

Appendix A – Robustness tests for subsamples and firm survival

In this appendix, we describe two robustness tests. First, we split the full sample into subsamples by time period to examine whether the effect of CEO tenure on board structure is robust in various sub-periods. Second, we repeat our estimation using subsamples consisting of firms that survive for more than T years, where T=2, 5, 10, or 15.

Appendix Table 1 presents results for these tests. Columns 1 to 3 of Panels A (board independence) and B (CEO-chair dual title) split the full sample into three non-overlapping time periods (1920-50, 1951-1981, and 1982-2011) and find that the board independence-CEO tenure (chair duality) effect generally decreases (increases) over the century. In Panel C, we estimate Eq. (2) for subsamples consisting of firms that exist in the database more than 15 years (or more than 10 years, etc.). Subsetting in this manner allows us to examine whether our within-firm results hold for firms with a long history and therefore are not driven by sample composition effects (new or short-lived firms entering the full sample). Column 1 shows the baseline estimate from column 4 of Table 4, Panel A as a basis for comparison. Across the columns, the coefficients on CEO tenure are very similar, suggesting that our results are in fact driven by (long) within-firm dynamics.

Appendix B – Construction of the sample of CEO death and health events

We start with CEO death and health-related events from Salas (2010), Fee, Hadlock, and Pierce (2013) and Quigley, Crossland, and Campbell (2017) from 1972 to 2008, 1989 to 2006, and from 1950 to 2011, respectively. We supplement these data with our own data collection. Specifically, we use the following sources to ascertain whether the previous CEO died or had serious health problems (such as cancer or a heart attack) that forced him or her to step down. First, we collect names of CEOs who died in office and the dates of death from the obituary section of Standard and Poor's Register of Corporations, Directors, and Executives ('S&P Register') from 1950 to 2011. Second, we use news searches to collect additional CEO changes due to death or health reasons at public firms from 1968 to 2011. Third, we supplement this set of death and health events by examining all CEO turnovers in our database from 1973 to 2011 that are not identified above and determine whether they are due to death or serious health issues of the CEO by searching for news articles using Factiva. (News articles from Factiva are sparse prior to the mid-1970s.) We define death events as "sudden" if they are unexpected and not preceded by poor health based on the above-mentioned sources. The most common causes of sudden deaths include heart attack and plane or automobile crash, and the sources often mention "died unexpectedly" or "died due to sudden illness."

To determine the announcement date of the event, we first obtain dates (or often year-months) of CEO deaths from the obituary section of S&P Register, as well as from Salas (2010), Fee et al. (2013) and Quigley et al. (2017). Second, we search news articles for these CEO death and health events using Factiva

and other sources to identify the exact announcement date of death or health-related events. If there are multiple news articles, we use the first publication date as the event date. We also collect founder status from the news articles. Lastly, we match these events with our officer and director database using firm identifiers, names, and event dates.

Appendix C – Characteristics of firms that are not included in the main sample

In this appendix, we describe the characteristics of the firms in the “missing 20%” of the sample (i.e., firm-years that are not matched to our CEO and board data). Appendix Table 4 shows the firm-level characteristics of these firms. The small numbers of observations prior to the 1950s indicate that the majority of non-matched firms are from the modern period (e.g., when Compustat data exist). In general, these non-matched firms are smaller and less profitable (measured by ROA) than the firms in the main sample (see Panel B of Table 1) but have similar Tobin’s q and cash holdings. Thus, our results on CEO and board dynamics should be interpreted conditional on the selected sample of relatively large and profitable firms, particularly in a more modern time period.

Appendix Table 1: CEO tenure and board independence: Subsample and survival analyses

This table provides robustness tests for the relation between CEO tenure, board independence and board chair dual titles. Panels A and B split the full sample into subsamples consisting of different time periods, and examine board independence and dual chair titles; Panel C uses subsamples that require that firms survive more than a certain number of years; Panel D examines board independence and dual chair titles using a subsample of NYSE firms only, and a sample that includes firms listed on all exchanges (including the NASDAQ). Firms with only one reported director are excluded. All standard errors are adjusted for sample clustering at the firm level. *, **, and *** represent results significant at the 10, 5, and 1% levels, respectively.

Panel A: Subsample periods – board independence

Dep. Var.	Independence ratio		
	(1)	(2)	(3)
Sample:	1920-1950	1951-1981	1982-2011
CEO tenure	-0.163*** (-3.69)	-0.084*** (-2.71)	-0.096*** (-3.38)
Firm-level controls	Y	Y	Y
Firm fixed effects	Y	Y	Y
Year fixed effects	Y	Y	Y
R ²	0.746	0.728	0.664
N	15139	33705	38102

Panel B: Subsample periods – board chair duality

Dep. Var.	1 (Chair duality)		
	(1)	(2)	(3)
Sample:	1920-1950	1951-1981	1982-2011
CEO tenure	1.235*** (5.35)	2.421*** (15.26)	2.718*** (28.88)
Firm-level controls	Y	Y	Y
Firm fixed effects	Y	Y	Y
Year fixed effects	Y	Y	Y
R ²	0.590	0.559	0.546
N	7541	25396	34950

Panel C: Firm survival

Dep. Var.	Independence ratio				
	(1) Full sample	(2) Survive > 2 years	(3) Survive > 5 years	(4) Survive > 10 years	(5) Survive > 15 years
CEO tenure	-0.150*** (-6.87)	-0.150*** (-6.87)	-0.149*** (-6.81)	-0.145*** (-6.57)	-0.139*** (-6.18)
Firm-level controls	Y	Y	Y	Y	Y
Firm fixed effects	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y
R ²	0.656	0.653	0.647	0.635	0.626
N	86946	86354	83983	78121	70335

Panel D: NYSE only subsample and all exchanges

Dep. Var.	Independence ratio		1 (Chair duality)	
	(1) NYSE only	(2) All exchanges	(3) NYSE only	(4) All exchanges
CEO tenure	-0.118*** (-5.05)	-0.137*** (-6.67)	2.351*** (25.41)	2.447*** (34.37)
Firm-level controls	Y	Y	Y	Y
Firm fixed effects	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y
R ²	0.653	0.652	0.530	0.557
N	66579	143739	51696	116957

Appendix Table 2: CEO tenure, board independence and cumulative number of CEO turnovers

This table presents the relation between the CEO's tenure and board independence controlling for the cumulative number of CEO turnovers within firms. Firms with only one reported director are excluded from the sample. All standard errors are adjusted for sample clustering at the firm level. *, **, and *** represent results significant at the 10, 5, and 1% levels, respectively.

Dep. Var.	Independence ratio	
	(1)	(2)
Sample	Full	Full
CEO tenure	-0.129*** (-4.63)	-0.268*** (-8.88)
N. cumulative CEO turnovers	0.277 (1.32)	-0.188 (-1.24)
Firm-level controls	Y	Y
Firm fixed effects	Y	
Year fixed effects	Y	Y
R ²	0.656	0.200
N	86946	86946

Appendix Table 3: Average effect of firm performance on CEO turnover

This table examines the sensitivity of CEO turnover to firm performance proxied by changes in return on assets (ROA) defined as income before taxes ('IB' in Compustat) scaled by lagged assets and average excess stock return for the 12-month period prior to the fiscal year ending date. Columns 1 and 3 use contemporaneous (t) measures of performance, while columns 2 and 4 use both contemporaneous (t) and lagged (t-1) measures of performance. All accounting variables are from Moody's Industrial Manual or Compustat and stock returns are from CRSP. Linear probability models (i.e., OLS) with firm and year fixed effects are used throughout the table, although results largely hold up in logit models with firm fixed effects (i.e., conditional logit). All standard errors are adjusted for sample clustering at the firm level. *, **, and *** represent results significant at the 10, 5, and 1% levels, respectively.

Dep. Var. - Model	CEO Turnover [t]{0,1} - OLS			
	1926-2011			
Sample:	(1)	(2)	(3)	(4)
Δ ROA [t]	-0.226*** (-9.83)	-0.252*** (-9.82)	-	-
Δ ROA [t-1]	-	-0.165*** (-6.57)	-	-
Excess Ret [t]	-	-	-0.424*** (-10.48)	-0.465*** (-10.96)
Excess Ret [t-1]	-	-	-	-0.312*** (-8.22)
CEO tenure	0.007*** (22.25)	0.007*** (22.24)	0.007*** (22.87)	0.007*** (22.72)
log(assets)	-0.013*** (-4.66)	-0.012*** (-4.16)	-0.013*** (-4.99)	-0.013*** (-4.70)
q	-0.009*** (-3.54)	-0.007** (-2.52)	-0.005* (-1.93)	-0.001 (-0.22)
Firm fixed effects	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y
R ²	0.119	0.119	0.118	0.118
N	75174	66768	82538	80809

Appendix Table 4: Descriptive statistics on firm-years excluded in the main sample from 1920 to 2011

Table 1, Panel B in the main text presents summary statistics for key variables for the sample firms for which we also have director and officer data and hence include in our analysis. This table presents summary statistics for the firms that we do not include in our analysis because these observations lack director and officer data from 1920 to 2011. All variables definitions are the same as in Table 1, Panel B.

Variable	N (firm-years)	Total assets (\$million in 2000)	ROA	Tangibility	Tobin's q	Cash/assets
Panel A: Full Sample (1920-2011)						
Mean	15,197	1,816.82	0.032	0.321	1.507	0.064
Median	-	195.50	0.045	0.262	1.165	0.032
STD	-	11,898.81	0.118	0.254	1.057	0.091
Panel B: By-decade Mean						
1920s	30	336.17	0.048	0.530	0.835	0.027
1930s	40	371.34	0.001	0.459	0.890	0.064
1940s	31	866.14	0.102	0.323	1.358	0.121
1950s	265	4,746.39	0.068	0.425	1.142	0.089
1960s	2,864	1,418.74	0.072	0.326	1.778	0.073
1970s	3,730	1,546.35	0.048	0.307	1.195	0.042
1980s	3,804	2,026.63	0.028	0.336	1.382	0.045
1990s	2,477	2,112.90	0.008	0.323	1.609	0.068
2000s*	1,956	1,802.92	-0.024	0.286	1.896	0.123