones, 1991): $\frac{TA_{i,t}}{Asset_{i,t-1}} = \beta + \beta\frac{1}{Asset_{i,t-1}} + \frac{\Delta SALE_{i,t}-\Delta AR_{i,t}}{Asset_{i,t-1}} + \frac{PPE_{i,t}}{Asset_{i,t-1}} + ROA_{i,t-1} + \mu_{i,t}$ We estimate the model within each fiscal year and Fama-French 48 industry and require at least 10 observations to perform each estimation. Variable definitions follow Kothari et al. (2005). (source: Compustat)
Restatement	An indicator equal to 1 if the firm subsequently restated the financial statements for that fiscal year, and 0 otherwise. (source: GAO and Audit Analytics)
Irregularity	An indicator equal to 1 if the firm subsequently restated the financial statements for that fiscal year and the restatement is classified as irregularity, and 0 otherwise. (source: GAO and Audit Analytics)

Table A2. First-stage Estimates of 2SLS regressions

This table reports the specific first-stage estimates for the 2SLS regressions from Table 10. Column (1) corresponds to column (10) in Table 10 and column (2) corresponds to column (11) in Table 10. The dependent variable is *OID %* and is regressed against the local younger director pool and all second-stage controls. *Local pool of younger directors* is the natural logarithm of the number of directors aged below 65 from firms headquartered in the same state as the sample firm scaled by the number of firms in the state. The null hypothesis of weak instruments is rejected. In parentheses are *t*-statistics based on standard errors adjusted for heteroskedasticity and firm-level clustering. Superscripts ***, **, and * denote significance at 1%, 5%, and 10%.

	(1)	(2)
Local pool of younger directors	-0.282***	-0.281***
	(-9.14)	(-9.12)
Log market cap	0.000	0.000
	(0.18)	(0.17)
R&D	-0.225***	-0.224***
	(-3.47)	(-3.46)
Volatility	-0.223***	-0.226***
	(-3.06)	(-3.11)
Log firm age	0.005	0.005
	(0.78)	(0.77)
Log CEO age	0.258***	0.258***
	(9.94)	(9.94)
CEO quality	0.000***	0.000***
	(10.05)	(10.04)
E-index	0.002	0.002
	(0.79)	(0.78)
Board size	0.004***	0.004***
	(2.93)	(2.92)
Board independence	-0.045*	-0.045*
	(-1.73)	(-1.73)
Board ownership	0.150	0.150
	(1.57)	(1.57)
Board ownership^2	-0.142	-0.141
	(-0.73)	(-0.72)
Duality	0.005	0.005
	(0.78)	(0.73)
Busy board	0.125***	0.125***
	(5.15)	(5.16)
ID-blockholder	-0.039**	-0.039**
	(-2.45)	(-2.46)
Long-tenured ID %	0.291***	0.291***
	(15.28)	(15.29)
Cooption	0.062***	0.061***
	(5.89)	(5.85)
Gender diversity	-0.334***	-0.334***
	(-9.24)	(-9.24)
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Cragg-Donald Wald *F*-stat (Weak identification test)	391.94	391.83
Stock-Yogo critical values (10% maximal IV size)	16.38	16.38
N	22,362	22,393
Adjusted R^2	0.220	0.220

Table A3. Details of Sample of Firm Director Retirement Policy Changes

Event type	Full sample	Clean sample
1. Increase mandatory retirement age	51	35
2. Remove mandatory retirement age	21	9
3. Extend the exact retirement date (e.g. from "upon 72th birthday" to "upon the next annual meeting following 72th birthday"	11	8
4. Waive mandatory retirement age for certain directors	4	3
5. Grant the board the discretion to waive mandatory retirement age	2	2
6. Allow the board to appoint emeritus directors beyond mandatory retirement age	2	2
Total number of events	91	59

Table A4. Details of Sample Construction for Older Independent Director Appointment Announcements

Directors 65 or older at first appearance on a firm's board in ISS	**2,213**
- Appointment news is not available in the Factiva database	747
- Appointments by dual class firms	178
- Appointment news are several years earlier than first appearance in ISS (probably appointment age below 65) or later than first appearance in ISS (probably reelection of incumbent directors)	39
- Age is marginally below 65 in news if news contains information on age (mostly for first appearance at the age of 65 or 66)	86
- Data around appointment is not available in CRSP/ISS/COMPUSTAT	36
Full sample	**1,127**
- Directors are elected in annual shareholder meetings	154
Non-proxy sample	**973**
- Multiple appointment of directors	200
- Dividend/repurchase/stock split	36
- Top officer turnover (CEO/CFO/Chairman/President/Vice President)	22
- Merger/acquisition/spinoff	15
- Earnings announcement	13
- Proxy contest	5
- Executive pay	2
- Raising capital	1
- Strategic plan to cut expenses	1
- Separation of CEO and Chairman titles	1
- Move headquarters	1
Clean sample	**676**

Table A5. Details of Sample Construction for Independent Director Deaths

Directors death events found	**172**
- Data are not available in CRSP	9
- Director age information is missing	1
- Filing date is missing or filing date is over 20 trading days after date of death	16
- Confounded by simultaneous announcement of a replacement director	7
- Confounded by material firm news releases	6
Clean sample	**133**

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