

Board leadership structure and CEO turnover

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Abstract

We study whether bestowing chief executive officer (CEO) and board chairman duties on one individual affects a board's decision to dismiss an ineffective CEO. The results show that the sensitivity of CEO turnover to firm performance is significantly lower when the CEO and chairman duties are vested in the same individual. These results are consistent with the view that the lack of independent leadership in firms that combine the CEO and Chairman positions makes it difficult for the board to remove poorly performing managers. © 2002 Elsevier Science B.V. All rights reserved.

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1. Introduction

Financial economists have paid considerable attention to the role of boards of directors in internal corporate governance, focusing particularly on their role in monitoring managers and in removing non-performing chief executive officers (CEOs). Commenting on boards' effectiveness in this role, Jensen (1993) claims that internal control mechanisms are rather weak for disciplining poor managers. An important concern, according to Jensen (1993, p. 866), is the lack of independent leadership, which makes it "extremely difficult for the board to respond early to failure in its top management team."

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Jensen points out that when the CEO also holds the position of the chairman of the board (chairman), internal control systems fail, as the board cannot effectively perform its key functions including those of evaluating and firing CEOs. Similarly, Fama and Jensen (1983) argue that concentration of decision management and decision control in one individual reduces a board's effectiveness in monitoring top management. Several corporate governance activists have also expressed similar concerns about combining the CEO and chairman responsibilities.²

In contrast, Brickley et al. (1997) suggest that separate CEO and chairman positions may engender costs in monitoring the chairman ('who monitors the monitor?'), information sharing costs between the CEO and the chairman, and incentive costs associated with a succession process in which CEOs are promised the chairman title. These costs may offset the monitoring advantages that arise from a separate CEO–Chairman leadership structure. Comparing the performance of firms that separate CEO and chairman duties with those firms that combine them, Brickley et al. document that firms combining the duties perform no worse than those that do not combine them.³

We assess these two competing views by focusing on how the leadership structure of a board affects the sensitivity of CEO turnover to firm performance. Since a board's decision to replace a poorly performing CEO is a major internal control mechanism, CEO replacement decisions provide a natural setting for examining if the concentration of decision management and decision control exacerbates agency problems in firms.

If the lack of independent leadership in a firm with a single CEO–Chairman reduces monitoring by the board and makes it difficult for the board to replace a poorly performing CEO, the probability of CEO turnover is likely to be less sensitive to performance in a firm with a combined CEO/chairman position than in firms with two separate positions. Finding such evidence would lend support to Jensen's view that monitoring by boards diminishes in firms with a single CEO–Chairman. By contrast, finding no difference in the sensitivity of turnover to performance across the two groups of firms would be consistent with Brickley et al.'s view.

We test these two competing views using a sample of 455 CEO turnovers from 1992 to 1996 and a control sample of 823 firms with 3239 firm-year observations that do not change CEOs over the same period. We find that CEO turnover is significantly less

² From a survey of a large number of corporate directors, Lorsch and MacIver (1989) conclude that there are significant constraints in the CEO–Chairman. They recommend "the position of chairman and CEO be separated." See also Lipton and Lorsch (1992) for a similar recommendation. In addition, several corporate governance activists have sponsored shareholder proposals at several large US firms calling for separation of the CEO and chairman positions. For example, see "Shareholders Campaign to Dilute Power of Chief Executives by Splitting Top Jobs," *Wall Street Journal*, April 1, 1992, pp B1–B6; "Balancing the Power at the Top, British Style" by Richard Stevenson, *New York Times*, Sunday, November 15, 1992; "Stockholders want Boards of Independents," *USA Today*, Money Section May 14, 1993; "Sears pushed to split CEO's job," *USA Today*, Money Section, April 22, 1993.

³ However, the evidence in the literature is mixed. For example, Pi and Timme (1993), Baliga et al. (1996), Rechner and Dalton (1991) find that firms combining the CEO–Chairman titles perform worse than firms that do not combine them. Morck et al. (1988a) find that sole-signers to the letter to shareholders in the annual reports have a marginally lower turnover compared to firms with multiple-signers. Although Morck et al. conclude that sole-signers to the annual reports are difficult to discipline, their paper does not examine whether combining the CEO–Chairman titles in one individual affects turnover.

sensitive to firm performance in firms with combined titles than in firms with separate titles. In terms of implied probabilities, a one standard deviation decline in stock returns increases the likelihood of CEO turnover by 5.3% among firms with separate titles. However, in firms with combined positions a one standard deviation decline in firm performance increases top executive turnover probabilities by only about 2.5%. Overall, our findings suggest that boards are less effective in making effective CEO replacement decisions when the CEO also holds the position of chairman. Additional analyses indicate that our results are robust to including ownership variables, firm size, and annual dummies and to excluding CEOs with early tenure and CEOs aged between 63 and 65 years.

Our main findings contribute to the existing literature on the role of the board of directors in monitoring and replacing CEOs. Previous work has focused on how board composition (Weisbach, 1988), insider and institutional ownership (Denis et al. (1997) main bank ties (Kang and Shivdasani, 1995), and product market competition (DeFond and Park, 1999) affect the sensitivity of CEO turnover to firm performance. Our evidence indicates that combining the CEO and chairman positions is also an important factor that affects this sensitivity.⁴

This paper is organized as follows. Section 2 describes the data, our three performance measures, and the control variables. Section 3 presents descriptive statistics on the three performance measures and the control variables. Section 4 presents our empirical results. We first provide primary results from logit regressions of top executive turnover using different performance measures. In Section 5, we present various robustness checks. We first present results from logit regressions by year. We then check whether the primary results are robust to inclusion of ownership variables. We also examine whether our results are robust to dropping CEO turnover due to early tenure, different CEO retirement age definitions, and inclusion of firm size and year dummies. Section 6 concludes the paper.

2. Data, performance measures, and control variables

2.1. Data

We identify the CEO turnover sample from the executive history report in the *Standard & Poor's ExecuComp* database over the period 1992–1996. CEO turnover is defined as a change in the identity of the CEO. For each CEO, we search the wire service databases of the Lexis–Nexis Academic Universe and collect the dates of CEO change announcements. If the databases in Lexis–Nexis do not report on a CEO change, we assume that the departing date for the outgoing CEO given in the ExecuComp database is the CEO turnover date. When this date is missing, we assume the beginning date for the new CEO given in the ExecuComp database (typically the effective date of the new CEO's appointment) as the date of CEO turnover. We obtain CEO titles (i.e., whether the departing CEO held the additional position of chairman), age, and tenure with the firm from ExecuComp, proxy statements, and 10-K reports. We additionally require that each

⁴ Shivdasani and Yermack (1999) discuss how CEO involvement in the board selection process also entrenches the CEO and affects the incentives of boards to monitor CEOs.

firm we include has sufficient data in the CRSP, I/B/E/S and Compustat databases. We exclude firms if they change their fiscal year end in the year prior to the CEO change or if the CEO turnover event is due to a business merger or death. Our final sample includes 455 CEO turnovers during 1992–1996.

We also construct a control sample of firms from ExecuComp that do not experience any CEO change during the period for 1992 to 1996. The control firms meet the same data requirements as the firms in our CEO turnover sample and are included in the analysis only for the years in which they have complete data. In total, we have 3239 firm-years representing 823 control firms. Like the samples of most prior studies, a limitation of our sample is that it is biased towards larger firms since the ExecuComp database provides information mainly on firms listed on the S&P 500 and Mid-cap 400 indices.⁵

2.2. Performance measures

Prior studies use both stock returns and earnings as measures of firm performance in determining the likelihood of executive turnover (see Rosen (1990) and Milgrom and Roberts (1992) for a summary and discussion of this literature). Although studies by Warner et al. (1988), Weisbach (1988), Jensen and Murphy (1990), Murphy and Zimmerman (1993), and Kaplan (1994) measure performance using stock returns and find that top executive turnover is significantly related to stock performance, it is not clear whether stock return measures are more informative than earnings in measuring CEO performance. Kaplan (1994) suggests that stock returns also reflect changes in discount rates and therefore accounting earnings may be more informative. The empirical evidence is ambiguous on this issue. While Murphy and Zimmerman (1993) find a strong relation between turnover and earnings measures, Weisbach (1988) finds only a modest relation. To ensure the robustness of our results, we use three different measures of firm performance: market-adjusted stock returns, analysts' earnings forecast errors, and industry-relative earnings.

Our first measure of firm performance is the *market-adjusted stock returns*⁶ estimated as the stock return minus the return on the equally-weighted portfolio of all CRSP firms accumulated over the 12-month period immediately preceding the CEO turnover month (the "event month"). Following DeFond and Park (1999), we compute pseudo-event months for the control sample corresponding to the CEO turnover months. All control firms are randomly assigned a pseudo-event month such that the distribution of the pseudo-event months mirrors the distribution of the CEO turnover months.

Our second measure of performance is the *analysts' earnings forecast errors* estimated as realized earnings during the fiscal year immediately preceding the CEO turnover year less the analysts' forecasted earnings nine months prior to the fiscal year end. The analysts' forecasts are from the I/B/E/S database. Puffer and Weintrop (1991) argue that analysts' forecasts are likely to incorporate public information about expected firm

⁵ Exceptions are Denis et al. (1997) who selected their sample from the Value Line Investment Survey and DeFond and Park (1999) who selected the sample from their Lexis–Nexis database.

⁶ Warner et al. (1988) argue that market-adjusted stock returns are a better predictor of management changes than raw stock returns. With performance measures that examine stock returns in excess of the market, management is not held accountable for factors outside its control.

performance. If managers consistently under-perform market expectations incorporated in analysts' forecasts of earnings, they are more likely to be disciplined by internal control mechanisms. In an analysis of a sample of 50 CEO turnovers, Puffer and Weintrop find analysts' forecast errors marginally affect the likelihood of CEO turnover.

Our final measure of firm performance is the *industry-relative earnings* estimated as the sample firm's return on assets less the industry's median return on assets. The industry median returns on assets are based on the population of industry peers contained in the I/B/E/S database.

2.3. Control variables

2.3.1. CEO age

Murphy and Zimmerman (1993) and Weisbach (1988) find a strong relation between CEO turnover and CEO age. We therefore include CEO age as a control variable in our analysis. Because reported reasons for CEO departures are often not reliable, previous studies typically assume that turnover of CEOs around age 65 are more likely due to normal retirements than to forced departures. To control for this routine turnover, our tests include a dummy variable that takes a value of 1 if CEO is aged 63–65 and zero otherwise.

2.3.2. CEO tenure

Tenure is measured by the number of years the CEO had held the position as of the year of the turnover. CEO tenure could affect CEO turnover either positively or negatively. If long tenure is a clue that the CEO is closer to retirement, CEO tenure and CEO turnover are likely to be positively related. Alternatively, CEOs with longer tenure could have established a power base over time, suggesting that CEO turnover is negatively related to CEO tenure (Salancik and Meindl, 1984).

2.3.3. Herfindahl–Hirschman index (HHI)

Our tests also include the square root of the HHI, a measure of industry competition. The HHI is estimated as the sum of an industry's (two-digit SIC) squared market shares. DeFond and Park (1999) argue that in competitive industries, it is relatively easy for boards to identify unfit CEOs, resulting in a higher frequency of CEO turnovers. The HHI value assigned to each firm equals its industry average HHI over the 5 years covering our period of analysis (1992–1996).⁷ Because low levels of HHI are associated with higher competition, DeFond and Park (1999) predict a negative relation between the HHI and CEO turnover.

2.3.4. Stock return volatility

Following DeFond and Park (1999), we also include stock return volatility in our tests. Stock return volatility is calculated as the variance of returns during the 24 months prior to the event month. The prediction concerning the relation between CEO turnover and stock return volatility is ambiguous. On the one hand, firms with more volatile stock returns are more likely to experience the extremely poor performance that results in CEO turnover.

⁷ A 5-year average removes potential year-to-year variations in the HHI.

However, high return volatility also indicates that these firms are operating in a more difficult environment and that low returns are not necessarily a signal of poor performance. In this case, the board is less likely to dismiss the CEO based on low returns.

2.3.5. *Ownership variables*

In Section 5.2, we additionally control for ownership structure. Because Denis et al. (1997) argue that a board's ability to monitor CEOs is also affected by the firm's ownership structure, we examine whether our baseline results are robust to controlling for the firm's ownership structure. Following Denis et al., we focus on three different ownership variables. The first ownership variable measures the ownership by officers and directors at the end of the fiscal year preceding the CEO turnover.⁸ The second ownership variable measures the fraction of shares owned by blockholders owning 5% or more at the end of the fiscal year preceding the CEO turnover. Finally, our third measure is ownership of institutions estimated as the fraction of shares owned by institutions at the end of fiscal year preceding the CEO turnover.

3. Descriptive statistics

Table 1 provides the mean, median and standard deviations of the CEO title dummy variable, performance measures, and other control variables for the CEO turnover sample and the control sample. The last column of Table 1 reports the results of the *t*-test and Wilcoxon test for differences in the mean and median values of the variables across the two samples, respectively. Panel 1 provides results for the CEO title dummy, which takes a value of 1 if the CEO also holds the chairman title and 0 otherwise. The mean of the CEO title dummy is 0.77 for the CEO turnover sample and 0.81 for the control sample. The median values of this dummy variable are 1.00 for both samples. Both mean and median differences across the two samples are significant at the 10% level.

Panels 2–4 of Table 1 confirm the well-known results that with CEO turnover firms perform poorly compared with the control firms, which experience no turnover.⁹ The mean and median of market-adjusted stock-returns for the CEO turnover (control) sample are –8.2% (2%) and –8.5% (0.2%), respectively. The differences in stock performance measures for the two samples are statistically significant at less than the 1% level. The test results for the two additional measures of firm performance lead to similar inferences. The CEO turnover firms have significantly lower analysts' forecast errors compared with those of the control firms. Similarly, the CEO turnover firms show poor industry-relative earnings relative to the control firms.

CEOs in the turnover sample have shorter tenure and are slightly older than CEOs in the control group. The results on CEO age are consistent with previous studies and suggest

⁸ The ownership by officers and directors includes shares that are directly or beneficially owned by officers and directors of the firm.

⁹ To mitigate the impact of outliers on the inferences, we truncate the top and bottom 1% of market-adjusted stock returns, analysts' earnings forecast errors, and industry-relative earnings. This approach follows Murphy and Zimmerman (1993) who also truncate the distribution of the continuous variables in their analysis at the first and 99th percentiles.

Table 1

Descriptive statistics for firms that changed CEOs from 1992 through 1996 and for a control sample that did not change CEOs^a

Variable	Sample	N	Mean	Median	σ	t-Statistics	Z-Statistics
(1) CEO–Chairman (dummy)	CEO Changes	455	0.774	1.000	0.419	−1.69*	
	Control	3239	0.809	1.000	0.393		−1.78*
(2) Market-adjusted stock returns	CEO Changes	455	−0.082	−0.085	0.277	−7.27***	
	Control	3239	0.020	0.002	0.306		−6.91***
(3) Analysts' earnings forecast errors (scaled by assets)	CEO Changes	455	−0.018	−0.003	0.044	−4.77***	
	Control	3239	−0.007	0.000	0.037		−5.24***
(4) Industry-relative earnings (scaled by assets)	CEO Changes	455	−0.001	0.000	0.065	−5.06***	
	Control	3239	0.015	0.004	0.062		−4.37***
(5) CEO tenure (years)	CEO Changes	455	9.063	7.000	7.313	−3.33***	
	Control	3239	10.298	8.000	8.006		−3.77***
(6) CEO age	CEO Changes	455	60.200	62.000	6.663	12.36***	
	Control	3239	56.016	56.000	7.428		12.78***
(7) Herfindahl–Hirschman Index—square root (HHI)	CEO Changes	455	0.223	0.220	0.092	−2.08**	
	Control	3239	0.233	0.220	0.097		−1.51
(8) Stock return volatility	CEO Changes	455	0.009	0.006	0.010	−1.73*	
	Control	3239	0.010	0.007	0.009		−3.47***
(9) Fraction of shares owned by institutions	CEO Changes	256	0.523	0.561	0.181	−0.21	
	Control	1456	0.526	0.544	0.193		−0.04
(10) Fraction of shares owned by blockholders	CEO Changes	256	0.054	0.054	0.067	−1.20	
	Control	1456	0.060	0.053	0.079		−0.85
(11) Fraction of shares owned by officers and directors	CEO Changes	256	0.104	0.025	0.175	−1.51	
	Control	1456	0.122	0.053	0.157		−4.08***

that the turnover sample is likely to include some routine retirement-related turnover at age 65 (see Murphy and Zimmerman, 1993). To control for this effect on CEO turnover, we include in our multivariate tests a dummy for CEOs aged 63–65.

The HHI is lower for firms experiencing CEO turnover. Since low HHI values reflect a more competitive industry, the evidence is consistent with DeFond and Park (1999), who argue that CEO turnover is higher among firms that operate in more competitive industries. Stock return volatility for the turnover sample is smaller compared to that of the control sample. Ownership by institutions and blockholders for the two samples is similar. The only significant difference is in the median insider ownership, which is significantly lower for the CEO turnover firms than for the control firms.

Table 2 presents Pearson correlations between independent variables included in the tests reported in Sections 4 and 5. While all three measures of firm performance appear to be correlated, the correlation is highest between the two accounting measures of performance (Pearson correlation coefficient = 0.58). Except for CEO tenure and CEO age, most other correlations are small in magnitude (the absolute correlation coefficients are less than 0.3), suggesting that multicollinearity is not likely to pose a serious problem in the multivariate analysis.

4. Board leadership structure and turnover sensitivities

Table 3 reports the results of logit models that predict the probability of top executive turnover. The dependent variable is a dummy variable that takes a value of one for the CEO

Notes to Table 1:

Variable definitions:

Market-adjusted stock returns = cumulative market-adjusted stock returns over 12 months prior to the CEO turnover for the turnover sample.

Market-adjusted stock returns for the control sample are computed over the 12 months prior to a randomly assigned pseudo-event month.

Analysts' earnings forecast errors (scaled by assets) = actual reported earnings scaled by assets during the year immediately preceding the CEO turnover minus analysts' forecasts of the fiscal year's earnings made 9 months prior to the fiscal year end scaled by assets immediately preceding the event year.

Industry-relative earnings (scaled by assets) = net earnings scaled by assets during the fiscal year prior to the event year, minus median net earnings scaled by assets for the industry (two-digit SIC).

Herfindahl–Hirschman Index = mean of the sum of the squared market shares (in fractions) of all firms in an industry (two-digit SIC), computed over the 5 years from 1992 to 1996.

Stock return volatility = the variance of returns during the 24 months prior to the event year. At least 12 months of non-missing stock return data are required for inclusion in the analysis.

CEO tenure = the number of years the CEO has held the chief executive office.

CEO age = age of the CEO during the event year.

The fractions of shares owned by institutions, blockholders, and officers and directors are measured at the end of the year prior to the event year.

The *t*-statistics refer to *t*-tests comparing the means and the *Z*-statistics refer to Wilcoxon rank-sum tests comparing the central tendency of the two samples.

* $p < 10\%$.

** $p < 5\%$.

*** $p < 1\%$.

Table 2
Pearson correlations between independent variables^a

	Market-adjusted stock returns	Analysts' earnings forecast errors	Industry-relative earnings	CEO tenure	CEO age	HHI	Stock return volatility	% owned by institutions	% owned by blockholders	% owned by officers/directors
CEO–Chairman (dummy)	0.00	0.01	−0.07***	0.12***	0.22***	−0.07***	−0.11***	0.10***	−0.02	−0.11***
Market-adjusted stock returns		0.24***	0.13***	0.03**	−0.08***	0.00	0.14***	0.06***	0.03	0.06**
Analysts' earnings forecast errors			0.58***	0.04**	0.01	−0.00	−0.15***	0.04	0.03	0.01
Industry-relative earnings				0.09***	−0.04**	0.03*	−0.05***	0.06**	0.06**	0.08***
CEO tenure					0.43***	0.12***	0.01	−0.01	0.08***	0.11***
CEO age						0.02	−0.24***	−0.04	0.03	−0.08***
HHI							0.09***	0.13***	0.10***	0.19***
Stock return volatility								0.01	0.05*	0.21***
% owned by institutions									−0.07***	−0.22***
% owned by blockholders										0.30***

Correlations are based on 3694 observations except for the correlations between share ownership variables and other variables, which are based on 1712 observations.

^a See Table 1 for variable definitions.

* $p < 10\%$.

** $p < 5\%$.

*** $p < 1\%$.

Table 3

Pooled logit analysis of CEO turnover regressed on the CEO–Chairman dummy variable, performance measures, and other control variables for a sample of 455 CEO changes and 3239 no changes^a

Intercept	CEO– Chairman dummy	Market- adjusted stock returns	CEO– Chairman ×Market- adjusted stock returns	Analysts’ earnings forecast errors	CEO– Chairman ×Analysts’ earnings forecast errors	Industry- relative earnings	CEO– Chairman ×Industry- relative earnings	CEO tenure	CEO age	Dummy for CEO age = 63, 64 or 65	HHI	Stock return volatility	Pseudo R^2
Predicted sign	–	–	+	–	+	–	+	?	+	+	–	?	
(1)													
Coeff.	–7.055	–0.472	–2.090	1.282				–0.061	0.102	1.091	–0.980	11.703	0.124
Δ Prob	n/a	(–0.016)	(–0.053)	(0.029)				(–0.040)	(0.064)	(0.028)	(–0.008)	(0.009)	
t -Stat	(–13.0)***	(–3.2)***	(–5.3)***	(2.8)***				(–7.5)***	(10.7)***	(8.0)***	(–1.7)*	(1.9)*	
(2)													
Coeff.	–7.143	–0.464		–13.035	8.175			–0.061	0.104	1.105	–0.821	–0.533	0.123
Δ Prob	n/a	(–0.016)		(–0.042)	(0.023)			(–0.041)	(0.066)	(0.028)	(–0.007)	(–0.000)	
t -Stat	(–13.0)***	(–3.2)***		(–5.8)***	(3.0)***			(–7.6)***	(10.8)***	(8.1)***	(–1.4)	(–0.1)	
(3)													
Coeff.	–6.819	–0.665				–7.120	3.685	–0.059	0.103	1.110	–0.850	–3.575	0.119
Δ Prob	n/a	(–0.022)				(–0.038)	(0.016)	(–0.040)	(0.065)	(0.028)	(–0.007)	(0.003)	
t -Stat	(–12.6)***	(–4.9)***				(–4.3)***	(1.9)*	(–7.3)***	(10.7)***	(8.1)***	(–1.5)	(0.6)	
(4)													
Coeff.	–7.106	–0.383	–1.693	0.993	–9.116	7.951	–2.267	–0.347	–0.058	0.102	1.119	–0.955	0.135
Δ Prob	n/a	(–0.012)	(–0.042)	(0.022)	(–0.028)	(0.021)	(–0.012)	(–0.001)	(–0.038)	(0.062)	(0.028)	(–0.008)	(0.002)
t -Stat	(–12.8)***	(–2.4)**	(–4.3)***	(2.2)**	(–3.0)***	(2.2)**	(–1.1)	(–0.1)	(–7.1)***	(10.6)***	(8.1)***	(–1.7)*	(0.4)

turnover firms and a value of zero for the control firms. Independent variables include the CEO–Chairman dummy (equal to 1 if the titles of CEO and chairman are vested in the same individual and 0 otherwise), the three performance measures, interaction terms between the CEO–Chairman dummy and firm performance, CEO tenure, CEO age, the dummy for the CEO age of 63 to 65, the HHI, and stock return volatility. The “ ΔProb ” statistic reported beneath the coefficients indicates the percentage change in probability of CEO turnover from a one standard deviation change in the independent variable, evaluated at the mean of the independent variable. More precisely, the marginal effects of the regressors on the probabilities are calculated as $\delta Y/\delta x_i = A(z'x)(1 - A(z'x))z$, where Y is the dichotomous dependent variable; x_i is the i th independent variable; x is the vector of independent variables; A is the logistic cumulative distribution function; and z is the vector of coefficient estimates. $\delta Y/\delta x_i$ is calculated at the means of the regressors.

Prior studies document an inverse relation between management turnover and a firms performance measures (Coughlan and Schmidt, 1985; Warner et al., 1988; Weisbach, 1988). By adding the interaction terms between the performance measures and the CEO–Chairman dummy to the logit regression, we examine how the leadership structure of the board affects the sensitivity of top executive turnover to performance. Given the inverse relation between firm performance and CEO turnover, a positive coefficient on the interaction term would suggest that sensitivity is less for firms with combined CEO–chairman positions than for firms with separate positions.

Panels 1–3 of Table 3 present results of logit regression for each of the three performance measures separately while panel 4 combines all three measures in the same regression. Note that the estimated coefficient on the CEO–Chairman dummy is consistently negative, suggesting a decline in the likelihood of CEO turnover when the titles of CEO and chairman are vested in the same individual.

Panel 1 reports the results based on market-adjusted stock return as the performance measure. Consistent with previous studies on CEO turnover, the negative and statistically significant coefficient on excess stock returns suggests that poor firm performance significantly increases the likelihood of CEO turnover. The coefficient estimates are also economically significant; a one standard deviation decline in stock return increases the probability of CEO turnover by 5.3%.

In addition, the estimated coefficient on the interaction between the CEO–Chairman dummy and stock return is positive and significant at the 1% level. This suggests that

Notes to Table 3:

The dependent variable in the logit model is coded 1 if the observation is a CEO turnover firm and 0 if otherwise. All p -values relate to two-tailed tests. t -Stat. refers to asymptotic t -statistics on the logit coefficients.

ΔProb measures the change in the probability of CEO turnover, given a one standard deviation change in the independent variable. The marginal effects of the regressors on the probabilities are calculated as $\delta Y/\delta x_i = A(z'x)(1 - A(z'x))z$, where Y = dichotomous dependent variable; x_i = i th independent variable; x = vector of independent variables; A = logistic cumulative distribution function; and z = vector of coefficient estimates. $\delta Y/\delta x_i$ is calculated at the means of the regressors.

^a See Table 1 for variable definitions.

* $p < 10\%$.

** $p < 5\%$.

*** $p < 1\%$.

vesting the titles of CEO and chairman in the same individual significantly reduces the sensitivity of top executive turnover to firm performance. For firms with combined titles, a one standard deviation decline in firm performance increases the likelihood of CEO turnover by only 2.4%. Thus, the sensitivity of CEO turnover to firm performance declines by almost one-half when the same individual holds both the CEO and chairman positions. This finding strongly supports Jensen's (1993) view that independent leadership (i.e., separate positions of CEO and chairman) is important for effective monitoring of top management by the board of directors.

Panel 2 of Table 3 presents the results of the logit regression that uses analysts' earnings forecast errors as the performance measures. The results are similar to those of panel 1. The estimated coefficient on analysts' earnings forecast errors is negative and significant while those on the interaction term between forecast errors and the CEO–Chairman dummy are positive and statistically significant at less than the 1% level. In terms of estimated probabilities, a one standard deviation decline in analysts' forecast errors increases the likelihood of CEO turnover by 4.2% for firms with separate titles but increases the turnover probabilities by only 2.3% for firms with combined titles. The results remain qualitatively unchanged in panel 3 of Table 3, where we use industry-relative earnings as the performance measure, although the interaction term is significant at the 10% level. When all three performance measures are included in the same logit regression, the coefficients on industry-relative earnings and its interaction term become insignificant. This is not surprising given the high Pearson correlation ($=0.58$) between the two accounting measures of performance in Table 2.

Table 3 also reports that the estimated coefficients on the control variables are generally in the predicted direction. Note that the estimated coefficient on CEO tenure is negative and significant, suggesting that CEO turnover is less likely when CEOs have longer tenure. The coefficients on CEO age and the dummy for CEO ages of 63 to 65 are both positive and statistically significant at less than the 1% level in all four logit regressions. These results are consistent with the effects of the normal US retirement age of 65 on the likelihood of CEO turnover. The coefficient on the HHI is negative and marginally significant in the logit regressions that include stock market returns. The coefficient on stock volatility is significant at the 10% level only in the first logit regression that uses stock returns as the performance measure.

Notes to Table 4:

The dependent variable in the logit model is coded 1 if the observation is a CEO turnover firm and 0 if otherwise. All p -values relate to two-tailed tests. t -stat. refers to asymptotic t -statistics on the logit coefficients.

ΔProb measures the change in the probability of CEO turnover, given a one standard deviation change in the independent variable. The marginal effects of the regressors on the probabilities are calculated as $\delta Y / \delta x_i = A(z'x)(1 - A(z'x))z_i$, where Y = dichotomous dependent variable; x_i = i th independent variable; x = vector of independent variables; A = logistic cumulative distribution function; and z = vector of coefficient estimates. $\delta Y / \delta x_i$ is calculated at the means of the regressors.

^a See Table 1 for variable definitions.

* $p < 10\%$.

** $p < 5\%$.

*** $p < 1\%$.

Table 4

Logit analysis of CEO turnover regressed on the CEO–Chairman dummy variable, stock returns, and other control variables by year^a

CEO changes	No changes		Intercept	CEO–Chairman dummy	Market-adjusted stock returns	CEO–Chairman × Market-adjusted stock returns	CEO tenure	CEO age	Dummy for CEO age = 63, 64 or 65	HHI	Stock return volat.	Pseudo R ²
				–	–	+	?	+	+	–	?	
<i>1992</i>												
50	580	Coeff.	–10.870	–0.501	–1.910	1.291	–0.063	0.170	1.348	–2.846	–10.606	0.220
		ΔProb	n/a	(–0.007)	(–0.023)	(0.014)	(–0.019)	(0.048)	(0.013)	(–0.010)	(–0.004)	
		t-stat	(–6.1)***	(–1.0)	(–1.3)	(0.8)	(–2.8)***	(5.4)***	(3.3)***	(–1.4)	(–0.5)	
<i>1993</i>												
102	623	Coeff.	–7.835	–0.284	–2.746	1.257	–0.056	0.115	1.788	–1.534	8.777	0.206
		ΔProb	n/a	(–0.009)	(–0.074)	(0.030)	(–0.038)	(0.071)	(0.042)	(–0.012)	(0.007)	
		t-stat	(–6.2)***	(–0.8)	(–2.9)***	(1.2)	(–3.2)***	(5.2)***	(5.5)***	(–1.2)	(0.7)	
<i>1994</i>												
103	676	Coeff.	–7.785	–0.508	–3.001	2.322	–0.048	0.110	1.167	0.012	12.312	0.139
		ΔProb	n/a	(–0.018)	(–0.077)	(0.053)	(–0.034)	(0.071)	(0.031)	(0.000)	(0.009)	
		t-stat	(–6.5)***	(–1.6)	(–3.0)***	(2.1)**	(–3.0)***	(5.3)***	(4.1)***	(0.0)	(0.9)	
<i>1995</i>												
124	702	Coeff.	–6.383	–0.403	–2.679	1.707	–0.068	0.102	0.549	–1.360	–9.852	0.108
		ΔProb	n/a	(–0.017)	(–0.079)	(0.045)	(–0.054)	(0.078)	(0.018)	(–0.013)	(–0.007)	
		t-stat	(–6.0)***	(–1.4)	(–3.0)***	(1.7)*	(–4.1)***	(5.5)***	(2.0)**	(–1.2)	(–0.5)	
<i>1996</i>												
76	658	Coeff.	–3.761	–0.510	–1.249	0.681	–0.097	0.040	1.010	–0.082	44.970	0.110
		ΔProb	n/a	(–0.015)	(–0.028)	(0.013)	(–0.053)	(0.021)	(0.025)	(–0.001)	(0.028)	
		t-stat	(–2.7)***	(–1.6)	(–1.7)*	(0.8)	(–3.8)***	(1.8)*	(2.9)***	(–0.1)	(3.9)***	

5. Robustness checks

5.1. Robustness over time

Table 4 presents logit results by year when the firm performance measure is the market-adjusted stock returns. The coefficient on the interaction term between the CEO–Chairman dummy and stock returns is positive and significant in years 1994 and 1995. In each of the other years, the coefficients on the interaction term are not significant at the conventional levels, but the signs are consistently positive. Perhaps the weaker significance levels for estimated coefficients result from the smaller sample size when regressions are estimated on an annual basis. The signs and significance of the control variables are generally consistent with those reported in Table 3.

5.2. Does ownership structure affect the board's monitoring of the CEO–Chairman?

We also examine if our results are robust to cross-sectional variation in ownership by officers and directors, blockholders, and institutions. As noted previously, Denis et al. (1997) find that a firm's ownership structure significantly affects the turnover-performance sensitivity. They argue that high equity ownership by management makes it more difficult for a board to remove a poorly performing CEO for two reasons. First, higher managerial ownership is likely to result in greater power in the hands of the top executive—either through the voting control associated with equity ownership or through simply entrenching the manager more deeply (Morck et al., 1988b). Second, higher managerial ownership inhibits the external control market, which has an impact on the effectiveness of internal monitoring efforts (Hirshleifer and Thakor, 1994).

Denis et al. (1997) further argue that ownership by blockholders and institutions is also important in internal corporate governance. Higher ownership by blockholders and institutions can reduce management entrenchment and support a more active board. This mitigates agency problems and aligns the incentives of shareholders and managers.

To examine the robustness of our primary results to a firm's ownership structure, we present results from logit regressions that additionally control for the ownership structure of firms. We include four additional ownership variables in the baseline logit regressions that relate top executive turnover to stock performance measures. The first two variables are related to the fraction of shares owned by officers and directors. Following Morck et al. (1988a) and Denis et al. (1997), we classify the ownership by officers and directors into three categories: less than or equal to 5%, between 5% and 25%, and greater than 25%. Two dummy variables are formed to capture the last two categories. The third and fourth ownership variables are the fraction of shares owned by blockholders and the fraction owned by institutions.

Table 5 presents the results that augment the primary logit regression with ownership variables.¹⁰ We find that the signs of the coefficients on ownership variables are generally consistent with Denis et al. (1997). Specifically, the coefficients on the dummies for

¹⁰ The ownership data is from the Compact Disclosure. Ownership data is available only for a smaller sample of firms, which reduces the number of observations from 3694 to 1712.

Table 5

Pooled logit analysis of CEO turnover regressed on the CEO–Chairman dummy variable, stock returns, ownership variables, and other control variables for a sample of 256 CEO changes and 1456 no changes^a

	Intercept	CEO– Chairman dummy	Market- adjusted stock returns	CEO– Chairman ×Market- adjusted stock returns	% owned by institutions	% owned by blockholders	Officers and directors ownership between 5% and 25% dummy	Officers and directors ownership ≥25% dummy	CEO tenure	CEO age	CEO age = 63, 64 or 65 dummy	HHI	Stock return volatility	Pseudo R^2
Predicted sign	–	–	–	+	+	?	–	–	?	+	+	–	?	
Coeff.	–8.155	–0.266	–3.599	2.471	0.316	0.011	–0.392	–0.131	–0.058	0.120	0.955	–0.673	5.045	0.151
Δ Prob	n/a	(–0.010)	(–0.101)	(0.061)	(0.006)	(0.001)	(–0.017)	(–0.004)	(–0.042)	(0.081)	(0.028)	(–0.006)	(0.004)	
t -Stat	(–9.4)***	(–1.1)	(–5.2)***	(3.2)***	(0.8)	(0.1)	(–2.2)**	(–0.6)	(–5.1)***	(8.3)***	(5.0)***	(–0.8)	(0.5)	

The dependent variable in the logit model is coded 1 if the observation is a CEO turnover firm and 0 if otherwise.

All p -values relate to two-tailed tests. t -Stat. refers to asymptotic t -statistics on the logit coefficients.

Δ Prob measures the change in the probability of CEO turnover, given a one standard deviation change in the independent variable. The marginal effects of the regressors on the probabilities are calculated as $\delta Y / \delta x_i = A(z'x)(1 - A(z'x))z_i$, where Y = dichotomous dependent variable; x_i = i th independent variable; x = vector of independent variables; A = logistic cumulative distribution function; and z = vector of coefficient estimates. $\delta Y / \delta x_i$ is calculated at the means of the regressors.

^a See Table 1 for variable definitions.

** $p < 5\%$.

*** $p < 1\%$.

ownership by officers and directors are negative while the coefficients on ownership by institutions and blockholders are positive. However, only the coefficient on the dummy for ownership by officers and directors between 5% and 25% is significant at the 5% level. More importantly, the inclusion of ownership variables has no effect on the thrust of our primary results. The estimated coefficient on market-adjusted stock returns continues to remain negative and significant while the coefficient on the interaction term between the CEO–Chairman dummy and stock returns continues to remain positive and significant. In terms of estimated probabilities, a one standard deviation decline in market-adjusted stock returns increases the likelihood of CEO turnover by 10.1% for firms with separate CEO and chairman positions, while the same change in stock returns for a firm with combined CEO and chairman positions increases the probability of CEO turnover by only 4%.

Denis et al. (1997) also examine whether managerial ownership affects the sensitivity of turnover to performance. Similarly Kang and Shivdasani (1995) examine whether blockholder ownership affects the sensitivity of turnover to firm performance. To address this issue, we augment the logit regressions reported in Table 5 with *interactions* between market-adjusted stock returns and the four ownership variables described above. Though not reported here, we find that our main results remain qualitatively identical. Additionally, the interaction of the stock returns with the dummy for ownership by officers and directors between 5% and 25% is positively significant at the 10% level, while the remaining three interaction variables are not significant.

Additionally, to mitigate concern that our results might be picking up variation in CEO ownership by title, we control directly for the ownership of the CEO (instead of ownership of all insiders). Our main results remain unaffected.

5.3. CEO turnover during “evaluation period”

A potential issue is that some firms perhaps combine the CEO and Chairman position to signal the end of an “evaluation period” for a new CEO. According to this view, new CEOs undergo an evaluation period early in their tenure. If the CEO’s ability is found to be poor, he/she is replaced. But if the CEO’s ability turns out to be good, the CEO is rewarded with the additional title of Chairman. It is possible that the higher sensitivity of turnover to performance when the CEO is not chairman is driven by CEO turnover during this early-tenure evaluation period. We address this concern by constructing a subsample of CEO turnovers that excludes cases with CEO tenures of less than 2 years (we also experimented with dropping CEOs with tenure of 1 year and the results are not sensitive to this choice). We use CEO tenure as a proxy for if the CEO is in the evaluation period on the assumption that CEOs are more likely to be evaluated early in their careers. We re-run our analysis on this subsample of CEO turnovers with long tenures and find that our main results remain unaffected.

5.4. CEO retirement age

We also examine the robustness of our main findings to different classifications of retirement age. Our multivariate tests control for routine turnover associated with retirement by including a dummy variable that takes a value of 1 if the CEO is aged between 63 and 65 and zero otherwise. We perform two tests to examine whether our findings are

sensitive to this definition of retirement age. First, we define the age of 66 to be also within the retirement age and re-run our analysis. We find that the main results remain unchanged. As a second check on the robustness of our findings to retirement age classification, we drop retiring CEOs altogether from the sample and then re-run the analysis. The results based on this subsample of ‘non-retirement’ sample (not reported in a table) are qualitatively identical to those reported in Table 3.

5.5. *Size and year dummies*

We additionally test the robustness of our findings by including the natural log of sales as a control variable. The results (not reported in a table) resemble those reported in Table 3. We also add year dummies to the logit regressions reported in Table 3 and find that the results are robust to the inclusion of year dummies.

6. Conclusions

We examine if the board’s ability to monitor top managers is affected when the CEO is also vested with the title of chairman. Several scholars, most notably Jensen (1993), have argued that the lack of independent leadership in firms where the CEO is also the chairman results in less monitoring of top management and consequently more severe agency problems. Given that a key function of the board is to determine who should serve as CEO, these scholars argue that the board cannot effectively replace poorly performing managers when the CEO and chairman titles are vested in one individual.

If board monitoring of top management is less effective in firms that combine the positions of CEO and chairman, it is predicted that the sensitivity of top executive turnover to firm performance is lower in those firms than for firms with separate CEO and chairman positions. Indeed, we find that the sensitivity of top executive turnover to firm performance is significantly lower for firms that vest the titles of CEO and chairman in the same individual. Our results are robust to various measures of firm performance and to the inclusion of ownership variables.

Our findings suggest several avenues for future research. While we have documented that the board’s monitoring role is weaker in firms with a combined CEO–Chairman title, why more firms do not separate the CEO and chairman titles remains an open question. More theoretical work is needed to understand the advantages and disadvantages of different board leadership structures. Another potential area of research is to determine whether board composition differs across firms with different board leadership structures, and to examine how the interaction among different governance features affect a board’s ability to make effective CEO replacement decisions.

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