Internet Appendix for "CEO Turnover and Relative Performance Evaluation"

Dirk Jenter and Fadi Kanaan*

This online appendix presents the results from extensions and robustness tests of the analyses shown in the paper. The results are presented in the order they appear in the paper.

The introduction of the paper discusses the stock price reactions to CEO turnover announcements. Table IA.I of this appendix shows that there is no evidence of different stock price reactions in industry recessions compared to booms, and thus no evidence that the market views the more frequent CEO dismissals in recessions as better or worse news than the less frequent dismissals in booms.

Section III.E of the paper describes four robustness tests of the paper's main findings, the results of which are presented in Tables IA.II to IA.V of this appendix. Table IA.II re-estimates the second stage CEO turnover regressions allowing for *three* CEO turnover outcomes: retention, voluntary turnover, and forced turnover. We use Cox hazard regressions and apply the method of Lunn and McNeil (1995) to estimate differential effects of the explanatory variables on voluntary and forced turnover. The coefficient estimates for forced CEO turnover are similar to the ones in Table 2 of the paper, with both idiosyncratic and peer performance strongly predicting CEO dismissals.

The second robustness test allows for *industry*-specific peer performance sensitivities in the first stage regressions. The results using industry-specific betas, shown in Table IA.III, are very similar to the ones using the same peer performance beta for all firms. Next, we allow for *firm*-specific betas in the first stage regressions.¹ The results in Table IA.IV show that the peer performance effect on CEO dismissals is both economically and statistically significant and once again similar to the effect using the same beta for all firms.

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¹ We do not allow for firm-specific intercept terms in the first stage regressions; doing so would attribute the average firm performance over the sample period to the "luck" component of performance and bias the tests towards rejecting the relative performance evaluation hypothesis.

The final robustness test examines whether the peer performance effect on CEO turnovers is also present when performance is measured by accounting returns. Using two-year changes in operating return on assets as the performance measure, Table IA.V shows that both the firmspecific and the industry component of operating performance determine the likelihood of CEO dismissals. The statistical significance of the peer-performance effect is smaller than when using stock returns but remains above the 1% level in all regressions.

Section IV.A of the paper discusses the hypothesis that the peer performance effect on CEO turnover may be due to strategic interactions between firms in oligopolistic industries. Tables IA.VI and IA.VII test whether the effect of industry performance on CEO dismissals vanishes for firms that are small relative to their industry and therefore unlikely to affect the industry equilibrium. Small firms are identified either as firms with market capitalizations below 1% of the total market capitalization of all firms in the same industry on CRSP, or as firms with book assets below 1% of the total book assets of all firms in the same industry on Compustat. Independently of the exact definition of small firms, we find that industry performance has a statistically and economically large effect on the likelihood of forced CEO turnovers in small firms.

Section IV.B of the paper discusses the hypothesis that industry or market-wide recessions may allow boards to learn more (or more relevant) information about the quality of their CEO than booms. Table IA.VIII tests whether the effect of industry performance is larger for new CEOs, about whom learning by the board should be more important. The regressions allow for different effects of industry performance on turnover for CEOs with up to four years of tenure, for CEOs between years five and eight, and for CEOs with more than eight years of tenure.² There is no evidence that the effect of industry performance on CEO dismissals is larger for CEOs with shorter tenures.

Finally, Section IV.D of the paper examines whether CEO power affects the relationship between peer performance and CEO turnover. The corresponding tests are presented in Tables IA.IX to IA.XII of this appendix. Table IA.IX tests whether CEOs who are founders are more or less affected by peer group performance than other CEOs. Table IA.X presents the same analysis for CEOs with large equity stakes³, Table IA.XI for CEOs with insider-dominated boards⁴, and

 $^{^{2}}$ CEOs with up to four years of tenure make up 39.5% of the observations in the sample, and CEOs with more than eight years of tenure make up 35.1% of the observations.

³ Slightly more than 8% of the CEO-year observations have CEO ownership of at least 10%.

⁴ The number of independent directors on each board is obtained from the IRRC directors database, which covers the S&P 500, S&P MidCap and S&P SmallCap indexes from 1996 to 2009. A director is classified as an insider if she is

Table IA.XII for CEOs with high excess compensation⁵. We find no consistent effects of CEO power on firms' propensity to use relative performance evaluation. To the extent that CEO power affects the relation between performance and CEO turnover, the effect is the same for peer performance and idiosyncratic performance.

References

Lunn, Mary, and Don McNeil, 1995, Applying Cox regressions to competing risks, *Biometrics*, 51, 524-532.

a current or former employee of the firm, a family member of a director or executive, a recipient of charitable funds, a major customer, or if she provides professional services to the company. All other directors are classified as independent. The average fraction of independent directors on boards in the IRRC sample is 68%.

⁵ Excess compensation is determined by regressing annual CEO compensation on industry fixed effects, year fixed effects, CEO tenure, and measures of firm size and performance. The residuals from this regression are averaged over time for each CEO to provide an estimate of the average level of excess compensation for that CEO.

Table IA.I

Stock price reactions to forced CEO turnovers

This table reports 3- and 5-day market-adjusted stock returns around forced CEO turnover announcements. Average announcement returns are calculated separately for underperforming and for outperforming CEOs (i.e., CEOs with negative and positive firm-specific stock returns in the 12 months preceding the turnover, respectively), and for observations with (equal-weighted) industry stock returns above and below the median industry stock return in the sample. Firm-specific stock returns are calculated as the residuals from a regression of stock returns on equal-weighted industry stock returns. The industry definitions follow the Fama and French (1997) classification into 48 industries.

Panel A: 3-day stock price reaction around announcements of forced CEO turnovers					
	Industry performance below median		Industry perfe		
	No. of observations	3-day announcement return	No. of observations	3-day announcement return	T-test for differences in means
Outperforming CEOs (positive idiosyncratic stock return in year t-1)	71	-2.48%	61	-2.87%	0.23
Underperforming CEOs (negative idiosyncratic stock return in year t-1)	389	-1.63%	270	-1.94%	0.33
T-test for differences in means		0.56		0.73	

Panel A: 5-day stock price reaction around announcements of forced CEO turnovers					
	Industry performance below median		Industry performance above median		
	No. of observations	5-day announcement return	No. of observations	5-day announcement return	T-test for differences in means
Outperforming CEOs (positive idiosyncratic stock return in year t-1)	71	-2.57%	61	-3.32%	0.40
Underperforming CEOs (negative idiosyncratic stock return in year t-1)	389	-1.80%	270	-2.04%	0.22
T-test for differences in means		0.52		0.81	

Table IA.II

Two-stage hazard regressions of voluntary and forced CEO turnover on firm and industry performance

The first stage regressions use industry stock returns to predict contemporaneous company stock returns and are reported in Panel A of Table 2 of the paper. Columns (1) and (2) use equal-weighted and columns (3) and (4) use value-weighted industry returns as measure of peer group performance. The industry definitions follow the Fama and French (1997) classification into 48 industries. The second stage Cox hazard regressions shown below predict forced and voluntary CEO turnover using the predicted values and the residuals from the first stage regression as estimates of the peer-group component and of the idiosyncratic component of company stock returns, respectively. A CEO is of retirement age if she is between 63 and 66 years old, and CEO equity ownership is high if she owns more than 5% of all outstanding shares. All t- and z-statistics are calculated with robust standard errors clustered at the industry level.

Second stage hazard regressions of forced and voluntary CEO turnovers on peer-group induced and idiosyncratic firm performance					
• •	EW In	dustry	VW Industry		
	(1)	(2)	(3)	(4)	
Forced CEO turnover	-0.936	-0.932	-0.931	-0.920	
dummy	[-9.57]***	[-9.23]***	[-8.87]***	[-8.74]***	
	Effects on forced	CEO turnover:			
Idiosyncratic stock return	-2.531	-2.559	-2.626	-2.618	
in year t-1	[-11.94]***	[-11.19]***	[-11.19]***	[-10.84]***	
Industry-induced stock	-1.574	-1.709	-1.284	-1.515	
return in year t-1	[-8.62]***	[-8.35]***	[-8.02]***	[-8.32]***	
Idiosyncratic stock return	-0.767	-0.767	-0.704	-0.707	
in year t-2	[-6.12]***	[-6.13]***	[-5.87]***	[-5.81]***	
Industry-induced stock	-0.135	-0.324	-0.438	-0.599	
return in year t-2	[-0.76]	[-1.56]	[-2.20]**	[-2.73]***	
CEO of retirement age	-1.053	-1.050	-1.063	-1.060	
C	[-4.85]***	[-4.81]***	[-4.83]***	[-4.82]***	
CEO with high equity	-1.187	-1.220	-1.227	-1.247	
ownership	[-5.45]***	[-5.57]***	[-5.52]***	[-5.62]***	
F	Effects on voluntar	y CEO turnover	:		
Idiosyncratic stock return	-0.274	-0.291	-0.301	-0.301	
in year t-1	[-6.22]***	[-6.41]***	[-6.90]***	[-6.72]***	
Industry-induced stock	-0.018	-0.147	0.075	-0.116	
return in year t-1	[-0.18]	[-1.34]	[0.72]	[-1.13]	
Idiosyncratic stock return	-0.151	-0.149	-0.133	-0.136	
in year t-2	[-1.67]*	[-1.63]	[-1.48]	[-1.52]	
Industry-induced stock	0.228	0.061	0.176	0.019	
return in year t-2	[1.67]*	[0.36]	[1.08]	[0.10]	
CEO of retirement age	1.266	1.270	1.268	1.269	
	[14.18]***	[14.69]***	[14.25]***	[14.64]***	
CEO with high equity	-0.357	-0.375	-0.363	-0.375	
ownership	[-4.82]***	[-4.95]***	[-4.92]***	[-4.95]***	
Year fixed effects	No	Yes	No	Yes	

Table IA.III

Two-stage hazard regressions of forced CEO turnover on firm and industry performance using industry-specific beta estimates

The first stage regressions use industry stock returns to predict contemporaneous company stock returns. A different peer-performance sensitivity (beta) is estimated for each industry. The industry definitions follow the Fama and French (1997) classification into 48 industries. The second stage Cox hazard regressions predict forced CEO turnover using the predicted values and the residuals from the first stage regressions as measures of the peer-group component and of the idiosyncratic component of company stock returns, respectively. A CEO is of retirement age if she is between 63 and 66 years old, and CEO equity ownership is high if she owns more than 5% of all outstanding shares. All t- and z-statistics are calculated with robust standard errors clustered at the industry level.

Panel A: Industry-specific beta estimates from first stage regressions of firm performance on industry performance

	(1) (2) Firm stock return on EW industry performance	(3) (4) Firm stock return on VW industry performance
Average beta estimate for year t-1	0.752	0.860
Median beta estimate for year t-1	0.766	0.910
Average beta estimate for year t-2	0.728	0.809
Median beta estimate for year t-2	0.714	0.842

Panel B: Second stage hazard regressions of CEO dismissals on peer-group induced and idiosyncratic firm performance

	Forced CEO	Forced CEO	Forced CEO	Forced CEO
Idiosyncratic stock return	-2.606	-2.748	-2.611	-2.751
in year t-1	[-11.42]***	[-11.42]***	[-11.13]***	[-11.45]***
Industry-induced stock	-1.410	-1.697	-1.262	-1.598
return in year t-1	[-9.37]***	[-9.45]***	[-8.30]***	[-10.13]***
Idiosyncratic stock return	-0.802	-0.822	-0.740	-0.792
in year t-2	[-6.39]***	[-6.36]***	[-6.20]***	[-6.49]***
Industry-induced stock	-0.046	-0.406	-0.341	-0.530
return in year t-2	[-0.26]	[-1.53]	[-1.75]*	[-1.99]**
CEO of retirement age	-0.870	-0.856	-0.871	-0.857
	[-4.16]***	[-4.07]***	[-4.07]***	[-4.05]***
CEO with high equity	-0.787	-0.823	-0.814	-0.826
ownership	[-3.64]***	[-3.59]***	[-3.73]***	[-3.61]***
Year fixed effects	No	Yes	No	Yes

Table IA.IV

Two-stage hazard regressions of forced CEO turnover on firm and industry performance using firm-specific beta estimates

The first stage regressions use industry stock returns to predict contemporaneous company stock returns. A different peer-performance sensitivity (beta) is estimated for each firm. The industry definitions follow the Fama and French (1997) classification into 48 industries. The second stage Cox hazard regressions predict forced CEO turnover using the predicted values and the residuals from the first stage regressions as measures of the peer-group component and of the idiosyncratic component of company stock returns, respectively. A CEO is of retirement age if she is between 63 and 66 years old, and CEO equity ownership is high if she owns more than 5% of all outstanding shares. All t- and z-statistics are calculated with robust standard errors clustered at the industry level.

Panel A: Firm-specific beta est performance	timates from first s	tage regressions	of firm performanc	e on industry
	(1) Firm stock retui industry perfo	(2) m on EW rmance	(3) Firm stock re industry pe	(4) eturn on VW rformance
Average beta estimate for year t-1	0.816		0.9	65
Median beta estimate for year t-1	0.699		0.8	41
Average beta estimate for year t-2	0.811		0.9	58
Median beta estimate for year t-2	0.666		0.7	81

Panel B: Second stage hazard regressions of CEO dismissals on peer-group induced and idiosyncratic firm performance

	Forced CEO	Forced CEO	Forced CEO	Forced CEO
	turnover	turnover	turnover	turnover
Idiosyncratic stock return	-2.570	-2.736	-2.571	-2.739
in year t-1	[-11.75]***	[-11.70]***	[-12.09]***	[-11.97]***
Industry-induced stock	-1.632	-2.027	-1.676	-2.186
return in year t-1	[-9.27]***	[-8.78]***	[-9.37]***	[-9.79]***
Idiosyncratic stock return	-0.810	-0.845	-0.723	-0.793
in year t-2	[-7.03]***	[-7.10]***	[-6.18]***	[-6.60]***
Industry-induced stock	-0.247	-0.504	-0.507	-0.703
return in year t-2	[-1.73]*	[-2.56]**	[-2.95]***	[-3.48]***
CEO of retirement age	-0.844	-0.837	-0.864	-0.847
	[-3.91]***	[-3.88]***	[-4.00]***	[-3.93]***
CEO with high equity	-0.767	-0.805	-0.750	-0.797
ownership	[-3.18]***	[-3.23]***	[-3.02]***	[-3.15]***
Year fixed effects	No	Yes	No	Yes

Table IA.V

Two-stage hazard regressions of forced CEO turnover on firm and industry operating performance

The first stage regressions use industry means (columns 1 and 2) and industry medians (columns 3 and 4) of two-year changes in operating return on assets (ROA) to predict contemporaneous changes in company operating performance. ROA is calculated as operating income divided by the average of beginning and end-of-year book assets. The industry definitions follow the Fama and French (1997) classification into 48 industries. The second stage Cox hazard regressions predict forced CEO turnover using the predicted values and the residuals from the first stage regression as estimates of the peer-group component and of the idiosyncratic component of changes in company performance, respectively. A CEO is of retirement age if she is between 63 and 66 years old, and CEO equity ownership is high if she owns more than 5% of all outstanding shares. All t- and z-statistics are calculated with robust standard errors clustered at the industry level.

Panel A: First stage regressions of firm performance on industry performance					
	(1)	(2)	(3)	(4)	
	Change in ROA over the prior two years				
Constant	0.001	0.001	-0.000	-0.000	
	[1.30]	[1.30]	[-0.18]	[-0.18]	
Industry mean of change in	0.819	0.819			
ROA over the prior two years	[13.97]***	[13.97]***			
Industry median of change in			1.183	1.183	
ROA over the prior two years			[25.63]***	[25.63]***	
	0.06	0.06	0.07	0.07	

Panel B: Second stage hazard regressions of CEO dismissals on peer-group induced and idiosyncratic firm performance

	Forced CEO turnover	Forced CEO turnover	Forced CEO turnover	Forced CEO turnover
Idiosyncratic change in ROA	-4.604	-4.572	-4.607	-4.555
over the prior two years	[-7.81]***	[-7.98]***	[-7.77]***	[-7.86]***
Industry-induced change in	-4.324	-5.436	-4.358	-5.521
ROA over the prior two years	[-2.85]***	[-3.61]***	[-2.75]***	[-3.42]***
CEO of retirement age	-0.968	-0.959	-0.968	-0.958
	[-4.16]***	[-4.15]***	[-4.16]***	[-4.15]***
CEO with high equity	-0.893	-0.880	-0.894	-0.880
ownership	[-4.68]***	[-4.52]***	[-4.68]***	[-4.52]***
Year fixed effects	No	Yes	No	Yes

Table IA.VI

Two-stage hazard regressions of forced CEO turnover on firm and industry performance Small firms only (equity market values)

The estimation is restricted to firms with equity market values less than 1% of total industry market value. The first stage regressions use industry stock returns to predict contemporaneous company stock returns. The second stage Cox hazard regressions predict forced CEO turnover using the predicted values and residuals from the first stage regression as estimates of the peer-group component and of the idiosyncratic component of company stock returns, respectively. The industry definitions follow the Fama and French (1997) classification into 48 industries. A CEO is of retirement age if she is between 63 and 66 years old, and CEO equity ownership is high if she owns more than 5% of all outstanding shares. All standard errors are clustered at the industry level.

Panel A: First stage regressions of firm performance on industry performance						
	(1)	(2)	(3)	(4)		
	Firm stock return	Firm stock return	Firm stock return	Firm stock return		
	in year t-1	in year t-1	in year t-1	in year t-1		
Constant	0.050	0.050	0.072	0.072		
	[4.78]***	[4.78]***	[6.36]***	[6.36]***		
EW industry stock return	0.892	0.892				
in year t-1	[27.43]***	[27.43]***				
VW industry stock return			1.031	1.031		
in year t-1			[19.41]***	[19.41]***		
R-squared	0.17	0.17	0.13	0.13		
	Firm stock return	Firm stock return	Firm stock return	Firm stock return		
	in year t-2	in year t-2	in year t-2	in year t-2		
Constant	0.074	0.074	0.089	0.089		
	[5.25]***	[5.25]***	[5.61]***	[5.61]***		
EW industry stock return	0.887	0.887				
in year t-2	[22.61]***	[22.61]***				
VW industry stock return			1.043	1.043		
in year t-2			[16.25]***	[16.25]***		
R-squared	0.14	0.14	0.11	0.11		

Panel B: Second stage hazard regressions of CEO dismissals on peer-group induced and idiosyncratic firm performance

	Forced CEO turnover	Forced CEO turnover	Forced CEO turnover	Forced CEO turnover
Idiosyncratic stock return	-2.509	-2.615	-2.490	-2.609
in year t-1	[-10.06]***	[-9.75]***	[-9.63]***	[-9.81]***
Industry-induced stock	-1.331	-1.573	-1.153	-1.467
return in year t-1	[-8.36]***	[-8.60]***	[-6.28]***	[-8.78]***
Idiosyncratic stock return	-0.784	-0.804	-0.713	-0.757
in year t-2	[-5.57]***	[-5.58]***	[-5.37]***	[-5.76]***
Industry-induced stock	-0.133	-0.495	-0.528	-0.760
return in year t-2	[-0.64]	[-1.53]	[-1.85]*	[-2.02]**
CEO of retirement age	-1.358	-1.338	-1.363	-1.350
	[-5.12]***	[-5.11]***	[-5.13]***	[-5.19]***
CEO with high equity	-0.815	-0.843	-0.837	-0.848
ownership	[-3.22]***	[-3.16]***	[-3.24]***	[-3.18]***
Year fixed effects	No	Yes	No	Yes

Table IA.VII

Two-stage hazard regressions of forced CEO turnover on firm and industry performance Small firms only (book assets)

The estimation is restricted to firms with book assets less than 1% of total industry assets. The first stage regressions use industry stock returns to predict contemporaneous company stock returns. The second stage Cox hazard regressions predict forced CEO turnover using the predicted values and residuals from the first stage regression as estimates of the peer-group component and of the idiosyncratic component of company stock returns, respectively. The industry definitions follow the Fama and French (1997) classification into 48 industries. A CEO is of retirement age if she is between 63 and 66 years old, and CEO equity ownership is high if she owns more than 5% of all outstanding shares. All standard errors are clustered at the industry level.

Panel A: First stage regre	ssions of firm perfo	rmance on industry	performance	
	(1)	(2)	(3)	(4)
	Firm stock return	Firm stock return	Firm stock return	Firm stock return
	in year t-1	in year t-1	in year t-1	in year t-1
Constant	0.070	0.070	0.093	0.093
	[6.58]***	[6.58]***	[8.37]***	[8.37]***
EW industry stock return	0.908	0.908		
in year t-1	[25.32]***	[25.32]***		
VW industry stock return			1.055	1.055
in year t-1			[18.30]***	[18.30]***
R-squared	0.17	0.17	0.13	0.13
	Firm stock return	Firm stock return	Firm stock return	Firm stock return
	in year t-2	in year t-2	in year t-2	in year t-2
Constant	0.091	0.091	0.108	0.108
	[6.73]***	[6.73]***	[7.33]***	[7.33]***
EW industry stock return	0.902	0.902		
in year t-2	[24.09]***	[24.09]***		
VW industry stock return			1.056	1.056
in year t-2			[16.14]***	[16.14]***
R-squared	0.14	0.14	0.11	0.11

Panel B: Second stage hazard regressions of CEO dismissals on peer-group induced and idiosyncratic firm performance

	Forced CEO turnover	Forced CEO turnover	Forced CEO turnover	Forced CEO turnover
Idiosyncratic stock return	-2.463	-2.593	-2.484	-2.606
in year t-1	[-10.21]***	[-10.04]***	[-9.71]***	[-9.99]***
Industry-induced stock	-1.383	-1.662	-1.144	-1.508
return in year t-1	[-7.89]***	[-8.33]***	[-6.65]***	[-9.37]***
Idiosyncratic stock return	-0.753	-0.768	-0.674	-0.717
in year t-2	[-5.28]***	[-5.27]***	[-5.13]***	[-5.50]***
Industry-induced stock	-0.078	-0.459	-0.454	-0.718
return in year t-2	[-0.41]	[-1.50]	[-1.62]	[-2.01]**
CEO of retirement age	-1.136	-1.085	-1.091	-1.078
	[-4.49]***	[-4.44]***	[-4.40]***	[-4.46]***
CEO with high equity	-0.797	-0.814	-0.792	-0.806
ownership	[-3.12]***	[-3.06]***	[-3.13]***	[-3.06]***
Year fixed effects	No	Yes	No	Yes

Table IA.VIII

Two-stage hazard regressions of forced CEO turnover on firm and industry performance Different turnover-performance slopes for different levels of CEO tenure

The first stage regressions use industry stock returns to predict contemporaneous company stock returns and are reported in Panel A of Table 2 of the paper. Columns (1) and (2) use equal-weighted and columns (3) and (4) use value-weighted industry returns as measure of peer group performance. The second stage Cox hazard regressions shown below predict forced CEO turnover using the predicted values and residuals from the first stage regression as estimates of the peer-group component and of the idiosyncratic component of company stock returns, respectively. The second stage regressions allow for differential effects of peer performance on CEO turnover if the CEO has been in office for either less than four years or for more than eight years. The industry definitions follow the Fama and French (1997) classification into 48 industries. A CEO is of retirement age if she is between 63 and 66 years old, and CEO equity ownership is high if she owns more than 5% of all outstanding shares. All standard errors are clustered at the industry level. The baseline hazards are set to one for the marginal effects calculations in Panel B.

Panel A: Second stage hazard regressions of CEO dismissals on peer-group induced and						
idiosyncratic firm performance						
	EW II	laustry	v w II	idustry		
	(1)	(2)	(3)	(4)		
	Forced CEO	Forced CEO	Forced CEO	Forced CEO		
	turnover	turnover	turnover	turnover		
Idiosyncratic stock	-2.557	-2.725	-2.656	-2.778		
return in year t-1	[-11.68]***	[-11.65]***	[-11.05]***	[-11.44]***		
Industry-induced stock	-1.689	-1.976	-1.272	-1.669		
return in year t-1	[-8.15]***	[-8.46]***	[-5.47]***	[-8.12]***		
for CEOs with	0.366	0.328	0.216	0.234		
tenure <= 48 months	[2.77]***	[1.99]**	[0.63]	[0.63]		
for CEOs with	-0.092	-0.341	-0.231	-0.260		
tenure > 96 months	[-0.34]	[-1.06]	[-0.73]	[-0.74]		
Idiosyncratic stock	-0.776	-0.794	-0.718	-0.766		
return in year t-2	[-6.22]***	[-6.15]***	[-5.87]***	[-6.20]***		
Industry-induced stock	0.011	-0.413	-0.212	-0.485		
return in year t-2	[0.05]	[-1.15]	[-0.55]	[-1.09]		
for CEOs with	-0.292	-0.394	-0.334	-0.297		
tenure <= 48 months	[-0.74]	[-0.80]	[-0.68]	[-0.57]		
for CEOs with	-0.160	-0.210	-0.398	-0.371		
tenure > 96 months	[-0.41]	[-0.43]	[-0.96]	[-0.86]		
CEO of retirement age	-0.933	-0.886	-0.889	-0.872		
	[-4.15]***	[-4.04]***	[-4.11]***	[-4.06]***		
CEO with high equity	-0.813	-0.838	-0.818	-0.831		
ownership	[-3.62]***	[-3.61]***	[-3.64]***	[-3.58]***		
Year fixed effects	No	Yes	No	Yes		

tenure				
	EW Ir	ndustry	VW II	ndustry
	(1)	(2)	(3)	(4)
	Industry-induced	Industry-induced	Industry-induced	Industry-induced
	return in year t-1			
Marginal effect for CEOs	-0.77	-0.80	-0.61	-0.73
with tenure ≤ 48 months	[5.78]***	[5.80]***	[3.86]***	[4.19]***
Marginal effect for CEOs	-0.98	-1.04	-0.79	-0.89
with tenure > 96 months	[8.17]***	[7.44]***	[5.53]***	[6.02]***
Difference in marginal	0.21	0.24	0.18	0.15
effects	[1.42]	[1.70]*	[0.84]	[0.72]
	Industry-induced	Industry-induced	Industry-induced	Industry-induced
	return in year t-2			
Marginal effect for CEOs	-0.16	-0.39	-0.32	-0.40
with tenure ≤ 48 months	[0.88]	[2.08]**	[1.90]*	[2.27]**
Marginal effect for CEOs	-0.08	-0.28	-0.32	-0.39
with tenure > 96 months	[0.49]	[1.46]	[2.57]**	[2.88]***
Difference in marginal	-0.08	-0.11	0.00	-0.01
effects	[0.69]	[0.96]	[0.04]	[0.05]

Panel B: Marginal effects of peer-group induced performance on CEO dismissals for CEOs with different levels of tenure

Table IA.IX

Two-stage hazard regressions of forced CEO turnover on firm and industry performance **Different turnover-performance slopes for founder CEOs**

The first stage regressions use industry stock returns to predict contemporaneous company stock returns and are reported in Panel A of Table 2. Columns (1) and (2) use equal-weighted and columns (3) and (4) use value-weighted industry returns as measure of peer group performance. The second stage Cox hazard regressions shown below predict forced CEO turnover using the predicted values and residuals from the first stage regression as estimates of the peer-group component and of the idiosyncratic component of company stock returns, respectively. The second stage regressions allow for differential effects of both idiosyncratic and peer performance on CEO turnover for CEOs who are founders. A CEO is classified as a founder if her tenure starts at least five years before the firm's listing date. The industry definitions follow the Fama and French (1997) classification into 48 industries. A CEO is of retirement age if she is between 63 and 66 years old, and CEO equity ownership is high if she owns more than 5% of all outstanding shares. All standard errors are clustered at the industry level. The baseline hazards are set to one for the marginal effects calculations in Panel B.

idiosvncratic firm performance					
* *	EW In	ndustry	VW Ir	ndustry	
	(1)	(2)	(3)	(4)	
	Forced CEO	Forced CEO	Forced CEO	Forced CEO	
	turnover	turnover	turnover	turnover	
Idiosyncratic stock return	-2.546	-2.737	-2.671	-2.799	
in year t-1	[-11.43]***	[-11.24]***	[-10.62]***	[-10.96]***	
for founders	0.275	0.405	0.335	0.403	
	[0.54]	[0.79]	[0.65]	[0.78]	
Industry-induced stock	-1.601	-1.946	-1.245	-1.648	
return in year t-1	[-8.46]***	[-8.38]***	[-7.52]***	[-9.36]***	
for founders	0.002	-0.004	-0.258	-0.148	
	[0.00]	[-0.01]	[-0.46]	[-0.26]	
Idiosyncratic stock return	-0.829	-0.850	-0.751	-0.804	
in year t-2	[-5.08]***	[-5.13]***	[-4.72]***	[-5.01]***	
for founders	0.413	0.456	0.256	0.307	
	[1.00]	[1.09]	[0.62]	[0.73]	
Industry-induced stock	-0.089	-0.563	-0.437	-0.701	
return in year t-2	[-0.43]	[-1.76]*	[-1.74]*	[-2.15]**	
for founders	-0.605	-0.514	-0.058	0.068	
	[-1.76]*	[-1.19]	[-0.12]	[0.13]	
Founder	0.580	0.559	0.511	0.478	
	[2.26]**	[2.02]**	[1.96]**	[1.72]*	
CEO of retirement age	-0.898	-0.868	-0.889	-0.871	
	[-4.17]***	[-4.07]***	[-4.13]***	[-4.08]***	
CEO with high equity	-0.828	-0.860	-0.857	-0.865	
ownership	[-3.91]***	[-3.84]***	[-3.94]***	[-3.86]***	
Year fixed effects	No	Yes	No	Yes	

Panel A: Second stage bazard regressions of CEO dismissals on peer-group induced and

	EW In	dustry	VW Ir	ndustry
	(1)	(2)	(3)	(4)
	Idiosyncratic stock	Idiosyncratic stock	Idiosyncratic stock	Idiosyncratic stock
	return in year t-1			
Marginal effect	-2.05	-1.78	-2.09	-1.91
for founders	[4.72]***	[5.00]***	[5.03]***	[5.17]***
Marginal effect	-1.46	-1.33	-1.52	-1.40
for non-founders	[11.43]***	[11.24]***	[10.62]***	[10.96]***
Difference in	-0.59	-0.45	-0.57	-0.51
marginal effects	[1.35]	[1.23]	[1.33]	[1.34]
	Industry-induced	Industry-induced	Industry-induced	Industry-induced
	return in year t-1			
Marginal effect	-1.45	-1.49	-1.35	-1.43
for founders	[3.28]***	[3.45]***	[2.76]***	[2.96]*
Marginal effect	-0.92	-0.94	-0.71	-0.82
for non-founders	[8.46]***	[8.38]***	[7.52]***	[9.36]***
Difference in	-0.53	-0.54	-0.64	-0.61
marginal effects	[1.18]	[1.30]	[1.30]	[1.32]
	Idiosyncratic stock	Idiosyncratic stock	Idiosyncratic stock	Idiosyncratic stock
	return in year t-2			
Marginal effect	-0.38	-0.30	-0.44	-0.40
for founders	[1.31]	[1.21]	[1.54]	[1.54]
Marginal effect	-0.48	-0.41	-0.43	-0.40
for non-founders	[5.08]***	[5.13]***	[4.72]***	[5.01]***
Difference in	0.10	0.11	-0.02	0.00
marginal effects	[0.30]	[0.39]	[0.05]	[0.02]
	Industry-induced	Industry-induced	Industry-induced	Industry-induced
	return in year t-2			
Marginal effect	-0.63	-0.82	-0.44	-0.50
for founders	[2.29]**	[2.70]***	[1.50]	[1.92]*
Marginal effect	-0.05	-0.27	-0.25	-0.35
for non-founders	[0.43]	[1.76]*	[1.74]*	[2.15]**
Difference in	-0.58	-0.55	-0.19	-0.16
marginal effects	[2.03]**	[1.84]*	[0.51]	[0.44]

Panel B: Marginal effects of idiosyncratic and peer-group induced performance on CEO dismissals for founders and non-founders

Table IA.X

Two-stage hazard regressions of forced CEO turnover on firm and industry performance Different turnover-performance slopes for CEOs with large equity stakes

The first stage regressions use industry stock returns to predict contemporaneous company stock returns and are reported in Panel A of Table 2. Columns (1) and (2) use equal-weighted and columns (3) and (4) use value-weighted industry returns as measure of peer performance. The second stage Cox hazard regressions shown below predict forced CEO turnover using the predicted values and residuals from the first stage regression as estimates of the peer-group and of the idiosyncratic component of company stock returns, respectively. The second stage regressions allow for differential effects of performance on CEO turnover for CEOs who own more than 10% of their firm's equity. Equity ownership is obtained from ExecuComp. The industry definitions follow the Fama and French (1997) classification into 48 industries. A CEO is of retirement age if she is between 63 and 66 years old. All standard errors are clustered at the industry level. The baseline hazards are set to one for the marginal effects calculations in Panel B.

Panel A: Second stage hazard regressions of CEO dismissals on peer-group induced and idiosyncratic firm performance					
	(1)	(2)	(3)	(4)	
	Forced CEO	Forced CEO	Forced CEO	Forced CEO	
	turnover	turnover	turnover	turnover	
Idiosyncratic stock return	-2.498	-2.674	-2.603	-2.724	
in year t-1	[-11.37]***	[-11.30]***	[-10.78]***	[-11.14]***	
for CEOs with	-1.368	-1.167	-1.451	-1.311	
ownership >=10%	[-1.62]	[-1.30]	[-1.67]*	[-1.46]	
Industry-induced stock	-1.560	-1.894	-1.251	-1.651	
return in year t-1	[-8.48]***	[-8.27]***	[-7.79]***	[-8.88]***	
for CEOs with	-1.128	-0.870	-0.240	0.091	
ownership >=10%	[-1.46]	[-1.03]	[-0.19]	[0.07]	
Idiosyncratic stock return	-0.834	-0.845	-0.761	-0.809	
in year t-2	[-5.29]***	[-5.29]***	[-4.90]***	[-5.19]***	
for CEOs with	0.808	0.811	0.703	0.742	
ownership >=10%	[1.60]	[1.58]	[1.22]	[1.31]	
Industry-induced stock	-0.077	-0.546	-0.416	-0.659	
return in year t-2	[-0.41]	[-1.84]*	[-2.10]**	[-2.49]**	
for CEOs with	-1.630	-1.708	-1.382	-1.361	
ownership >=10%	[-1.05]	[-0.97]	[-0.77]	[-0.72]	
CEO of retirement age	-0.901	-0.886	-0.900	-0.887	
	[-4.19]***	[-4.12]***	[-4.18]***	[-4.16]***	
CEO with equity	-1.200	-1.199	-1.465	-1.477	
ownership >=10%	[-2.59]***	[-2.49]**	[-3.07]***	[-3.00]***	
Year fixed effects	No	Yes	No	Yes	

	EW Industry		VW Ir	ndustry
	(1)	(2)	(3)	(4)
	Idiosyncratic stock return in year t-1			
Marginal effect for CEOs	-0.45	-0.39	-0.44	-0.41
with ownership $>= 10\%$	[4.66]***	[4.43]***	[4.79]***	[4.67]***
Marginal effect for CEOs	-1.65	-1.51	-1.70	-1.57
with ownership < 10%	[11.37]***	[11.30]***	[10.78]***	[11.14]***
Difference in marginal	1.21	1.12	1.27	1.17
effects	[7.16]***	[7.04]***	[7.08]***	[7.06]***
	Industry-induced	Industry-induced	Industry-induced	Industry-induced
	return in year t-1			
Marginal effect for CEOs	-0.31	-0.28	-0.16	-0.16
with ownership $\geq 10\%$	[3.43]***	[3.32]***	[1.16]	[1.14]***
Marginal effect for CEOs	-1.03	-1.07	-0.82	-0.95
with ownership $< 10\%$	[8.48]***	[8.27]***	[7.79]***	[8.88]***
Difference in marginal	0.72	0.79	0.66	0.80
effects	[5.27]***	[5.36]***	[4.06]***	[4.79]***
	Idiosyncratic stock	Idiosyncratic stock	Idiosyncratic stock	Idiosyncratic stock
	return in year t-2			
Marginal effect for CEOs	0.00	0.00	-0.01	-0.01
with ownership $\geq 10\%$	[0.07]	[0.09]	[0.13]	[0.15]
Marginal effect for CEOs	-0.55	-0.48	-0.50	-0.47
with ownership $< 10\%$	[5.29]	[5.29]***	[4.90]***	[5.19]***
Difference in marginal	0.55	0.47	0.49	0.46
effects	[3.95]***	[3.93]***	[3.47]***	[3.64]***
	Industry-induced return in year t-2			
Marginal effect for CEOs	-0.20	-0.23	-0.19	-0.20
with ownership $>= 10\%$	[1.01]	[1.15]	[0.94]	[0.98]
Marginal effect for CEOs	-0.05	-0.31	-0.27	-0.38
with ownership < 10%	[0.41]	[1.84]*	[2.10]**	[2.49]**
Difference in marginal	-0.15	0.08	0.08	0.18
effects	[1.12]	[0.56]	[0.47]	[1.13]

Panel B: Marginal effects of idiosyncratic and peer-group induced performance on CEO dismissals for CEOs with different levels of stock ownership

Table IA.XI

Two-stage hazard regressions of forced CEO turnover on firm and industry performance Different turnover-performance slopes for insider-dominated boards

The first stage regressions use industry stock returns to predict contemporaneous company stock returns and are reported in Panel A of Table 2. Columns (1) and (2) use equal-weighted and columns (3) and (4) use value-weighted industry returns as measure of peer group performance. The second stage Cox hazard regressions shown below predict forced CEO turnover using the predicted values and residuals from the first stage regression as estimates of the peer-group and of the idiosyncratic component of company stock returns, respectively. The second stage regressions allow for differential effects of both idiosyncratic and peer performance on CEO turnover for firms with at least 50% inside directors on the board. The industry definitions follow the Fama and French (1997) classification into 48 industries. A CEO is of retirement age if she is between 63 and 66 years old, and CEO equity ownership is high if she owns more than 5% of all outstanding shares. All standard errors are clustered at the industry level. The baseline hazards are set to one for the marginal effects calculations in Panel B.

CEO P

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Panel A: Second stage hazard regressions of CEO dismissals on peer-group induced and idiosyncratic					
firm performance	EW In	dustry	VW In	dustry	
	(1)	(2)	(3)	(4)	
	Forced CEO	Forced CEO	Forced CEO	Forced CEO	
	turnover	turnover	turnover	turnover	
Idiosyncratic stock return in	-2.389	-2.662	-2.565	-2.757	
year t-1	[-10.81]***	[-10.75]***	[-10.17]***	[-10.37]***	
for boards with $\geq 50\%$	-0.255	-0.138	-0.109	-0.027	
insiders	[-0.51]	[-0.27]	[-0.20]	[-0.05]	
Industry-induced stock	-1.413	-1.860	-0.968	-1.498	
return in year t-1	[-6.95]***	[-7.59]***	[-4.88]***	[-6.84]***	
for boards with $>=50\%$	-0.537	-0.351	-0.943	-0.654	
insiders	[-1.19]	[-0.76]	[-1.84]*	[-1.28]	
Idiosyncratic stock return in	-1.043	-1.120	-0.995	-1.087	
year t-2	[-5.19]***	[-5.66]***	[-5.02]***	[-5.34]***	
for boards with $>=50\%$	0.531	0.608	0.498	0.592	
insiders	[1.40]	[1.52]	[1.29]	[1.46]	
Industry-induced stock	-0.198	-0.755	-0.456	-0.801	
return in year t-2	[-0.82]	[-2.06]**	[-1.54]	[-2.32]**	
for boards with $>=50\%$	0.135	0.486	0.346	0.550	
insiders	[0.40]	[1.21]	[0.93]	[1.41]	
Boards with $\geq 50\%$ insiders	0.148	-0.017	0.182	0.076	
	[0.70]	[-0.07]	[0.84]	[0.32]	
CEO of retirement age	-0.906	-0.906	-0.885	-0.897	
	[-4.10]***	[-4.17]***	[-4.12]***	[-4.16]***	
CEO with high equity	-0.931	-0.949	-0.948	-0.957	
ownership	[-4.33]***	[-4.38]***	[-4.23]***	[-4.36]***	
Year fixed effects	No	Yes	No	Yes	

* significant at 10%; ** significant at 5%; *** significant at 1%

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`	EW Industry		VW Ir	ndustry
	(1)	(2)	(3)	(4)
	Idiosyncratic stock return in year t-1			
Marginal effect for boards	-1.93	-1.59	-2.02	-1.76
with $\geq 50\%$ insiders	[4.99]***	[5.05]***	[5.22]***	[5.26]***
Marginal effect for boards	-1.59	-1.48	-1.76	-1.62
with $< 50\%$ insiders	[10.81]***	[10.75]***	[10.17]***	[10.37]***
Difference in marginal	-0.34	-0.12	-0.26	-0.14
effects	[0.93]	[0.39]	[0.62]	[0.42]
	Industry-induced return in year t-1			
Marginal effect for boards	-1.42	-1.26	-1.44	-1.36
with $\geq 50\%$ insiders	[4.44]***	[4.62]***	[3.76]***	[3.91]***
Marginal effect for boards	-0.94	-1.03	-0.67	-0.88
with $< 50\%$ insiders	[6.95]***	[7.59]***	[4.88]***	[6.84]***
Difference in marginal	-0.48	-0.23	-0.78	-0.48
effects	[1.48]	[0.86]	[2.02]**	[1.49]
	Idiosyncratic stock return in year t-2			
Marginal effect for boards	-0.37	-0.29	-0.38	-0.31
with $\geq 50\%$ insiders	[2.08]**	[1.88]*	[2.02]**	[1.90]*
Marginal effect for boards	-0.69	-0.62	-0.68	-0.64
with $< 50\%$ insiders	[5.19]***	[5.66]***	[5.02]***	[5.34]***
Difference in marginal	0.32	0.33	0.31	0.32
effects	[1.21]	[1.46]	[1.10]	[1.30]
	Industry-induced return in year t-2			
Marginal effect for boards	-0.05	-0.15	-0.08	-0.16
with $\geq 50\%$ insiders	[0.21]	[0.70]	[0.32]	[0.62]
Marginal effect for boards	-0.13	-0.42	-0.31	-0.47
with < 50% insiders	[0.82]	[2.06]**	[1.54]	[2.32]**
Difference in marginal	0.09	0.27	0.23	0.31
effects	[0.36]	[1.17]	[0.85]	[1.29]

Panel B: Marginal effects of idiosyncratic and peer-group induced performance on CEO dismissals for different levels of board independence

Table IA.XII

Two-stage hazard regressions of forced CEO turnover on firm and industry performance Different turnover-performance slopes for CEOs with high excess compensation

The first stage regressions use industry stock returns to predict contemporaneous company stock returns and are reported in Panel A of Table 2. Columns (1) and (2) use equal-weighted and columns (3) and (4) use value-weighted industry returns as measure of peer group performance. The second stage Cox hazard regressions shown below predict forced CEO turnover using the predicted values and residuals from the first stage regression as estimates of the peer-group component and of the idiosyncratic component of company stock returns, respectively. The second stage regressions allow for differential effects of both idiosyncratic and peer performance on CEO turnover for CEOs with excess compensation in the top 20% of all observations. Excess compensation is calculated as each CEO's average residual from a regression of the log of total annual CEO compensation (ExecuComp TDC1) on log sales, log CEO tenure, stock returns in year t and t-1, value-weighted industry returns in year t and t-1, the two-year change in return on assets, year fixed effects, and industry fixed effects. The industry definitions follow the Fama and French (1997) classification into 48 industries. A CEO is of retirement age if she is between 63 and 66 years old, and CEO equity ownership is high if she owns more than 5% of all outstanding shares. All standard errors are clustered at the industry level. The baseline hazards are set to one for the marginal effects calculations in Panel B.

firm performance				
	EW Industry		VW Ir	ndustry
	(1)	(2)	(3)	(4)
	Forced CEO	Forced CEO	Forced CEO	Forced CEO
	turnover	turnover	turnover	turnover
Idiosyncratic stock return in	-2.281	-2.454	-2.377	-2.497
year t-1	[-10.37]***	[-10.10]***	[-9.72]***	[-9.62]***
for CEOs with excess	-1.050	-1.029	-1.054	-1.045
compensation in top 20%	[-3.35]***	[-3.39]***	[-3.48]***	[-3.41]***
Industry-induced stock	-1.393	-1.698	-1.066	-1.440
return in year t-1	[-7.39]***	[-7.67]***	[-6.05]***	[-8.13]***
for CEOs with excess	-0.698	-0.807	-0.764	-0.754
compensation in top 20%	[-2.79]***	[-3.12]***	[-3.14]***	[-2.95]***
Idiosyncratic stock return in	-0.927	-0.962	-0.834	-0.896
year t-2	[-5.93]***	[-5.93]***	[-5.35]***	[-5.72]***
for CEOs with excess	0.501	0.563	0.390	0.436
compensation in top 20%	[2.41]**	[2.52]**	[1.80]*	[1.98]**
Industry-induced stock	-0.159	-0.622	-0.523	-0.784
return in year t-2	[-0.79]	[-1.93]*	[-2.30]**	[-2.79]***
for CEOs with excess	-0.038	-0.038	0.207	0.290
compensation in top 20%	[-0.18]	[-0.15]	[0.69]	[0.98]
CEO with excess	-0.154	-0.130	-0.205	-0.240
compensation in top 20%	[-1.24]	[-0.98]	[-1.71]*	[-1.91]*
CEO of retirement age	-0.982	-0.951	-0.969	-0.951
	[-4.41]***	[-4.26]***	[-4.24]***	[-4.20]***
CEO with high equity	-0.815	-0.850	-0.851	-0.856
ownership	[-3.91]***	[-3.84]***	[-3.96]***	[-3.85]***
Year fixed effects	No	Yes	No	Yes

Panel A: Second stage hazard regressions of CEO dismissals on peer-group induced and idiosyncratic firm performance

unterent ievels of excess compensation	EW Industry		VW Ir	dustry
	$(1) \qquad (2)$		(3)	(4)
	Idiosyncratic stock	Idiosyncratic stock	Idiosyncratic stock	Idiosyncratic stock
	return in year t-1			
Marginal effect for CEOs with excess	-1.46	-1.31	-1.46	-1.31
compensation in top 20%	[10.04]***	[11.33]***	[10.56]***	[11.86]***
Marginal effect for CEOs with excess	-1.32	-1.21	-1.35	-1.25
compensation below the top 20%	[10.37]***	[10.10]***	[9.72]***	[9.62]***
Difference in marginal effects	-0.14	-0.09	-0.11	-0.06
	[0.92]	[0.74]	[0.75]	[0.44]
	Industry-induced	Industry-induced	Industry-induced	Industry-induced
	return in year t-1			
Marginal effect for CEOs with excess	-0.92	-0.94	-0.78	-0.81
compensation in top 20%	[8.46]***	[8.61]***	[7.76]***	[8.04]***
Marginal effect for CEOs with excess	-0.81	-0.84	-0.61	-0.72
compensation below the top 20%	[7.39]***	[7.67]***	[6.05]***	[8.13]***
Difference in marginal effects	-0.11	-0.10	-0.17	-0.09
	[0.89]	[0.94]	[1.49]	[0.87]
	Idiosyncratic stock	Idiosyncratic stock	Idiosyncratic stock	Idiosyncratic stock
	return in year t-2			
Marginal effect for CEOs with excess	-0.19	-0.15	-0.19	-0.17
compensation in top 20%	[3.03]***	[2.70]***	[3.14]***	[3.20]***
Marginal effect for CEOs with excess	-0.54	-0.47	-0.47	-0.45
compensation below the top 20%	[5.93]***	[5.93]***	[5.35]***	[5.72]***
Difference in marginal effects	0.35	0.33	0.29	0.28
	[3.24]***	[3.29]***	[2.60]***	[2.85]***
	Industry-induced return in year t-2			
Marginal effect for CEOs with excess	-0.09	-0.25	-0.13	-0.18
compensation in top 20%	[1.00]	[2.43]**	[1.04]	[1.31]
Marginal effect for CEOs with excess	-0.09	-0.31	-0.30	-0.39
compensation below the top 20%	[0.79]	[1.93]*	[2.30]**	[2.79]***
Difference in marginal effects	0.01	0.06	0.16	0.21
	[0.06]	[0.49]	[1.13]	[1.75]*

Panel B: Marginal effects of idiosyncratic and peer-group induced performance on CEO dismissals for CEOs with different levels of excess compensation