

Do Directors Answer for Performance? Turnover on Corporate Boards

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Abstract

We examine the threat of replacement as an incentive to align the interests of members of corporate boards of directors with those of shareholders. Our results suggest an economically significant relation between director turnover and prior firm performance measured using either stock or accounting returns. In stock returns, we demonstrate that the threat of replacement is only correlated with the idiosyncratic component of stock returns; a finding that is consistent with turnover that reflects the monitoring of actions attributable to management. Replacement directors are, on average, of higher quality than the director they replace, however, poorly performing firms appear to be punished in the director labor market as they are unable to attract higher quality replacements. Turnover has a negative impact on the likelihood that a director gains a future directorship during a three-year window following their exit; however, the likelihood of future employment is not correlated with the performance of the firm they left, but is positively correlated with the director's past experience.

Keywords: Director turnover, firm performance, board seats, replacement directors

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1. Introduction

The fiduciary role of the corporate board of directors is to monitor management and, more generally, to represent the interests of shareholders in a firm's business dealings (Fama, 1980, Fama and Jensen, 1983). Over the past three decades, boards of public corporations have faced increasing scrutiny over their effectiveness by regulators, institutional investors, and other stakeholders (e.g. Parrino, Sias, and Starks, 2003; Linck, Netter, and Yang, 2009). In addition, policies enacted under the Sarbanes Oxley (SOX) legislation, and changes to the listing requirements of major U.S. stock exchanges, have driven a shift over the last decade towards corporate boards that are comprised largely of unaffiliated outside directors.

Agency theory posits that directors should be exposed to the threat of replacement for poor performance as an incentive mechanism to align their interests with those of shareholders. There is little evidence, however, establishing disciplinary action as an incentive for directors. This is perhaps not surprising given that board members themselves exercise a substantial degree of discretion in determining the composition and tenure of their membership. Consistent with this, the academic literature assumes that either no higher authority exists to discipline directors for poor performance (e.g. Yermack, 2004) or that reputation effects will motivate directors to resign prior to the realization of poor firm performance (e.g. Fahlenbrach, Low, and Stulz, 2013). Therefore, it is not clear if members of boards of directors face the threat of turnover for past poor performance, and if they do, whether this threat imparts a substantial expected economic consequence for individual directors.

In this paper we examine director turnover for a broad sample of non-officer directors serving in U.S. public corporations between 2001 and 2011. Following the enactment of the Sarbanes Oxley Act (SOX) in 2002, and changes in exchange listing requirements, the composition

of U.S. corporate boards of directors shifted from being comprised predominantly of insider directors to being comprised primarily of outside and unaffiliated directors. Linck et al. (2009) find that SOX substantially impacted the structure and makeup of corporate boards, was associated with a high rate of director turnover stemming from compliance, and had a significant effect on the makeup of the labor pool of corporate directors. Given these changes, we anticipate that the incentive effects associated with the threat of replacement may be substantially more dynamic in our sample period.

Our results indicate that directors are more likely to be removed from a corporate board following the realization of poor stock and accounting performance. The relation between firm performance and director turnover is observed both at the director and the firm level (where poor performance results in a larger proportion of turnover in the pool of sitting directors). This relation also obtains across several alternative measures of firm performance. For example, directors of firms in the lowest quartile of stock performance are 0.9% more likely to turnover in the following year, an economically significant effect given an unconditional annual rate of turnover of 7.6%.

Following Bertrand and Mullainathan (2001) we decompose firm stock price performance into measures of luck and skill and find that the relation between director turnover and firm performance manifests only in the idiosyncratic component of stock returns (skill). This suggests that director turnover is a consequence of poor performance that is directly attributable to the firm's management, and by extension the board of directors themselves, rather performance tied to the firm's industry or the overall market.

Linck et al. (2009) assert that scrutiny over directors' actions increased following the implementation of SOX. Consistent with this, we document that the negative relation between director turnover and stock price performance, in particular skill component of returns, only

manifests following the enactment and implementation of SOX and contemporaneous exchange listing requirements. This finding supports the notion that the director labor market is considerably more dynamic, and much more tied to firm performance, in the post-SOX era.

The prior literature indicates that internal and external features of corporate governance can moderate the performance-turnover sensitivity for corporate executives (e.g. Weisbach, 1988; Denis, Denis and Sarin, 1997), however, the role that governance characteristics play in turnover for non-executive directors is unknown. As noted in Yermack (2004), it is unclear who, if anyone, monitors these monitors. We provide evidence that governance characteristics do impact director turnover. Consistent with entrenchment, directors are less likely to turnover in firms that exhibit weak internal governance; for example when the current or former CEO is also the Chair of the board, or when directors are co-opted by the sitting CEO. Conversely, directors are subjected to a higher likelihood of turnover at firms with strong external monitoring. For example, the presence of motivated institutional ownership is associated with a higher likelihood of director turnover. While these internal and external governance characteristics have an economically significant effect on director turnover, we find no evidence that the turnover-performance sensitivity for directors varies with the structure of corporate governance. Overall, these results suggest that while a firm's governance structure plays a role in insulating or exposing directors to the threat of replacement, these structures do not consistently moderate the turnover-performance relation.

Having established a significant relation between director turnover and firm performance, we consider the consequences of turnover for the firm as well as the departing directors. To investigate the impact on the firm, we examine the quality of directors appointed to the board following turnover. Overall, replacement directors are more experienced than the directors that turnover; replacements are more likely to hold additional directorships and serve as CEO at another

public company. Given that firms with low performance are more likely to experience turnover, we examine whether performance alters the quality of replacement a firm is able to obtain. Higher performing firms experiencing turnover are consistently able to attract higher quality replacements as measured by the number of additional directorships, CEO experience, and audit committee experience, whereas low performing firms cannot attract higher quality replacements. These results suggest that poorly performing firms are penalized in the director labor market, perversely just at the time when they need high quality directors.

In order to examine the consequences of turnover at the director-level, we investigate whether directors are able to obtain a new directorship during a three-year window following their turnover. For the threat of replacement to be an effective incentive mechanism, we should observe ex-post settling up of the director labor market. Consistent with this, directors are 1% less likely to gain a new directorship in the three-years following their turnover, compared to directors that do not turnover. This effect of turnover on future directorships is economically significant considering that the unconditional probability of gaining a new directorship over this horizon is 9.6%. We also find, however, that firm performance is not a significant determinant of future directorships, even if we condition on turnover, a result that suggests that either performance effects are largely subsumed by the information associated with turnover, or that the attribution of performance to any one director on a board is difficult in the director labor market. The likelihood of obtaining future directorships following turnover is positively associated with having additional directorships and audit committee service, suggesting that reputation and experience is a first-order determinant of future employment opportunities for these directors.

The results on post-turnover employment outcomes for directors suggest that experience rather than firm performance is the key attribute valued in the director labor market. Since

performance is not relevant, turnover itself appears to be a signal of a poor director. Our results suggest that the threat of replacement offers an effective incentive for directors given the effect of turnover on a director's future employment opportunities.

2. Related Literature

Our results contribute to two strands of the literature in corporate finance and managerial incentives. First, our evidence concerning the threat of director replacement builds on prior studies that examine the sources of motivation for outside directors and managers of the firm. Fama (1980) and Fama and Jensen (1983) argue that outside directors have an incentive to be effective monitors to signal their value to shareholders and labor markets. Similarly, Yermack (2004) notes that replacement, in addition to compensation, provides the most direct incentives for directors.

Empirically, Yermack (2004) observes a negative relationship between director turnover and a firm's stock returns for a sample of directors that have a tenure of five or less years. However, Yermack (2004) states that "For outside directors, the threat of replacement is more attenuated, since directors do not report to a higher authority that might fire them for poor performance." In a related paper, Fahlenbrach, Low and Stulz (2013) argue that outside directors, themselves, decide when to continue to serve as a director and when to resign. These authors suggest that directors anticipate future poor performance and step down from the board in advance in order to protect their reputation.

Our study examines the relationship between corporate performance and the turnover of outside and unaffiliated directors between 2001 and 2011; a period that allows us to capture this relationship in the post-SOX environment. Linck et al. (2009) note that SOX increased the workload for directors and increased public scrutiny over their decisions. In addition, SOX and

changes in listing requirements necessitated a substantial increase in the representation of outside directors on the boards of public corporations.

Our work on director turnover is closely related to the existing literature concerning turnover and incentives for corporate executives. For example, Weisbach (1988) and Parrino (1997) identify a negative relationship between firm performance and CEO turnover. Several other studies examine director departures in the context of particular circumstances. For example, Harford (2003) finds that the vast majority of target directors lose their board seat following completed acquisitions. Farrell and Whidbee (2000) document an increased likelihood of outside director turnover following forced CEO turnover. Fos and Tsoutsoura (2014) provide evidence that directors are likely to lose their seat following a proxy contest. Ertimur, Ferri, and Maber (2012) show that compensation committee members experience more turnover than non-compensation committee members of firms that engage in option backdating.

A second contribution of this paper is an examination of the consequences to director turnover for the firm and the directors experiencing turnover. Our study is the first to examine the quality of directors appointed to companies following director turnover. It is important to understand this aspect of the director labor market given that the board of directors provides a fundamental link between the shareholders and the management of a company. In addition, we add to the prior literature by focusing on ex-post settling-up following director turnover. If the director labor market plays a role in incentivizing directors to act in their shareholders' best interest, it is important to understand the magnitude of this incentive. Yermack (2004) documents a positive relationship between firm performance and additional board seats obtained by outside directors in the future. Coles and Hoi (2003) find that directors who rejected all provisions of Pennsylvania Senate Bill 1310 were more likely to gain additional directorships. Fich and

Shivdasani (2007) shows that directors of firms facing lawsuits for financial fraud experience a decline in other board seats held. Ertimur, Ferri, and Maber (2014) also provide evidence that directors experience a decrease in the number of additional directorships held following proxy contests. Finally, a number of papers indicate that director experience is an important determinant of director employment. For example, Fahlenbrach, Low and Stulz (2010) find that CEO experience is an important determinant of director appointments. In addition, Harford and Schonlau (2013) examine the future directorships gained by the directors of acquiring firms and demonstrate that the likelihood of future directorships is positively correlated with director experience, but uncorrelated with the past performance of their firms.

3. Data and summary statistics

The initial sample of director data is drawn from Management Diagnostic's BoardEx database, which includes 430,993 director-firm-year observations during our sample window of 2000 to 2011. We merge our sample of director-firm-year observations with Compustat to obtain firm-level accounting data, with the Center for Research of Stock Prices (*CRSP*) database for stock returns, and with the institutional ownership data from Thomson Reuters. After excluding director-firm-year observations with missing values for returns, the book value of total assets and institutional ownership, we are left with 388,461 director-firm-year observations.

In order to identify director turnover events, we follow a director from one firm-year board report date on BoardEx to the next, where the board report date corresponds to the end of the firm's fiscal year. Directors that are no longer listed as a director of a firm at the subsequent board report date are classified as turnover directors, while those who continue to be listed as a director are classified as non-turnover directors. The death of a director is recorded by BoardEx, and we eliminate any instances of turnover attributable to the death of an individual. We eliminate 40,465

director-firm-year observations that do not have a subsequent board report date to identify director turnover. Given that we require a follow-on board report date to identify director turnover, none of our turnover observations are due to acquisitions, delisting, or privatization, all of which may be likely outcomes following poor firm performance. To focus on a sample of outside director turnovers, we also eliminate 64,723 director-firm-year observations where the director is identified as an officer of the firm. BoardEx also provides information on director characteristics including age, tenure, committee membership, and past and current employment and directorships. We delete 2,211 director-firm-year observations with missing values for age and tenure on the board.

Given these restrictions, the final sample consists of 281,062 outside director-firm-year observations, of which there are 21,275 turnovers. This suggests an unconditional turnover rate of 7.57%. Focusing at the firm level, the sample includes 39,975 firm-year observations where 14,220 experience at least one director turnover. This sample contains 5,802 unique firms and 43,351 distinct directors.

Panel A of Table 1 summarizes the four measures of one-year lagged firm performance used in this study. Industry-adjusted stock return is a sample firm's annual buy-and-hold return minus the annual buy-and-hold return for the median firm in the same Fama-French 48 industry. Industry-adjusted ROA is calculated as a sample firm's net income scaled by total book value of assets, minus the median scaled net income for firms in the same Fama-French 48 industry. Following Bertrand and Mullainathan (2001) and Bushman, Dai, and Wang (2010), we estimate the industry component of stock returns, referred to as "luck", as the fitted value from cross-sectional regressions using one-year lagged annual buy-and-hold returns for the sample firms on

the corresponding median Fama-French 48 industry return. The idiosyncratic component of stock return, referred to as “skill”, is then estimated as the residual value from this fitted estimate.¹

Panel B of Table 1 summarizes the characteristics of the directors, boards of directors, and outside ownership for the sample firm-years. The first seven rows of variables presented in the panel are director characteristics and we present summary statistics for these variables computed at the director-firm-year level. For example, we compute director age as the average (median) age of each director observation for the full sample, which is 60.49 (61.0) years of age. On average, approximately one third of the directors in our sample hold more than one directorship at a given point in time, and roughly 4% of the director observations gain a new directorship at a public company in the year prior. Just over 20% of the director observations are of individuals who also hold a position as a CEO of another company. One in ten director-firm-year observations in the sample are female, while 17.63% of directors in our sample hold three or more public directorships. On average, just over one third of director-firm-year observations are characterized as captured, which we define as directors with tenure on the board of less than the tenure of the current CEO (e.g. Coles, Daniel and Naveen (2014)).

Measures used to examine the impact of internal and external governance structures on director turnover are also detailed in Panel B of Table 1. Fifty (fifteen) percent of firm-years have a (former) CEO that holds the position of chairman of the board. On average, motivated monitors hold 2.65% of outstanding shares in a given firm-year.² The average board in our sample has 8.65 directors, where 71.63% are considered outsiders.

¹ A full summary of the definition and construction of the variables used in this paper is available in the appendix.

² Fich, Harford and Tran (2014) define holdings by “motivated monitors” as the percentage of shares outstanding held by institutional investors whose holding in the firm constitutes, at minimum, the top 10% of the institution’s portfolio by value.

Panel C of Table 1 reports firm characteristics used as control variables throughout our analyses. Roughly 10% of firm-year observations coincide with turnover in the identity of the firm's CEO. The average firm in our sample is 19.32 years old with a natural log of assets equal to 6.51. Return volatility in the prior year for the average firm is 0.13.

In Panel D of Table 1 we compare lag firm performance for subsamples of turnover and non-turnover firm-years in the sample. Turnover by outside directors occurs in roughly 36% of the firm-years in the sample. Overall, the results in Panel D suggest that firm-year observations with turnover by at least one director are associated with relatively poor firm performance in the prior year when compared to firm-year observations with no director turnover. For example, the average industry-adjusted stock return prior to a turnover event is 8.36%, which is 1.27% lower than the average industry-adjusted stock return for a firm-year observation when there is no director turnover. Similar differences obtain when we compare industry-adjusted accounting returns, and the stock returns attributable to both luck and skill.³

4. Director turnover-performance sensitivity

4.1 Director-level regressions

Table 2 summarizes the results of logistic regressions modeling the likelihood that an individual director experiences turnover in a given firm-year as a function of firm performance, attributes of the director, and firm characteristics.⁴ We report coefficient p-values in parentheses and standardized coefficients in brackets. The standardized coefficient relates the modeled effect on the likelihood of director turnover for a one standard deviation in a continuous variable, or for

³ Bushman, Dai, and Wang (2010) obtain similar results for the returns to skill and luck when examining firm-years associated with CEO turnover.

⁴ The specifications here largely follow those outlined in the director turnover models summarized in Fahlenbrach, Low and Stulz (2013).

a change from 0 to 1 for an indicator variable. Models 1-3 of Table 2 incorporate continuous measures of firm performance. In Model 1, the coefficient on industry-adjusted stock return is negative and statistically significant, where the standardized coefficient indicates a one standard deviation decrease in industry-adjusted stock returns increases the likelihood of director turnover by 0.5%. In Model 2 the negative and significant coefficient on industry-adjusted ROA suggests that a one standard deviation decrease in industry-adjusted ROA increases the likelihood of director turnover by 3.0%. Under both models, the sensitivity of director turnover to performance is economically significant given an unconditional rate of turnover of 7.6% for the sample.⁵

Model 3 of Table 2 estimates the sensitivity of director turnover to the components of returns attributable to luck and skill. The coefficient associated with the return to luck captures the sensitivity of director turnover to the component of firm performance due to actions outside of the control of the board of directors and management. The coefficient associated with skill, however, relays the sensitivity of director turnover to performance that can be ascribed to the actions of directors and management. The results of Model 3 indicate that director turnover is not significantly related to the luck component of stock return. The coefficient on the skill component of stock return, however, is negatively correlated with director turnover. A one standard deviation decrease in the idiosyncratic stock return increases the likelihood of director by 0.5%, suggesting that the threat of replacement reflects only the observation of actions attributable to management rather than to events that are outside of their control.

⁵ Yermack (2004) studies director turnover for a sample of 734 outside directors of Fortune 500 firms between 1992 and 1994. He documents that a one standard deviation in market-adjusted stock returns is associated with 0.92% increase in the likelihood director turnover. Our results are not directly comparable given his sample period, emphasis on larger firms, and restriction that the directors in his sample have held the position for a maximum of five years. When we restrict our sample observations to include only directors holding the position for five years or less we also find that the marginal effect of performance on turnover is significantly higher.

In Models 4-6 of Table 2 we estimate director turnover as a function of discrete measures of firm performance constructed as indicator variables equal to one if the sample firm-year performance falls in the lowest quartile of performance for a given sample year. The economic inferences drawn from Models 1-3 of the table are unchanged in these specifications. For example, the likelihood of director turnover for firms in the lowest quartile of industry-adjusted stock price performance is 0.9% higher than for directors in the top three quartiles. Furthermore, a director at a firm in the lowest quartile of industry-ROA is 1.7% more likely to turnover. When we decompose returns into quartiles of luck and skill, it continues to be the case that director turnover remains sensitive to only the skill component of stock price performance.

The regressions in Table 2 incorporate a variety of control variables that are plausibly correlated with director turnover.⁶ We include two indicator variables to control for the effect of director age; one corresponding to directors near retirement age (65-71) and one corresponding to the average mandatory retirement age of 72 (or older) as described in Cline and Yore (2014). As expected, the likelihood of director turnover is positively correlated with each of these indicator variables. Directors that hold more than one directorship are also less likely to turnover, which is consistent with the hypothesized value of additional directorships for firms in terms of business connections, experience and reputation. In contrast, we also find that directors who gain an additional directorship in the prior year are more likely to turnover, suggesting that an increase in responsibilities and limited attention may force directors to limit the number of directorships held at any one time. Despite the importance of serving as CEO at another public company, we find

⁶ We also include a number of firm-level control variables in the regression in Table 2. For brevity, we suppress the output associated with these variables for the director-level analysis, but report them in the board level analysis summarized in Table 3 and in Section 4.2 of this paper. The statistical and economic significance of these firm-level control variables are not different in the analyses performed at either the director or firm level.

that current CEO experience does not have a significant negative impact on the likelihood of director turnover.

All three committee membership indicator variables are negative and statistically significant in all of the specifications summarized in Table 2. Audit committee membership has the highest economic significance suggesting that directors sitting on this committee are 3.2% to 3.3% less likely to turnover than directors that do not. Overall, these results imply that membership on key committees reduces the likelihood of turnover for directors of public corporations. All else equal, we also find that female directors are 0.2% less likely to turnover than male directors, which is consistent with their relative scarcity in the director labor market, and the hypothesized benefits of board diversity for corporate governance (e.g. Adams and Ferreira, 2009).

In sum, the results from Table 2 document a persistent negative correlation between various measures of firm performance and director turnover. These findings suggest that directors are disciplined for poor performance, a result corroborated by the fact that the performance-turnover sensitivity obtains only for the idiosyncratic, or skill, aspect of performance.

4.2 Board-level regressions

Given our evidence at the individual director level in Section 4.1, we next examine how the relation between firm performance and turnover manifests at the board level. Specifically, we consider whether firm performance can explain the proportion of directors that turnover in a given year. Table 3 reports OLS regressions modeling the percentage of directors on the board of directors that turnover in a given year as a function of firm performance, board characteristics, and firm characteristics. As a baseline, we note that the unconditional rate of proportional board turnover for the sample is 5.9% of the membership of the average board in a given year, which translates into approximately 0.51 directors per year. In Models 1–3 of Table 3 we incorporate the

continuous measures of firm performance used in Models 1-3 of Table 2. In Model 1, the coefficient on industry-adjusted stock return is negative and statistically significant suggesting that as firm performance decreases, boards experience a higher proportion of director turnover in the following year. In Model 2, board turnover is also negatively correlated with lagged industry-adjusted ROA. Model 3 separates stock returns into their luck and skill components. Similar to the director-level regressions discussed in section 4.1, we demonstrate that the negative relation between the fraction of board turnover and stock price performance holds only for the skill component of returns. Additional firm characteristics have the same sign and significance across the first three models of Table 3.

Models 4–6 of Table 3 evaluate the extent of director turnover relative to measures of firm performance that are equal to one for firm-year observations in the lowest quartile of performance for a given sample year. In keeping with results in earlier models, the coefficients in each of these models suggest that relatively poor firm performance is correlated with a higher proportion of director turnover. For example, the coefficient on low stock performance in Model 4 is positive and statistically significant, suggesting that firms in the lowest quartile of stock performance experience 0.8% more board turnover in a given year. This effect is economically significant considering the average proportion of turnover in a given year is 5.9%. Model 5 indicates that boards in the lowest quartile of industry-adjusted ROA experience 1.4% more turnover in a given year. In keeping with our earlier results for individual directors, we also find that the sensitivity of proportional board turnover to performance is significant for the idiosyncratic (skill) portion of firm performance, but not for luck. Boards in the lowest quartile of idiosyncratic performance experience 0.9% more turnover in a given year. The sign and significance of the coefficients on our controls for firm characteristics are all consistent with the first three models of Table 3.

Our findings in Table 3 suggest that there is a negative and economically significant relationship between performance and the proportion of directors that turnover in the next year. This performance-turnover sensitivity is robust to various measures of stock and accounting returns, and obtains specifically for stock returns that are correlated with management skill rather than luck. Collectively, Tables 2 and 3 provide strong evidence that directors are disciplined through turnover for poor performance.

4.3 Performance turnover sensitivity around SOX

The enactment of the Sarbanes Oxley Act (SOX) in 2002 as well as subsequent changes in exchange listing requirements lead to dramatic shifts in the structure of corporate boards. Linck et al. (2009) suggest that public scrutiny over board decisions and director workload increased following the implementation of SOX and listing requirements. Given this increased scrutiny as well as that boards shifted to be comprised primarily of outside and unaffiliated directors, we expect differences in the incentive effects associated with the threat of replacement surrounding these regulatory changes. To test this, we investigate whether there are differences in turnover performance sensitivity between the pre- and post-SOX time periods.

In Table 4 we repeat regression specifications similar to those outlined in Tables 2 and 3 and include interaction terms between a post-SOX indicator variable and performance measures. This interaction term should capture any differences in turnover-performance sensitivities between the pre- and post-SOX periods. Models 1-3 detail a linear probability model estimating the likelihood that an individual director experiences turnover in a given firm-year as a function of firm performance, interaction terms, director attributes, and firm characteristics. We utilize a linear probability model for ease of interpreting the marginal effects of interaction terms.⁷ For brevity,

⁷ Cornelli, Kominek and Ljungqvist (2012) and Guo and Masulis (2015) also rely on a linear probability model to estimate CEO turnover and interpret interaction terms.

we only report coefficients of continuous performance measures and their interactions with the post-SOX indicator in Table 4. All director and firm controls included in regressions are the same as those included in Tables 2 and 3 and have the same sign and significance.

The coefficient on industry-adjusted stock return is not statistically significant, while its interaction term is negative and significant in Model 1; the turnover-performance sensitivity for stock returns manifests only in the post-SOX era. This indicates that a one standard deviation decrease in industry-adjusted stock returns increases the likelihood of director turnover by 0.8%. Examining industry-adjusted ROA, results in Model 2 indicate that a turnover-performance relation existed pre-SOX, but decreases after. These findings suggest that earnings were a more salient performance benchmark in the director labor market pre-SOX, while investors focus attention on stock performance post-SOX. Model 3 separates stock returns into their luck and skill components. Similar to Table 2, luck has no significant relation with director turnover in either pre- or post-SOX periods. The coefficient on the interaction between post-SOX and skill, however, is negatively correlated with director turnover. The negative relation between director turnover and skill found in Table 2 holds only for the post-SOX period.

Similar to Table 3, Models 4-6 of Table 4 estimate OLS regression specifications modeling the proportion of directors that turnover in a given year and include interaction terms between a post-SOX indicator variable and performance measures. Focusing at the board level, we find the same differences in turnover-performance sensitivities between the two time periods. Overall, the results of Table 4 suggest that stock performance, in particular skill, become a more important factor in director turnover in the post-SOX era.

4.4 Turnover versus non-turnover directors

Given the significant relation between turnover-performance for corporate directors, we examine whether specific director characteristics, such as their reputation and experience, affect the likelihood of turnover, and more specifically, the likelihood of turnover during years following relatively poor firm performance. Indeed, given the limited role for observable individual action on boards, it is questionable whether performance attribution for an individual director is feasible for an internal monitor (such as a board chair or lead director), or an external monitor such as an institutional blockholder. An alternative to attribution is the scapegoating of directors who are, for example, more conspicuous in their board committee activities or who have less experience with the firm, or who have less reputation in the broader labor market for directors. In order to distinguish between these two motivations, we compare directors that turnover to those directors that remain on the board in a given firm-year.

Table 5 summarizes the differences between turnover and non-turnover directors for the 14,200 firm-years experiencing director turnover(s). Column I (II) reports average director-level characteristics for directors that do (do not) turnover in sample firm-years in which at least one director exits the board. In order to identify differences in director characteristics between individuals that do and do not turnover, we estimate pairwise differences where each director that exits the firm is paired with a director that does not exit for every firm-year in which at least one director exits the board. The differences in director characteristics for all pairs are then averaged over the firm-year. Column III reports average differences in director characteristics for our turnover/non-turnover director pairs. In this sense, the results in Table 5 provide insight into the within firm differences between directors that do/do not exit the firm.

These results indicate that, on average, directors that turnover are older and have a longer tenure on the board; characteristics that unambiguously increase the likelihood that a seated director will exit a board in a given year. Other director characteristics associated with a director's experience and reputation also impact turnover. For example, directors holding multiple board seats and directors who are current CEOs are less likely to exit a board in a given year as are directors who sit on the audit, compensation, or nominating committees.

Table 6 further investigates differences in turnover and non-turnover director characteristics conditional on prior firm performance. We estimate logistic regressions modeling individual director turnover in a given firm-year in which at least one director turns over as a function of differences between individual director characteristics and the average characteristics for all other directors on that board. The specifications are run separately for subsamples of firms experiencing turnover in the lowest quartile of stock performance in the prior year and for those in the highest quartile. Consistent with results of Table 5, for both subsets of firms, directors that turnover are more likely to be older and have longer tenure and less likely to hold additional directorships, sit on key committees or be captured by the CEO.

To distinguish the motivation of director turnover between scapegoating and performance attribution, we examine whether directors that turnover are difference based on firm stock performance. We calculate a Chi-squared test statistic to test for differences in the coefficients between the two subsamples, lowest and highest quartiles of performance (third column of Table 6). The magnitude of the difference in age between directors that do and do not turnover is significantly lower for firm-years in the lowest quartile. In addition, the effect of holding additional seats and captured by the CEO are attenuated in the lowest performance quartile group. These results suggest captured directors are less insulated from turnover following poor

performance relative to years characterized by good performance. Overall, the results presented in Tables 5 and 6 show that the relative characteristics of directors that do and do not turnover vary significantly with measures of board capture, reputation, and experience. Furthermore, differences between characteristics of directors that do and do not turnover varies in the context of firm performance in a way that is consistent with performance attribution during periods characterized by poor performance.

4.5 Does governance moderate the performance-turnover sensitivity for corporate directors?

Prior studies examining executive turnover have emphasized the substantial impact of various corporate governance features on the sensitivity of turnover to performance. In this context, turnover within corporate boards is interesting because boards themselves have long been recognized as governance features with a significant effect on the sensitivity of executive turnover to firm performance. In the case of corporate directors, it remains unclear which internal or external governance features might impact director turnover generally, or more specifically the sensitivity of their turnover to firm performance.

In this section, we examine whether a number of different governance features moderate the likelihood of director turnover and their sensitivity of turnover to performance. We consider the effect of two internal governance features commonly associated with agency conflicts, and therefore likely to insulate directors from internal monitoring. The first is a measure of director capture (co-option) by the CEO, which we define as director-firm-years in which the director has a tenure on the board of less than the tenure of the current CEO (e.g. Coles, Daniel and Naveen (2014)). The second is a measure of CEO duality in which the current (or former) CEO also holds the title of Board Chair. The literature has also found that institutions and other large external

blockholders can increase the likelihood of executive turnover in firms.⁸ To examine the role of external monitoring on director turnover we consider the effect of motivated institutional ownership which is measured following Fich, Harford and Tran (2014) as the percentage of shares outstanding owned by institutional investors whose holding value in the firm is in the top 10% of the institution's portfolio.

In Table 7 we estimate logistic regression specifications similar to those outlined in Table 2. Specifically, these regressions estimate the likelihood that an individual director exits a board seat as a function of firm performance, director characteristics, and the features of internal and external governance described in the paragraph above.⁹ As in Table 2, we estimate specifications in Table 7 utilizing a variety of alternative measures of firm performance and we report coefficient *p*-values in parentheses and marginal effects in brackets.

The results in Table 7 indicate that, after controlling for various governance characteristics, the sensitivity of turnover to performance for corporate directors remains consistently negative across all performance measures. The coefficient associated with CEO capture is negative and statistically significant. This result suggests that those directors that have been appointed since the current CEO assumed office are, all else equal, 1.9% less likely to turnover; a finding that is consistent with the notion that board capture decreases director turnover. The results in Table 7 do not suggest that duality for current CEOs alters the likelihood of director turnover, however, a director is between 0.4% and 0.5% less likely to turnover if the chairman of the board is the former CEO. In general, these results suggest that co-opted boards and CEO duality are associated with more stable director tenures. Finally, these results suggest that the likelihood of director turnover

⁸ See for example Denis, Denis and Sarin (1997); Huson, Parrino and Starks (2001); and Goyal and Park (2002).

⁹ Given that we obtain similar results for turnover and proportional turnover at the director and firm level respectively, we describe but do not tabulate, our results performed at the firm level.

is higher when the firm has a higher concentration of motivated institutional owners. For example, the coefficient in Model 1 suggests that a one standard deviation increase in the ownership of motivated institution, all else equal, increases the likelihood of director turnover by 1.7%.

While our governance variables have an unconditional effect on director turnover, the agency or monitoring effects of these characteristics can only be derived from their economic interaction with the sensitivity of turnover to performance for directors. To evaluate these effects, we replicate each model in Table 7, but add an interaction term between an individual governance variable and each of our measures of prior firm performance. In these untabulated results we obtain no evidence that the turnover-performance sensitivity varies with any of our governance measures a firm's governance structure.¹⁰ This result is consistent with Huson, Parrino, and Starks (2001), who find that the turnover-performance sensitivity of CEOs did not change significantly over the decades of the 1970s through the 1990s despite substantial changes in internal corporate governance characteristics. Overall, our results suggest that corporate governance features are correlated with the likelihood of director turnover, however, we find no evidence that these characteristics consistently moderate the observed turnover-performance relation.

In Table 8 we consider the role of corporate governance features on the proportion of director turnover at the firm level. As in Table 3, we estimate OLS regressions explaining the fraction of board turnover in a given year as a function of firm characteristics including lagged performance. In addition to CEO duality, we consider the governance effects associated with external motivated monitors. We aggregate our measure of captured directors and include the

¹⁰ In addition to the governance variables described above, we replicate our specifications utilizing a number of alternative measures of corporate governance including: the total percentage of institutional ownership; the number of blockholders with 5% interest or more; the number of motivate monitors; the change in the number of 5% plus blockholders and the change in the number of motivate monitors. While the results of these tests indicate that blockholders generally have a positive effect on the likelihood of turnover, in no case do we observe that these ownership variables moderate the sensitivity of director turnover to performance.

percentage of directors captured on the board as an explanatory variable. Finally, we consider the effect of board busyness, which we define as the percentage of directors on the board that hold three or more public directorships (e.g. Fich and Shivdasani (2006)).

The results in Table 8 also confirm that the fraction of board turnover is negatively correlated with a variety of measures of firm performance, even after controlling for features of corporate governance. The coefficients associated with current and former CEO are both negative and statistically significant, as is the fraction of captured board members, which is consistent with the inferences from the results of Table 7. Percent captured is also negative and statistically significant. The coefficient on busy is positive and statistically significant, which is consistent with the notion that boards with increased responsibilities and limited attention experience higher rates of turnover. Finally, a higher concentration of motivated institutional owners is associated with a greater proportion of director turnover which is consistent with a greater degree of monitoring. In unreported specifications, we interact our governance variables (and alternative measures) with firm performance. In no instance do we find that governance moderates the sign or significance of the relationship between firm performance and proportional board turnover.

5. Replacement directors on corporate boards

To investigate the impact of director turnover on the firm, we consider the quality of directors appointed to the board over various annual horizons. Our evidence suggests that the threat of turnover tied to firm performance represents a material economic incentive for the average director in our sample. This incentive effect may however be, at least partially, offset by the costs of replacing the skills and experience of the directors that exit the board. Given the relatively thin labor market for qualified directors, the appointment of less qualified directors is a potential

concern following turnover, the costs of which are likely exacerbated when turnover coincides with relatively poor firm financial and operating performance.

In Table 9 we summarize the differences between turnover directors and directors appointed to the same firm in the year(s) following turnover. Given that each departure does not necessarily match to a single replacement, we quantify the differences between these departing and replacement directors by pairing departing directors with each replacement director over one, two and three year time horizons.¹¹ The difference in director characteristics for each pair is then averaged for each firm-year associated with at least one director exit. Panel A summarizes all turnover-replacement pairs for 12,752 turnover and 13,113 replacement directors over a one-year horizon following director turnover. Panel B summarizes all turnover-replacement pairs for 15,369 turnover directors and 20,827 replacement directors over a two-year horizon following turnover. Panel C summarizes all turnover-replacement pairs for 16,252 turnover directors and 26,608 replacement directors over a three-year horizon following director turnover.

Column I of each of the Panels in Table 9 reports average differences in director characteristics for all turnover-replacement pairs. Overall, our results suggest that replacement directors are almost six years younger and exhibit higher proxies for reputation and experience in terms of additional directorships and current CEO experience (e.g. Fahlenbrach et al., 2010; Ferris, Jagannathan, and Pritchard, 2003) than the directors they replace. In addition, replacement directors are less likely to have compensation and nominating committee experience and more likely to be female.

Since firms with lower performance are more likely to experience director turnover, we examine whether turnover may have unintended consequences for the firms seeking to replace

¹¹ We examine short and long-term horizons in order to account for the search and matching frictions in the director labor market.

directors following poor performance. The existing research indicates that holding a directorship in a poorly performing firm might be relatively unattractive for otherwise qualified replacement candidates. For example, Fich and Shivdasani (2007) demonstrate that outside directors of firms subject to lawsuits for financial fraud experience a decline in the number of board seats held, while Srinivasan (2005) finds that reputation capital declines for directors following earnings restatements. Further, Gilson (1990) shows that outside directors serving on the boards of companies in financial distress hold fewer additional board seats.

To consider the potential moderating influence of firm performance on the quality of replacement directors, columns II and III of Table 9 separate turnover-replacement pairs into firms-years in the lowest quartile (column II) and the highest quartile (column III) of industry-adjusted stock returns for a given sample year. Consistent with the potential reputation costs for new directors, we find that replacement directors of firms with prior low performance are generally of lower quality relative to the replacement directors of firms in the highest quartile of performance. Specifically, these directors have fewer additional directorships, are less likely to have CEO experience, and have less experience on audit committees relative to directors that take positions on the boards of higher performance firms. We obtain consistent results across both the two and three-year horizons (Panels B and C, respectively). These results suggest that poorly performing firms experiencing director turnover are coincidentally punished in the director labor market, an effect that likely reduces the net benefits associated with a higher sensitivity of director turnover to performance.

6. Labor market outcomes for directors who turnover

Our evidence suggests that director reputation and experience reduce the likelihood of director turnover generally, and likely partially insulate directors from turnover following poor

firm performance. Of course, directors who exit firms experience direct costs in the loss of expected compensation and benefits that would otherwise be received in their continuing role as a director. In this section, we consider the indirect costs of turnover for the directors that exit firms in terms of their future job opportunities as directors in other public corporations. On one hand, being associated with negative performance has been shown to decrease the number of additional board seats for outside directors, which in turn may imply weaker employment alternatives for directors experiencing prior board turnover. On the other hand, specific attribution of performance to any one individual on a board is unlikely, thus turnover itself might serve as a weak signal of director quality.

In Table 10 we report logistic regressions modeling the likelihood that a director obtains a new directorship in sample event years $t=1-3$. For ease of exposition, the specifications are run separately for subsamples of directors that turnover in the sample year ($t=0$) and for directors that do not turnover in the sample year. The models examine the likelihood of future employment given lagged firm performance (year $t-1$), director age, gender, and other director characteristics tied to reputation and experience observed in year $t=0$. In untabulated specifications similar to those presented, but run for the full sample of turnover and non-turnover director-firm-year observations we find that being subjected to turnover reduces the likelihood of obtaining a new directorship, all else equal, by approximately 1.0%. As a benchmark, the unconditional probability of gaining an additional directorship over the three year window is 9.6%.

Models 1 and 2 (Models 3 and 4) of Table 10 estimate the probability of gaining a future directorship for turnover (non-turnover) directors only. Industry-adjusted stock returns are not a significant determinant of a director obtaining an additional directorship over the next three years for either subsample of turnover/non turnover directors. The coefficient on ROA, however, is

positive and statistically significant for both turnover and non-turnover directors, suggesting that earnings are a salient performance benchmark in the director labor market. Past experience, as proxied by additional directorships and audit committee membership, has significantly positive effects on gaining a seat in the future, even for directors experiencing turnover. For example, the results of Model 1 (Model 3) indicate that turnover (non-turnover) directors holding at least one additional directorship are 7.1% (8.3%) more likely to gain at least one new board seat during the next three years. This director attribute nearly doubles the probability of gaining a new board seat, suggesting that the best way to get on a board is to be on a board. Audit committee experience increases the probability of gaining a new seat by 0.6%-0.7% for both turnover and non-turnover directors. Finally, the evidence indicates that females and younger directors are in higher demand in the director labor market, although females are somewhat less likely to obtain a new position following a turnover event relatively to females that are not subject to turnover.

In general, the results in Table 10 provide only weak evidence that pre-turnover performance (specifically accounting performance) is positively correlated with the likelihood that a director will obtain a new directorship during a three-year window following a turnover event. This result suggests that it may be difficult to attribute firm performance to the actions of any one director, and/or that performance in the context of earnings is more salient than returns to the demand side of the director labor market. Our evidence does suggest however, that various measures of past experience and reputation have a positive effect on the likelihood of obtaining a new directorship, although these effects are more muted for directors if they have previously left a board during the past three years. These latter findings are consistent with results of Harford and Schonlau (2013), who show that past experience, but not performance, is valued in the director labor market following M&A events.

7. Conclusion

In this paper, we examine whether directors are disciplined for poor performance, the consequences for firms experiencing director turnover and the ex-post outcomes for those directors that turnover. Our results suggest that directors are disciplined for poor performance (stock and accounting). Specifically, the likelihood of turnover for an individual director is decreasing in firm performance as is the proportion of directors who turnover from a board in a given year. Our results indicate that the turnover-performance sensitivity in returns manifests only in the idiosyncratic component of stock returns (skill). These findings suggest that the threat of replacement for directors is a byproduct of observing those actions attributable to the firm's management and not to events outside their control.

Given an economically significant turnover-performance sensitivity, we investigate whether a number of alternative internal and external governance characteristics have an impact on the likelihood of director turnover, and more specifically, on the sensitivity of turnover to performance. Our evidence suggests that there is less director turnover for firms with weak internal governance mechanisms including a dual CEO-Chair role and instances where directors are co-opted by the sitting CEO. On the other hand, firms with strong external monitoring, specifically those with more motivated blockholders, experience a higher likelihood of director turnover. While these effects hold generally, we find no evidence to suggest that any one specific governance characteristic systematically alters the turnover-performance sensitivity of the average director or firm in our sample.

We examine the quality of directors appointed to the board following turnover in order to assess the consequences of turnover for the firm. Firms with higher performance experiencing turnover appear to be able to attract higher quality replacements (number of additional directors,

CEO experience, and audit committee experience), whereas low performing firms cannot do so. These findings suggest that poorly performing firms are further punished in the director labor market with low quality replacements. Directors experiencing turnover also face consequences in the director labor market in that they are less likely to gain a new directorship in the future. Turnover appears to be a signal of poor director quality, although measures of experience (holdings additional directorships and audit committee experience) have positive impacts on gaining future directorships.

Overall, our results are consistent with Fama (1980) and Fama and Jensen (1983) who argue that outside directors have incentives to be effective monitors in order to signal their value to the director labor market. Our evidence suggests that the threat of replacement presents an economically significant incentive for directors in the context of firm performance. This effect seems particularly pertinent in the post-SOX decade in which members of boards of directors have faced far more scrutiny. It is also important to understand the consequences for the firm experiencing director turnover given that the board of directors is a fundamental link between shareholders and management. Despite a need for high quality directors, poorly performing firms are further penalized by the director labor markets and are unable to attract qualified candidates for board seats, ironically precisely in states where board expertise and experience is likely to be most valuable. Finally, the director labor market performs a major role in incentivizing directors. Our results suggest that while director turnover is a signal of poor quality, thus reducing the likelihood of obtaining future seats on other boards, past experience for these directors remains remarkably valuable in the director labor market, even for directors who have experienced turnover in the context of poor firm performance in the recent past.

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Appendix A: Variable Definitions

	Variable Definition
<i>Panel A: Firm Performance Measures</i>	
Industry-adjusted stock return	Annual stock return adjusted by median Fama-French 48 industry return
Industry-adjusted ROA	Net income scaled by total book value of assets adjusted by median Fama-French 48 industry ROA
Luck	The fitted value from a cross-sectional regression of annual stock return on median Fama-French 48 industry return
Skill	The residual from a cross-sectional regression of annual stock return on median Fama-French 48 industry return
Low performance	Indicator equal to one if industry-adjusted stock return falls in the lowest quartile of industry-adjusted stock return in a given sample year
Low ROA	Indicator equal to one if industry-adjusted ROA falls in the lowest quartile of industry-adjusted ROA in a given sample year
Low luck	Indicator equal to one if industry-adjusted stock return falls in the lowest quartile of luck in a given sample year
Low skill	Indicator equal to one if industry-adjusted stock return falls in the lowest quartile of skill in a given sample year
<i>Panel B: Director Characteristics</i>	
Age	Director age in years
Tenure	Director tenure in years
Number of other seats	Total number of other public directorships held
Hold additional seats	Indicator equal to one if director holds additional directorships at outside public firms, zero otherwise
Current CEO elsewhere	Indicator equal to one if director is currently a CEO of an outside public firm, zero otherwise
Audit committee	Indicator equal to one if director sits on the audit committee, zero otherwise
Compensation committee	Indicator equal to one if director sits on the compensation committee, zero otherwise
Nomination committee	Indicator equal to one if director sits on the nominating committee, zero otherwise
Gain new seat - prior year	Indicator equal to one if director gains an additional directorship at outside public firm in the prior year, zero otherwise
Female	Indicator equal to one if director is female, zero otherwise
Captured	Indicator equal to one if director tenure is less than current CEO tenure
Age (65-71)	Indicator equal to one if director age is greater than or equal to 65 and less than or equal to 71, zero otherwise
Age (72+)	Indicator equal to one if age is 72 or older, zero otherwise
Audit committee experience	Indicator equal to one if director currently sits or previously sat on audit committee of a public firm, zero otherwise
Comp committee experience	Indicator equal to one if director currently sits or previously sat on compensation committee of a public firm, zero otherwise
Nom committee experience	Indicator equal to one if director currently sits or previously sat on nomination committee of a public firm, zero otherwise

Appendix A (continued): Variable Definitions

	Variable Definition
<i>Panel C: Firm Governance Measures</i>	
Busy	Percentage of outside directors holding three or more directorships
Percent captured	Percentage of outside directors with tenure less than the current CEO
CEO chair	Indicator equal to one if CEO also holds position of chairman of the board, zero otherwise
Chair is former CEO	Indicator equal to one if chairman of the board was previously CEO, zero otherwise
Motivated monitor	Percentage of shares outstanding held by institutional investors whose holding value in the firm is in the top 10% of the institution's portfolio
Board size	Total number of directors on the board
Outsiders	Percentage of outside directors on the board
<i>Panel D: Firm Characteristics</i>	
CEO turnover	Indicator equal to one if CEO turnover occurs
Firm age	Firm age in years
Firm size	The natural log of total book value of assets
Return volatility	Standard deviation of stock returns in prior fiscal year

Table 1: Summary of firm characteristics

This table summarizes firm characteristics for 39,975 firm-years between 2000 and 2011. Panel A summarizes firm performance measures from CRSP and Compustat. Industry-adjusted stock return is the annual buy-and-hold return adjusted by the median Fama-French 48 industry return. Industry-adjusted ROA is net income scaled by total book value of assets adjusted by the median Fama-French 48 industry ROA. Luck is the fitted value from a cross-sectional regression of annual buy-and-hold returns on the median Fama-French 48 industry return. Skill is the residual value from a cross-sectional regression of annual buy-and-hold returns on the median Fama-French 48 industry return. Panel B reports board, director and governance characteristics from BoardEx and ThomsonReuters. Age is director age in years. Hold additional seats is an indicator equal to one if director holds additional directorships at outside public firms, zero otherwise. Current CEO elsewhere is an indicator equal to one if director is currently a CEO of an outside public firm, zero otherwise. Female is an indicator equal to one if director is female, zero otherwise. Gain new seats - prior year is an indicator equal to one if director gains an additional directorships at outside public firms in the past year, zero otherwise. Busy is an indicator equal to one if the director holds three or more public directorships. Captured is an indicator equal to one if director tenure is less than current CEO tenure. CEO chair is an indicator equal to one if the CEO also holds the position of chairman of the board and zero otherwise. Former CEO is chair is an indicator equal to one if the chairman of the board was previously the firm's CEO. Motivated monitor is the percent of shares outstanding held by institutional investors whose holding value in the firm is in the top 10% of the institution's portfolio. Board size is the total number of directors on the board. Outsiders is the percentage of outside directors on the board. Panel C reports firm characteristics from Compustat and BoardEx. CEO turnover is an indicators variable equal to one if CEO turnover occurs during the fiscal year. Firm age is the age of the firm in years. Firm size is the log transformed total book value of assets. Return volatility is the standard deviation of annual stock returns. Panel D splits the sample into firm-years experiencing director turnover(s) (14,220 firm-years) and firm-years with no director turnover (25,755 firm-years) to compare firm performance measures. ***, **, * denote statistically significant differences at the 1%, 5%, and 10%, levels respectively.

	Mean	Median	Std Dev
<i>Panel A: Firm Performance Measures</i>			
Industry-adjusted stock return	9.17%	0.00%	0.60
Industry-adjusted ROA	-1.76%	0.00%	0.18
Luck	16.85%	14.75%	0.29
Skill	-1.84%	-10.00%	0.62
<i>Panel B: Board, Director and Governance Characteristics</i>			
Age	60.49	61.00	9.26
Hold additional seats	37.14%	0.00%	0.48
Gain new seat - prior year	3.81%	0.00%	0.19
Current CEO elsewhere	20.59%	0.00%	0.40
Female	10.31%	0.00%	0.30
Busy	17.63%	0.00%	0.38
Captured	33.81%	0.00%	0.47
CEO chair	50.02%	100.00%	0.50
Former CEO is chair	15.45%	0.00%	0.36
Motivated monitor	2.65%	0.00%	0.09
Board size	8.65	8.00	2.73
Outsiders	71.63%	75.00%	0.15
<i>Panel C: Firm Characteristics</i>			
CEO turnover	10.07%	0.00%	0.30
Firm age	19.32	14.00	14.90
Firm size	6.51	6.51	2.10
Return volatility	0.13	0.11	0.10
	Turnover Firm-Years (1)	Non-Turnover Firm-Years (2)	Difference (1) – (2)
<i>Panel D: Firm Performance Measures</i>			
Industry-adjusted stock return	8.36%	9.62%	-1.27%**
Industry-adjusted ROA	-1.92%	-1.68%	-0.24%
Luck	17.91%	16.23%	1.74%***
Skill	-3.15%	-1.11%	-2.03%***

Table 2: Logit regressions modeling individual director turnover

The table reports logistic regressions modeling the likelihood that a director turns over in a given firm-year. The sample consists of 281,062 director-firm-year observations between 2000 and 2011. In each model, the dependent variable is an indicator equal to one if the director turns over and zero otherwise. Models 1 – 3 include continuous measures of performance: industry-adjusted stock return (Model 1), industry-adjusted ROA (Model 2), luck and skill (Model 3). Industry-adjusted stock return is the annual buy-and-hold return adjusted by the median Fama-French 48 industry return. Industry-adjusted ROA is net income scaled by total book value of assets adjusted by the median Fama-French 48 industry ROA. Luck is the fitted value from a cross-sectional regression of annual buy-and-hold returns on the median Fama-French 48 industry return. Skill is the residual value from a cross-sectional regression of annual buy-and-hold returns on the median Fama-French 48 industry return. Models 4 – 6 include measures of performance based on sample quartiles for a given sample year: low performance (Model 4), low ROA (Model 5), low luck and low skill (Model 6). Low performance is an indicator equal to one if industry-adjusted stock return falls in the lowest quartile of performance for the sample year and zero otherwise. Low ROA is an indicator equal to one if industry-adjusted ROA falls in the lowest quartile of performance for the sample year and zero otherwise. Low luck is an indicator equal to one if luck falls in the lowest quartile of performance for the sample year and zero otherwise. Low skill is an indicator equal to one if skill falls in the lowest quartile of performance for the sample year and zero otherwise. Age (65-71) is an indicator equal to one if the director is between the ages of 65 and 71 and zero otherwise. Age (72+) is an indicator equal to one if the director is 72 years or older. Hold additional seats is an indicator equal to one if the director holds additional directorships at outside public firms and zero otherwise. Gain new seat - prior year is an indicator equal to one if the director gained an additional directorship at outside public firms in the past year and zero otherwise. Current CEO elsewhere is an indicator equal to one if the director is currently a CEO at an outside public firm and zero otherwise. Audit committee is an indicator equal to one if the director sits on the audit committee and zero otherwise. Compensation committee is an indicator equal to one if the director sits on the compensation committee and zero otherwise. Nomination committee is an indicator equal to one if the director sits on the nomination committee and zero otherwise. Female is an indicator equal to one if the director is female and zero otherwise. Additional director controls not shown include tenure (director tenure in years). Firm controls not shown include CEO turnover (an indicators variable equal to one if CEO turnover occurs during the fiscal year), firm age (age of the firm in years), firm size (log transformed total book value of assets), return volatility (standard deviation of annual stock returns), board size (total number of directors on the board) and outsiders (percentage of outside directors on the board). Year indicators are also included. *p*-values based on standard errors clustered by firm and by year are in parentheses and marginal effects computed at the mean values of the independent variables are provided in brackets. Marginal effects are the change in the probability of director turnover for a one standard deviation change in a continuous variable or a shift from zero to one for an indicator variable.

Table 2 (continued)

	Firm Performance, Continuous			Firm Performance, Low		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	-2.164 (0.000)	-2.197 (0.000)	-2.169 (0.000)	-2.211 (0.000)	-2.329 (0.000)	-2.220 (0.000)
Industry-adjusted stock return	-0.083 (0.007) [-0.005]			0.153 (0.000) [0.010]		
Industry-adjusted ROA		-0.504 (0.000) [-0.032]			0.283 (0.000) [0.018]	
Luck			-0.021 (0.896) [-0.001]			0.045 (0.256) [0.003]
Skill			-0.084 (0.002) [-0.005]			0.155 (0.000) [0.010]
Age (65-71)	0.245 (0.000) [0.015]	0.242 (0.000) [0.015]	0.245 (0.000) [0.015]	0.245 (0.000) [0.015]	0.243 (0.000) [0.015]	0.245 (0.000) [0.015]
Age (72+)	0.897 (0.000) [0.056]	0.894 (0.000) [0.056]	0.897 (0.000) [0.056]	0.897 (0.000) [0.056]	0.893 (0.000) [0.056]	0.897 (0.000) [0.056]
Hold additional seats	-0.060 (0.033) [-0.004]	-0.063 (0.030) [-0.004]	-0.060 (0.032) [-0.004]	-0.062 (0.025) [-0.004]	-0.073 (0.011) [-0.005]	-0.063 (0.022) [-0.004]
Gain new seat - prior year	0.073 (0.081) [0.005]	0.075 (0.073) [0.005]	0.074 (0.082) [0.005]	0.074 (0.079) [0.005]	0.074 (0.071) [0.005]	0.073 (0.086) [0.005]
Current CEO elsewhere	0.012 (0.679) [0.001]	0.009 (0.758) [0.001]	0.012 (0.678) [0.001]	0.012 (0.688) [0.001]	0.009 (0.765) [0.001]	0.012 (0.688) [0.001]
Audit committee	-0.526 (0.000) [-0.033]	-0.525 (0.000) [-0.033]	-0.526 (0.000) [-0.033]	-0.525 (0.000) [-0.033]	-0.523 (0.000) [-0.033]	-0.525 (0.000) [-0.033]
Compensation committee	-0.348 (0.000) [-0.022]	-0.346 (0.000) [-0.022]	-0.347 (0.000) [-0.022]	-0.347 (0.000) [-0.022]	-0.345 (0.000) [-0.022]	-0.347 (0.000) [-0.022]
Nomination committee	-0.295 (0.000) [-0.019]	-0.295 (0.000) [-0.019]	-0.295 (0.000) [-0.019]	-0.294 (0.000) [-0.018]	-0.294 (0.000) [-0.018]	-0.295 (0.000) [-0.018]
Female	-0.038 (0.040) [-0.002]	-0.038 (0.044) [-0.002]	-0.038 (0.040) [-0.002]	-0.038 (0.043) [-0.002]	-0.037 (0.049) [-0.002]	-0.037 (0.045) [-0.002]
Year, Director, Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	281,062	281,062	281,062	281,062	281,062	281,062
Pseudo r ²	0.042	0.043	0.042	0.042	0.043	0.043

Table 3: OLS regressions modeling percentage of board that turnover

The table reports OLS regressions modeling the percentage of directors on a board that turnover in a given firm-year. The sample consists of 39,975 firm-year observations between 2000 and 2011. In each model, the dependent variable is the percentage of directors on the board that turnover. Models 1 – 3 include measures of continuous performance: industry-adjusted stock return (Model 1), industry-adjusted ROA (Model 2), luck and skill (Model 3). Industry-adjusted stock return is the annual buy-and-hold return adjusted by the median Fama-French 48 industry return. Industry-adjusted ROA is net income scaled by total book value of assets adjusted by the median Fama-French 48 industry ROA. Luck is the fitted value from a cross-sectional regression of annual buy-and-hold returns on the median Fama-French 48 industry return. Skill is the residual value from a cross-sectional regression of annual buy-and-hold returns on the median Fama-French 48 industry return. Models 4 – 6 include measures of performance based on sample quartiles in a given sample year: low performance (Model 4), low ROA (Model 5), low luck and low skill (Models 6). Low performance is an indicator equal to one if industry-adjusted stock return falls in the lowest quartile of performance for the sample year and zero otherwise. Low ROA is an indicator equal to one if industry-adjusted ROA falls in the lowest quartile of performance for the sample year and zero otherwise. Low luck is an indicator equal to one if luck falls in the lowest quartile of performance for the sample year and zero otherwise. Low skill is an indicator equal to one if skill falls in the lowest quartile of performance for the sample year and zero otherwise. CEO turnover is an indicators variable equal to one if CEO turnover occurs during the fiscal year. Firm age is the age of the firm in years. Firm size is the log transformed total book value of assets. Return volatility is the standard deviation of annual stock returns. Board size is the total number of directors on the board. Outsiders is the percentage of outside directors on the board. Year indicators are also included. *p*-values based on standard errors clustered by firm and by year are in parentheses.

	Firm Performance, Continuous			Firm Performance, Low		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	0.030 (0.002)	0.029 (0.002)	0.030 (0.001)	0.028 (0.004)	0.023 (0.016)	0.026 (0.007)
Industry-adjusted stock return	-0.004 (0.013)			0.008 (0.000)		
Industry-adjusted ROA		-0.022 (0.000)			0.014 (0.000)	
Luck			-0.001 (0.949)			0.002 (0.423)
Skill			-0.004 (0.003)			0.009 (0.000)
CEO turnover	0.038 (0.000)	0.038 (0.000)	0.038 (0.000)	0.038 (0.000)	0.037 (0.000)	0.038 (0.000)
Firm age	0.000 (0.824)	0.000 (0.779)	0.000 (0.802)	0.000 (0.742)	0.000 (0.893)	0.000 (0.694)
Firm size	-0.002 (0.000)	-0.002 (0.001)	-0.002 (0.000)	-0.002 (0.000)	-0.002 (0.004)	-0.002 (0.000)
Return volatility	0.073 (0.000)	0.059 (0.000)	0.073 (0.000)	0.063 (0.000)	0.053 (0.000)	0.063 (0.000)
Board size	0.005 (0.000)	0.005 (0.000)	0.005 (0.000)	0.005 (0.000)	0.005 (0.000)	0.005 (0.000)
Outsiders	-0.029 (0.152)	-0.030 (0.145)	-0.029 (0.151)	-0.029 (0.158)	-0.029 (0.155)	-0.029 (0.153)
Year indicators	Yes	Yes	Yes	Yes	Yes	Yes
Observations	39,975	39,975	39,975	39,975	39,975	39,975
Adjusted r ²	0.036	0.036	0.036	0.037	0.038	0.037

Table 4: Regressions modeling post-SOX turnover-performance sensitivity

The table examines the difference in turnover-performance sensitivity between pre- and post-SOX time periods. Models 1 – 3 present linear probability models estimating the likelihood of director turnover for 281,062 director-firm-year observations between 2000 and 2011. In each model, the dependent variable is an indicator equal to one if the director turns over and zero otherwise. Models 4 – 6 present OLS regressions modeling the percentage of directors on a board that turnover in a given firm-year for a sample of 39,975 firm-year observations between 2000 and 2011. In each model, the dependent variable is the percentage of directors on the board that turnover. In all models, interactions between a post-SOX dummy variable and performance measures are included to capture difference in turnover-performance sensitivities between the two time periods. Industry-adjusted stock return is the annual buy-and-hold return adjusted by the median Fama-French 48 industry return. Industry-adjusted ROA is net income scaled by total book value of assets adjusted by the median Fama-French 48 industry ROA. Luck is the fitted value from a cross-sectional regression of annual buy-and-hold returns on the median Fama-French 48 industry return. Skill is the residual value from a cross-sectional regression of annual buy-and-hold returns on the median Fama-French 48 industry return. Post-SOX is an indicator equal to one if the director-firm-year occurs in 2004 or after and zero otherwise.

In Models 1 – 3, directors controls not shown include age (65-71), age (72+), hold additional seats, gain new seat - prior year, current CEO elsewhere, audit committee, compensation committee, nomination committee, female, and tenure. In all models, firm controls not shown include CEO turnover, firm age, firm size, return volatility, board size and outsiders. All variable definitions are included in Appendix A. *p*-values based on standard errors clustered by firm and by year are in parentheses.

	Director-Level			Firm-Level		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	0.124 (0.000)	0.124 (0.000)	0.120 (0.000)	0.043 (0.000)	0.043 (0.000)	0.039 (0.000)
Industry-adjusted stock return	0.001 (0.782)			0.001 (0.460)		
Stock return * Post-SOX	-0.008 (0.000)			-0.007 (0.000)		
Industry-adjusted ROA		-0.071 (0.000)			-0.057 (0.000)	
ROA * Post-SOX		0.039 (0.000)			0.039 (0.000)	
Luck			0.012 (0.217)			0.010 (0.147)
Luck * Post-SOX			-0.005 (0.694)			-0.005 (0.557)
Skill			-0.000 (0.811)			0.000 (0.933)
Skill * Post-SOX			-0.007 (0.000)			-0.006 (0.000)
Post-SOX	-0.002 (0.765)	-0.003 (0.637)	0.001 (0.866)	-0.002 (0.594)	-0.003 (0.466)	0.000 (0.949)
Director/Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	281,062	281,062	281,062	39,975	39,975	39,975
Adjusted r ²	0.036	0.036	0.036	0.034	0.035	0.034

Table 5: Summary of turnover vs. non-turnover directors

This table summarizes differences between turnover directors and non-turnover directors. The sample consists of 21,275 turnover director-firm-years and 92,363 non-turnover director-firm-years for 14,220 firm-years experiencing turnover between 2000 and 2011. Columns I and II report full sample average director characteristics. Column III reports average differences in director characteristics for turnover non-turnover director pairs. Each turnover director is paired with each non-turnover director in a given firm-year. The differences in director characteristics for all pairs are then averaged over the firm-year. Age is director age in years. Tenure is director tenure in years. Number of other seats is the total number of public directorships held by the director. Hold additional seats is an indicator equal to one if the director holds additional directorships at outside public firms and zero otherwise. Current CEO elsewhere is an indicator equal to one if the director is currently a CEO at an outside public firm and zero otherwise. Audit committee is an indicator equal to one if the director sits on the audit committee and zero otherwise. Compensation committee is an indicator equal to one if the director sits on the compensation committee and zero otherwise. Nomination committee is an indicator equal to one if the director sits on the nomination committee and zero otherwise. Gain new seat - prior year is an indicator equal to one if the director gained an additional directorship at outside public firms in the past year and zero otherwise. Female is an indicator equal to one if the director is female and zero otherwise. Captured is an indicator equal to one if the director's tenure is less than the current CEO's tenure and zero otherwise. ***, **, * denote statistical significance at the 1%, 5%, and 10%, levels respectively.

	Turnover Dir-Years (I)	Non- Turnover Dir-Years (II)	Pairs Difference (III)
Age	61.66	59.99	2.23***
Tenure	8.65	7.10	2.05***
Number of other seats	0.61	0.72	-0.07***
Hold additional seats	33.94%	39.77%	-4.57%***
Gain new seat - prior year	3.39%	4.26%	-0.84%***
Current CEO elsewhere	19.71%	21.81%	-1.32%***
Audit committee	38.81%	48.86%	-13.65%***
Compensation committee	40.67%	46.71%	-8.77%***
Nomination committee	31.43%	37.16%	-7.69%***
Female	8.75%	11.67%	-1.85%***
Captured	26.30%	33.37%	-8.16%***

Table 6: Logit regressions modeling differences between turnover and non-turnover directors

The table reports logistic regressions modeling the likelihood that a director turns over in a given firm-year. In each model, the dependent variable is an indicator equal to one if the director turns over and zero otherwise. The bottom (top) quartile regression consists of 26,200 (24,797) director-firm-year observations from firm-years experiencing director turnover in the lowest (highest) quartile of industry-adjusted stock return for a given year. All independent variables are defined as the difference between the individual director characteristic and the average characteristic for all other directors on that board. Age is director age in years. Hold additional seats is an indicator equal to one if the director holds additional directorships at outside public firms and zero otherwise. Gain new seat - prior year is an indicator equal to one if the director gained an additional directorship at outside public firms in the past year and zero otherwise. Current CEO elsewhere is an indicator equal to one if the director is currently a CEO at an outside public firm and zero otherwise. Audit committee is an indicator equal to one if the director sits on the audit committee and zero otherwise. Compensation committee is an indicator equal to one if the director sits on the compensation committee and zero otherwise. Nomination committee is an indicator equal to one if the director sits on the nomination committee and zero otherwise. Female is an indicator equal to one if the director is female and zero otherwise. Captured is an indicator equal to one if the director's tenure is less than the current CEO's tenure. Year indicators are also included. *p*-values based on robust standard errors are in parentheses and marginal effects computed at the mean values of the independent variables are provided in brackets. Marginal effects are the change in the probability of director turnover for a one standard deviation change in a continuous variable or a shift from zero to one for an indicator variable. The last column of the table reports the chi-squared test statistic testing for the difference in coefficients between the bottom and top quartile. ***, **, * denote statistically significance differences at the 1%, 5%, and 10%, levels respectively.

	Bottom Quartile	Top Quartile	Difference $\{\chi^2\}$
Intercept	-1.480 (0.000)	-1.567 (0.000)	
Age difference	0.011 (0.000) [0.002]	0.019 (0.000) [0.003]	5.66***
Tenure difference	0.029 (0.000) [0.005]	0.027 (0.000) [0.004]	0.21
Hold additional seats difference	-0.110 (0.005) [-0.018]	-0.235 (0.000) [-0.034]	4.74**
Gain new seat - prior year difference	-0.016 (0.851) [-0.003]	-0.125 (0.210) [-0.018]	0.68
Current CEO elsewhere difference	0.016 (0.697) [0.003]	0.015 (0.740) [0.002]	0.00
Audit committee difference	-0.602 (0.000) [-0.099]	-0.666 (0.000) [-0.097]	1.74
Compensation committee difference	-0.361 (0.000) [-0.059]	-0.469 (0.000) [-0.068]	4.78**
Nomination committee difference	-0.403 (0.000) [-0.066]	-0.453 (0.000) [-0.066]	0.79
Female difference	0.041 (0.450) [0.007]	0.019 (0.752) [0.003]	0.08
Captured difference	-0.192 (0.000) [-0.032]	-0.365 (0.000) [-0.053]	5.41**
Year Indicators	Yes	Yes	
Observations	26,200	24,797	
Pseudo r^2	0.034	0.047	

Table 7: Logit regressions modeling individual director turnover with governance

The table reports logistic regressions modeling the likelihood that a director turns over in a given firm-year. The sample consists of 281,062 director-firm-year observations between 2000 and 2011. In each model, the dependent variable is an indicator equal to one if the director turns over and zero otherwise. Models 1 – 3 include continuous measures of performance: industry-adjusted stock return (Model 1), industry-adjusted ROA (Model 2), luck and skill (Model 3). Industry-adjusted stock return is the annual buy-and-hold return adjusted by the median Fama-French 48 industry return. Industry-adjusted ROA is net income scaled by total book value of assets adjusted by the median Fama-French 48 industry ROA. Luck is the fitted value from a cross-sectional regression of annual buy-and-hold returns on the median Fama-French 48 industry return. Skill is the residual value from a cross-sectional regression of annual buy-and-hold returns on the median Fama-French 48 industry return. Models 4 – 6 include measures of performance based on sample quartiles for a given sample year: low performance (Model 4), low ROA (Model 5), low luck and low skill (Model 6). Low performance is an indicator equal to one if industry-adjusted stock return falls in the lowest quartile of performance for the sample year and zero otherwise. Low ROA is an indicator equal to one if industry-adjusted ROA falls in the lowest quartile of performance for the sample year and zero otherwise. Low luck is an indicator equal to one if luck falls in the lowest quartile of performance for the sample year and zero otherwise. Low skill is an indicator equal to one if skill falls in the lowest quartile of performance for the sample year and zero otherwise. Age (65-71) is an indicator equal to one if the director is between the ages of 65 and 71 and zero otherwise. Age (72+) is an indicator equal to one if the director is 72 years of age or older. Hold additional seats is an indicator equal to one if the director holds additional directorships at outside public firms and zero otherwise. Gain new seat - prior year is an indicator equal to one if the director gained an additional directorship at outside public firms in the past year and zero otherwise. Current CEO elsewhere is an indicator equal to one if the director is currently a CEO at an outside public firm and zero otherwise. Audit committee is an indicator equal to one if the director sits on the audit committee and zero otherwise. Compensation committee is an indicator equal to one if the director sits on the compensation committee and zero otherwise. Nomination committee is an indicator equal to one if the director sits on the nomination committee and zero otherwise. Female is an indicator equal to one if the director is female and zero otherwise. Captured is an indicator equal to one if the director's tenure is less than the current CEO's tenure. CEO chair is an indicator equal to one if the CEO also holds the position of chairman of the board and zero otherwise. Former CEO is chair is an indicator equal to one if the chairman of the board was previously the firm's CEO. Motivated monitor is the percent of shares outstanding held by institutional investors whose holding value in the firm is in the top 10% of the institution's portfolio. Additional director controls not shown include tenure (director tenure in years). Firm controls not shown include CEO turnover (an indicators variable equal to one if CEO turnover occurs during the fiscal year), firm age (age of the firm in years), firm size (log transformed total book value of assets), return volatility (standard deviation of annual stock returns), board size (total number of directors on the board) and outsiders (percentage of outside directors on the board). Year indicators are also included. *p*-values based on standard errors clustered by firm and by year are in parentheses and marginal effects computed at the mean values of the independent variables are provided in brackets. Marginal effects are the change in the probability of director turnover for a one standard deviation change in a continuous variable or a shift from zero to one for an indicator variable.

Table 7 (continued)

	Firm Performance, Continuous			Firm Performance, Low		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	-1.944 (0.000)	-1.980 (0.000)	-1.947 (0.000)	-1.990 (0.000)	-2.108 (0.000)	-1.999 (0.000)
Industry-adjusted stock return	-0.079 (0.008) [-0.005]			0.147 (0.000) [0.009]		
Industry-adjusted ROA		-0.473 (0.000) [-0.029]			0.271 (0.000) [0.017]	
Luck			-0.023 (0.885) [-0.001]			0.045 (0.265) [0.003]
Skill			-0.080 (0.002) [-0.005]			0.148 (0.000) [0.009]
Age (65-71)	0.232 (0.000) [0.014]	0.230 (0.000) [0.014]	0.232 (0.000) [0.014]	0.233 (0.000) [0.014]	0.231 (0.000) [0.014]	0.232 (0.000) [0.014]
Age (72+)	0.894 (0.000) [0.056]	0.891 (0.000) [0.055]	0.894 (0.000) [0.056]	0.894 (0.000) [0.056]	0.890 (0.000) [0.055]	0.894 (0.000) [0.056]
Hold additional seats	-0.072 (0.010) [-0.005]	-0.074 (0.010) [-0.005]	-0.072 (0.010) [-0.005]	-0.074 (0.008) [-0.005]	-0.084 (0.003) [-0.005]	-0.075 (0.007) [-0.005]
Gain new seat - prior year	0.092 (0.026) [0.006]	0.093 (0.023) [0.006]	0.092 (0.027) [0.006]	0.093 (0.025) [0.006]	0.093 (0.022) [0.006]	0.092 (0.029) [0.006]
Current CEO elsewhere	0.013 (0.659) [0.001]	0.010 (0.737) [0.001]	0.013 (0.658) [0.001]	0.012 (0.668) [0.001]	0.010 (0.742) [0.001]	0.012 (0.668) [0.001]
Audit committee	-0.520 (0.000) [-0.032]	-0.520 (0.000) [-0.032]	-0.520 (0.000) [-0.032]	-0.520 (0.000) [-0.032]	-0.518 (0.000) [-0.032]	-0.519 (0.000) [-0.032]
Compensation committee	-0.355 (0.000) [-0.022]	-0.354 (0.000) [-0.022]	-0.355 (0.000) [-0.022]	-0.355 (0.000) [-0.022]	-0.353 (0.000) [-0.022]	-0.355 (0.000) [-0.022]
Nomination committee	-0.302 (0.000) [-0.019]	-0.303 (0.000) [-0.019]	-0.302 (0.000) [-0.019]	-0.302 (0.000) [-0.019]	-0.301 (0.000) [-0.019]	-0.302 (0.000) [-0.019]
Female	-0.032 (0.083) [-0.002]	-0.032 (0.088) [-0.002]	-0.032 (0.083) [-0.002]	-0.032 (0.088) [-0.002]	-0.031 (0.095) [-0.002]	-0.031 (0.093) [-0.002]
Captured	-0.311 (0.000) [-0.019]	-0.308 (0.000) [-0.019]	-0.311 (0.000) [-0.019]	-0.310 (0.000) [-0.019]	-0.305 (0.000) [-0.019]	-0.310 (0.000) [-0.019]
CEO chair	-0.036 (0.122) [-0.002]	-0.031 (0.174) [-0.002]	-0.035 (0.124) [-0.002]	-0.036 (0.107) [-0.002]	-0.031 (0.178) [-0.002]	-0.035 (0.120) [-0.002]
Former CEO is chair	-0.073	-0.067	-0.073	-0.074	-0.069	-0.073

	(0.010)	(0.016)	(0.010)	(0.009)	(0.013)	(0.009)
	[-0.005]	[-0.004]	[-0.005]	[-0.005]	[-0.004]	[-0.005]
Motivated monitor	0.280	0.277	0.281	0.275	0.273	0.277
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	[0.017]	[0.017]	[0.017]	[0.017]	[0.017]	[0.017]
Year and Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	281,062	281,062	281,062	281,062	281,062	281,062
Pseudo r ²	0.045	0.045	0.045	0.045	0.045	0.045

Table 8: OLS regressions modeling percentage of board that turnover with governance

The table reports OLS regressions modeling the percentage of directors on a board that turnover in a given firm-year. The sample consists of 39,975 firm-year observations between 2000 and 2011. In each model, the dependent variable is the percentage of directors on the board that turnover. Models 1 – 3 include measures of continuous performance: industry-adjusted stock return (Model 1), industry-adjusted ROA (Model 2), luck and skill (Model 3). Industry-adjusted stock return is the annual buy-and-hold return adjusted by the median Fama-French 48 industry return. Industry-adjusted ROA is net income scaled by total book value of assets adjusted by the median Fama-French 48 industry ROA. Luck is the fitted value from a cross-sectional regression of annual buy-and-hold returns on the median Fama-French 48 industry return. Skill is the residual value from a cross-sectional regression of annual buy-and-hold returns on the median Fama-French 48 industry return. Models 4 – 6 include measures of performance based on sample quartiles in a given sample year: low performance (Model 4), low ROA (Model 5), low luck and low skill (Models 6). Low performance is an indicator equal to one if industry-adjusted stock return falls in the lowest quartile of performance for the sample year and zero otherwise. Low ROA is an indicator equal to one if industry-adjusted ROA falls in the lowest quartile of performance for the sample year and zero otherwise. Low luck is an indicator equal to one if luck falls in the lowest quartile of performance for the sample year and zero otherwise. Low skill is an indicator equal to one if skill falls in the lowest quartile of performance for the sample year and zero otherwise. Percent captured is the percentage of outside directors with tenure less than the tenure of the current CEO. Busy is the percentage of outside directors holding three or more public directorships. CEO chair is an indicator equal to one if the CEO also holds the position of chairman of the board and zero otherwise. Former CEO is chair is an indicator equal to one if the chairman of the board was previously the firm's CEO. Motivated monitor is the percent of shares outstanding held by institutional investors whose holding value in the firm is in the top 10% of the institution's portfolio. CEO turnover is an indicators variable equal to one if CEO turnover occurs during the fiscal year. Firm age is the age of the firm in years. Firm size is the log transformed total book value of assets. Return volatility is the standard deviation of annual stock returns. Board Size is the total number of directors on the board. Outsiders is the percentage of outside directors on the board. Year indicators are also included. *p*-values based on standard errors clustered by firm and by year are in parentheses.

Table 8 (continued)

	Firm Performance, Continuous			Firm Performance, Low		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	0.040 (0.000)	0.039 (0.000)	0.040 (0.000)	0.038 (0.000)	0.033 (0.002)	0.037 (0.001)
Industry-adjusted stock return	-0.004 (0.015)			0.008 (0.000)		
Industry-adjusted ROA		-0.021 (0.000)			0.014 (0.000)	
Luck			-0.001 (0.929)			0.002 (0.426)
Skill			-0.004 (0.004)			0.009 (0.000)
Percent captured	-0.009 (0.000)	-0.009 (0.000)	-0.009 (0.000)	-0.009 (0.000)	-0.009 (0.000)	-0.009 (0.000)
Busy	0.011 (0.002)	0.011 (0.005)	0.011 (0.002)	0.011 (0.003)	0.008 (0.018)	0.011 (0.004)
CEO chair	-0.006 (0.000)	-0.005 (0.000)	-0.006 (0.000)	-0.006 (0.000)	-0.005 (0.000)	-0.006 (0.000)
Former CEO is chair	-0.006 (0.001)	-0.005 (0.001)	-0.006 (0.001)	-0.006 (0.001)	-0.005 (0.001)	-0.006 (0.001)
Motivated monitor	0.026 (0.001)	0.026 (0.001)	0.026 (0.001)	0.026 (0.001)	0.025 (0.001)	0.026 (0.001)
CEO turnover	0.038 (0.000)	0.038 (0.000)	0.038 (0.000)	0.038 (0.000)	0.037 (0.000)	0.038 (0.000)
Firm age	0.000 (0.769)	0.000 (0.729)	0.000 (0.743)	0.000 (0.682)	0.000 (0.794)	0.000 (0.632)
Firm size	-0.003 (0.000)	-0.002 (0.000)	-0.003 (0.000)	-0.003 (0.000)	-0.002 (0.000)	-0.003 (0.000)
Return volatility	0.071 (0.000)	0.057 (0.000)	0.070 (0.000)	0.061 (0.000)	0.052 (0.000)	0.061 (0.000)
Board size	0.005 (0.000)	0.005 (0.000)	0.005 (0.000)	0.005 (0.000)	0.005 (0.000)	0.005 (0.000)
Outsiders	-0.032 (0.131)	-0.032 (0.127)	-0.032 (0.130)	-0.032 (0.136)	-0.031 (0.139)	-0.032 (0.132)
Year indicators	Yes	Yes	Yes	Yes	Yes	Yes
Observations	39,975	39,975	39,975	39,975	39,975	39,975
Adjusted r ²	0.039	0.039	0.039	0.039	0.040	0.039

Table 9: Firm Outcomes – Replacements of Directors

This table summarizes differences between turnover directors and directors appointed to the same firm in the following year(s). Each turnover director is paired with each replacement director over the given time horizon. The difference in director characteristics for each pair is then averaged over the turnover firm-year. Column I reports average differences in director characteristics for all turnover-replacement pairs. Column II reports average differences in director characteristics for turnover-replacement pairs in the lowest quartile of industry-adjusted stock return in each sample year and Column III reports average differences in director characteristics for turnover-replacement pairs in the highest quartile of industry-adjusted stock return in each sample year. Panel A summarizes all pairs for 12,752 turnover directors and 13,113 replacement directors over a 1 year horizon following turnover. Panel B summarizes all pairs for 15,369 turnover directors and 20,827 replacement directors over a 2 year horizon following turnover. Panel C summarizes all pairs for 16,252 turnover directors and 26,608 replacement directors over a 3 year horizon following turnover. Age is director age in years. Number of other seats is the total number of public directorships held by the director. Hold additional seats is an indicator equal to one if the director holds at least one additional public directorship and zero otherwise. Current CEO elsewhere is an indicator equal to one if the director is currently a CEO at an outside public firm and zero otherwise. Audit committee experience is an indicator equal to one if the director has current or previous outside audit committee experience and zero otherwise. Compensation committee experience is an indicator equal to one if the director has current or previous outside compensation committee experience and zero otherwise. Nomination committee experience is an indicator equal to one if the director has current or previous outside nomination committee experience and zero otherwise. Female is an indicator equal to one if the director is female and zero otherwise. ***, **, * denote statistical significance from zero at the 1%, 5%, and 10%, levels respectively.

	All Turnovers (I)	Low Performance (II)	High Performance (III)
<i>Panel A: Turnover-Replacement Pairs, 1-year Horizon</i>			
Age difference	-5.98***	-4.85***	-5.20***
Number of other seats difference	0.01	-0.03	0.05*
Hold additional seats difference	0.03***	0.01	0.05***
Current CEO elsewhere difference	0.03***	-0.01	0.02*
Audit com. experience difference	0.01	0.02	0.04***
Comp com. experience difference	-0.02***	-0.02	0.00
Nom com. experience difference	-0.02***	-0.01	0.00
Female difference	0.05***	0.04***	0.06***
<i>Panel B: Turnover-Replacement Pairs, 2-year Horizon</i>			
Age difference	-5.98***	-4.80***	-5.10***
Number of other seats difference	0.01	-0.01	0.05**
Hold additional seats difference	0.04***	0.02*	0.06***
Current CEO elsewhere difference	0.02***	-0.01	0.02
Audit com. experience difference	0.01**	0.02**	0.05***
Comp com. experience difference	-0.02***	-0.01	0.00
Nom com. experience difference	-0.01***	-0.01	0.00
Female difference	0.06***	0.04***	0.06***
<i>Panel C: Turnover-Replacement Pairs, 3-year Horizon</i>			
Age difference	-5.91***	-4.74***	-5.14***
Number of other seats difference	0.02*	0.00	0.06***
Hold additional seats difference	0.04***	0.02**	0.06***
Current CEO elsewhere difference	0.02***	-0.01	0.01
Audit com. experience difference	0.02***	0.03***	0.06***
Comp com. experience difference	-0.01*	-0.01	0.01
Nom com. experience difference	0.00	0.00	0.01
Female difference	0.06***	0.04***	0.06***

Table 10: Logistic regressions modeling the likelihood of a director gaining an additional board seat

The table reports logistic regressions modeling the likelihood that a director obtains a new directorship in the following three years. The sample consists of 230,967 director-year observations between 2000 and 2009. In each model, the dependent variable is an indicator equal to one if the director gains a new directorship in the following three years and zero otherwise. Models 1 and 4 include industry-adjusted stock return while Models 2 and 4 include industry-adjusted ROA. Industry-adjusted stock return is the annual buy-and-hold return adjusted by the median Fama-French 48 industry return. Industry-adjusted ROA is net income scaled by total book value of assets adjusted by the median Fama-French 48 industry ROA. Age (65-71) is an indicator equal to one if the director is between the ages of 65 and 71 and zero otherwise. Age (72+) is an indicator equal to one if the director is 72 years or older. Female is an indicator equal to one if the director is female and zero otherwise. Hold additional seats is an indicator equal to one if the director holds at least one additional public directorship and zero otherwise. Audit (Compensation, Nominating) committee is an indicator equal to one if the director sits on the audit (compensation, nominating) committee and zero otherwise. Year indicators are included. *p*-values based on standard errors clustered by firm and year are in parentheses, marginal effects computed at the mean values of the independent variables are in brackets. Marginal effects are the change in the probability of gaining a new directorship in the following three years for a one standard deviation change in a continuous variable or a shift from zero to one for an indicator variable.

	Turnover		No Turnover	
	Model 1	Model 2	Model 3	Model 4
Intercept	-2.933 (0.000)	-2.932 (0.000)	-2.567 (0.000)	-2.564 (0.000)
Industry-adjusted stock return	-0.029 (0.597) [-0.001]		0.026 (0.322) [0.002]	
ROA		0.314 (0.140) [0.015]		0.287 (0.000) [0.020]
Age (65-71)	-1.382 (0.000) [-0.065]	-1.390 (0.000) [-0.066]	-0.966 (0.000) [-0.067]	-0.969 (0.000) [-0.067]
Age (72+)	-2.194 (0.000) [-0.104]	-2.207 (0.000) [-0.104]	-1.843 (0.000) [-0.128]	-1.844 (0.000) [-0.128]
Female	0.261 (0.000) [0.012]	0.254 (0.000) [0.012]	0.319 (0.000) [0.022]	0.313 (0.000) [0.022]
Hold additional seats	1.498 (0.000) [0.071]	1.495 (0.000) [0.071]	1.192 (0.000) [0.083]	1.188 (0.000) [0.082]
Audit committee	0.131 (0.047) [0.006]	0.133 (0.044) [0.006]	0.094 (0.014) [0.007]	0.096 (0.012) [0.007]
Compensation committee	0.122 (0.111) [0.006]	0.124 (0.104) [0.006]	-0.014 (0.524) [-0.001]	-0.012 (0.565) [-0.001]
Nomination committee	-0.004 (0.967) [-0.000]	-0.001 (0.991) [-0.000]	-0.046 (0.068) [-0.003]	-0.045 (0.072) [-0.003]
Year indicators	Yes	Yes	Yes	Yes
Observations	17,867	17,867	213,100	213,100
Adjusted r ²	0.140	0.140	0.083	0.083