POWER AT THE TOP: AN EXAMINATION OF CEO TENURE AND EXCESS CHURN

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ABSTRACT

This research primarily examines the relationship between CEO power and CEO tenure in Standard & Poor's 1500 firms from 1997 to 2018. The panel regression and 2 step-system GMM models suggest that there is a strong positive relationship between CEO power and tenure. Additionally, power has a positive significant moderating effect on the performance–tenure relationship. The results are robust across crisis subsamples. This paper also investigates excess CEO churning. I find that about 1.6% of companies has excess CEO turnover. The logit models indicate that companies with powerful CEOs are less likely to experience excess turnover.

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CHAPTER 1: INTRODUCTION

There is a rising concern in corporate finance about boards' failure to discipline underperforming CEOs effectively. Boards fail to act in shareholders' interest when they monitor CEOs with higher status. Thus, examining the effects of CEO power on tenure is warranted as it directly affects shareholder value (Flickinger, Wrage, Tuschke, & Bresser, 2016). Another trend is that the new regulations, innovative environment, and increasing competition for CEO positions have caused the frequent replacement of CEOs. However, primarily, the newly appointed CEOs who do not get the opportunity and time, to entrench take most of the blame for bad firm performance, unlike their entrenched counterparts (Allgood & Farrell, 2000; Kaplan & Minton, 2012; Wang, Graefe-Ande, Pyles, & Kim, 2014).

According to the agency theory, powerful CEOs have a greater ability to cause moral hazard and information asymmetry. A CEO's ability to manipulate information prevents boards from detecting the CEO's actual skill level and replacing him with a better candidate (Bebchuk & Fried, 2003; Jensen & Meckling, 1976). Anecdotal evidence by Greifeld (2019) suggests that CEOs rarely leave the office voluntarily as they get used to "the power, status, and the perks." They gain power with past superior performance, and when they fail to adjust to the new environment, most CEOs "struggle to surrender" and complicate the succession process.

Bebchuk and Fried's (2003) managerial power theory predicts that entrenched executives have a significant influence over the board of directors; hence, they remain executives, even when the company is performing poorly. Similarly, agency theory predicts that when CEOs have more than one job (i.e., chairperson), boards are prone to oversee significant risks an organization faces since the chairperson is likely to create a hostile environment for critical questions. Failing to

detect these risks on time prevents boards from taking timely disciplinary actions against the CEOs during underperformance (Eisenhardt, 1989; Mandato & Devine, 2020).

Bennis and O'Toole (2000) argue that corporate bosses are coming and going at an unprecedented rate. The anecdotal evidence by Aluise (2012) warns that the frequent dismissals at large companies like Yahoo (9 CEOs since 2007), Hewlett Packard (7 CEOs in 1999-2015 period), and AIG (7 CEOs since 2005) are a sign of increasing CEO turnover. According to Coyne and Coyne (2007), more than half of the largest US companies replace their CEOs every four years. Similarly, Roselinde and Peter (2012) argue that CEOs in the 21st century averaged six-year tenure, significantly less than the last decade of the 20th century. Furthermore, Kaplan and Minton (2012) argue that increasing institutional ownership and board independence contribute to the high CEO turnover.

The first objective is to examine the relationship between CEO power and CEO tenure while controlling for several corporate and governance characteristics. My research investigates whether CEOs systematically use their power to influence board decisions on the replacement to guarantee longer tenure. The panel regression with fixed effects reports that powerful CEOs stay in the position significantly longer than their non-powerful counterparts.

The second objective is determining whether the CEO power moderates the performance-tenure relationship. In my panel regression with fixed effects, I interact two years of stock underperformance with CEO power and measure its effect on CEO tenure. My results report that underperforming CEOs generally have shorter tenures; however, if they are powerful enough, two years of worse-than-median industry performance does not have as bad an effect on their tenure.

Finally, I try to identify the widespread excess "churning" of CEOs and the effects of CEO power on it. This study identifies excess churning based on the arguments and anecdotal evidence

from multiple news articles that argue CEOs face more turnover in the 21st century than ever. The question arises whether the high rate of replacements suggests some degree of churning at the top. My descriptive statistics show that there was excess turnover in 1.6 % of companies on average during the 1998-2017 period. My logit panel model reports that CEO power significantly decreases the probability of excess churn.

The main contribution of this study to the current literature is to draw attention to excess churning and underlying reasons for excessive CEO replacement. Prior literature also does not investigate excess churning; most of the evidence is anecdotal from news articles (Aluise, 2012; Bennis & O'Toole, 2000). I also examine the CEO power-tenure relationship using more robust power measures from the extant literature and tenure as an alternative to turnover. (Baulkaran, 2014; Bebchuk, Cremers, & Peyer, 2011; Denis, Denis, & Sarin, 1997).

CHAPTER 2: LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 CEO power and tenure

Agency theory suggests that CEOs are motivated by self-interest, so when supervisory systems, such as the board of directors, fail to monitor them effectively, they can take advantage of the information asymmetry at the shareholders' expense (Eisenhardt, 1989). On the other hand, shareholders' self-interest is to minimize agency costs and maximize the firm value. When shareholders have a high ownership concentration in a company, they are incentivized to employ greater monitoring to reduce agency costs. Hence, large institutional blockholders in a company increase the chances of CEO turnover. Even if the institutional investors decide to "vote with their feet," media coverage of the event or informal communication between the board and blockholders regarding the reasons for selling may shed more light on CEO incompetence (Jensen & Meckling, 1976; Parrino, Sias, & Starks, 2003). The absence of outsider blockholders weakens monitoring mechanisms and discourages boards from disciplining CEOs effectively (Bebchuk & Fried, 2003).

CEOs have the incentive to make risky investment decisions to boost their short-term compensations and perks. However, the boards usually struggle to assess such projects as CEOs inherently have an information advantage. Firms that fail to separate the roles of CEO and chairperson can further reduce board oversight and increase information asymmetry. Failure of separation and inside domination of boards allow CEOs to guarantee a longer tenure (Eisenhardt, 1989; Fama & Jensen, 1983; Lewellyn & Muller-Kahle, 2012; Ocasio, 1994).

Managerial power theory suggests that powerful managers have a greater ability to influence board decisions. CEO power forces boards to design suboptimal contracts that allow CEOs to receive excess pay even when the firm performs poorly. The relationship between the two tends to be reciprocal, meaning that powerful CEOs get high pay and the high pay signals

CEO power. Thus, the theory predicts that a well-paid or powerful CEO will force the board to act in their favor in turnover decisions (Bebchuk & Fried, 2003). On the other hand, tournament theory predicts that high pay does not only encourage the incumbent CEO to make maximum effort to gain more rewards – higher compensation, but the possibility of high compensation boosts competition for the position. Thus, it limits CEO power and increases the chances of CEO turnover (Shen, Gentry, & Tosi Jr, 2010).

Wang et al. (2014) argue that boards are short-sighted when evaluating CEO performance. Instead of assessing CEOs based on long-term goals, they encourage/force CEOs to meet short-term goals set by analysts. Such short-sightedness decreases the likelihood of turnover of powerful CEOs who can manipulate accruals to meet the expectations prior to analysts' meetings (Wang, Davidson III, & Wang, 2010; Wang et al., 2014). Further, Han, Nanda, and Silveri (2016) use CEO compensation, duality, triality, tenure, ownership, the proportion of independent directors, and founding family factors to construct the CEO power index. They conclude that a high CEO power index decreases the firm value and probability of turnover.

Greater ownership of common stocks in the company gives managers voting power to elect the board of directors. With significant voting power, they can determine the composition of the board and influence board decisions about dismissals (Boeker, 1992; Fredrickson, Hambrick, & Baumrin, 1988). In fact, Denis et al. (1997) report that CEOs with 5-15 % ownership reduce the likelihood of forced turnover compared to CEOs with less than 5% ownership. They show that the performance sensitivity of forced turnover is significant only when ownership is less than 1%. Internal control for founders and other executives with significant ownership is weak due to strong managerial influence on the appointment of board members (Denis et al., 1997; Fredrickson et al., 1988). High managerial ownership is not necessarily inefficient as executives have incentives to

make long-term investment decisions (such as human capital), but it decreases external (acquisition attempts) and internal control activities on CEOs, which may result in managerial entrenchment (Denis et al., 1997). Although he rejected the relationship between significant board ownership and CEO tenure, Allen (1981) found that tenure is positively affected by CEO's substantial control over stocks.

In addition, some companies adopt a dual-class share structure where the holders of the superior class of common equity have more voting rights per share. Managers are more powerful in dual-class firms than in single-class firms, as insiders have superior voting rights (Baulkaran, 2014). Baulkaran (2014) also finds that dual-class CEOs' tenure is 8.28 years longer than their single-class industry peers. CEOs who hold this class of shares tend to have a bigger influence on board decisions as they elect a larger proportion of directors. (DeAngelo & DeAngelo, 1985).

Furthermore, executive power may be limited in competitive industries. Farrell and Whidbee (2003) argue that competitive industries offer skilled (industry-related knowledge and experience) CEO candidates who can replace the underperforming incumbent CEO. The availability of such candidates enables boards to make quicker decisions on CEO removals using relative performance evaluation (RPE) (DeFond & Park, 1999). Furthermore, Jaroenjitrkam, Yu, and Zurbruegg (2020) argue that product market competition effectively disciplines CEOs by limiting their power.

Finally, Lee, Matsunaga, and Park (2012) find a significant positive relationship between management forecast errors and CEO turnover when CEOs are less entrenched. Powerful CEOs are less likely to face turnover despite the discrepancies between their forecasted and actual skills.

2.2 Moderating effect of CEO Power

Fredrickson et al. (1988)'s model of CEO dismissal links firm performance and tenure with the mediation of the incumbent CEO's power. When a firm underperforms, its CEO is less likely to be dismissed if they are powerful. For example, suppose the CEO has large stockholdings in the company. In that case, they will have higher voting power on the nomination of board members, which discourages directors from voting against the CEO's interests. This prediction lies within the ownership dimension of managerial power proposed by Finkelstein (1992).

Dikolli, Mayew, and Nanda (2013) find that the probability of turnover increases by 36 % when CEOs have a negative quarterly performance and more than twice when CEOs have four subsequent negative quarterly performances. However, in the subsamples of long and short-tenured executives, experienced (powerful) CEOs have a lower chance of being replaced as they gain the trust of the board of directors with prior superior performance, unlike new (non-powerful) CEOs with "uncertain" skills. This finding is consistent with Fredrickson et al. (1988)'s model on dismissal, which suggests that CEO power helps incumbent CEOs to remain in their position during underperformance.

Ineffective boards and a lack of large outside shareholders create a favorable environment for powerful CEOs to extract rents and receive high compensation even when the firm performs poorly (Bebchuk & Fried, 2003). In a more recent paper, Bebchuk et al. (2011) find that a high pay slice (CEO compensation to total compensation of top 5 executives) is associated with low performance-turnover sensitivity. Unlike Van Essen, Otten, and Carberry (2015), whose research implies no relationship between total compensation and tenure, their findings suggest that highly compensated CEOs tend to be powerful and influence the board of directors' decisions about turnover guaranteeing longer tenure.

In terms of firm management, it is questionable whether duality is more effective than the separation of chairperson and CEO positions (or vice versa). However, duality helps CEOs gain power (Ocasio, 1994). Hence, Goyal and Park (2002) argue that boards become more dependent on CEOs when the CEOs have both chairperson and manager titles, which decreases their chance of removal if industry-relative earnings and stock returns are low. Similarly, Tuggle, Sirmon, Reutzel, and Bierman (2010) argue that boards' monitoring efforts will be impeded by duality. Duality increases the CEO's chance to remain in the position during negative deviations from prior performance as boards pay less attention to abnormal CEO activities in such firms.

2.3 Excess CEO churning

Excess CEO churning is an unhealthy degree of turnover in a company, which prevents CEOs from gaining momentum and reaching acceptable performance levels (Hambrick & Fukutomi, 1991). Khurana (2004) points out that CEOs are CEO turnover is 3 times higher than in 1985. Similarly, Chuck and Jan (2007) argue that the high turnover (four times higher) in 2005 was excessive compared to 1995; however, excess turnover is not due to board overreaction. Given that one-third of the dismissals were forced, resulting from poor performance, the actual reason appears to be the improved monitoring mechanisms that are not as forgiving of poor performance as before (Chuck & Jan, 2007; Lucier, Schuyt, & Tse, 2005).

However, Hambrick and Fukutomi (1991) argue that CEOs should be given a chance to implement their strategies. They believe that if a CEO gets enough time on the job, regardless of their vision and views, the CEO's performance will peak in four to five years. However, dismissing CEOs in the early years causes excess CEO churning (short-tenured CEOs) and harms the business.

Hermalin's (2005) CEO tenure model predicts that diligent boards are likely to recruit external candidates as there is higher uncertainty about their skills, allowing the boards to monitor the outsiders more frequently. High monitoring efforts of diligent boards increase the likelihood that outside CEOs will be fired, thus shortening their expected tenure (Allgood & Farrell, 2000).

Laux (2008) predicts that when independence is high, directors become more decisive in removing the incumbent CEO upon discovery of the lack of fit of the CEO to the position. Shen and Cannella Jr (2002) argue that outside CEOs tend to have little to no power in the early years of their incumbency, leading to power plays within top management/ motivated senior executives who put pressure on boards to remove the newly hired. However, their empirical results do not corroborate the direct relationship between superior executive power (or lack of CEO power) and early CEO dismissals.

Consistent with Laux's (2008) model on high CEO turnover, Kaplan and Minton (2012) find that CEO turnover is more sensitive to overall stock market performance and industry-relative performance of companies when board members are mostly outsiders. In an analysis of both the 1971-1994 period by Huson, Parrino, and Starks (2001) and the 1992-2007 period by Kaplan and Minton (2012), the dramatic increase in board independence was associated with higher CEO turnover. Kaplan and Minton (2012) also report that institutional blockholders increased significantly during the 1992-2007 period, which increased the performance sensitivity of CEO dismissals. Likewise, Parrino et al. (2003) report that long-term-oriented institutional investors are likely to use their block ownership to discipline CEOs by engaging in shareholder activism and potentially recruiting outsiders as new CEOs rather than insiders.

Philippon (2003) demonstrates that poorly governed firms respond more significantly to aggregate shocks than well-governed firms. Thus, poor governance amplifies CEO turnover during

poor market conditions.

Following the Sarbanes Oxley Act (2002), the trivial number of compliant[1] firms decreased the number of independent directors, and the majority increased board independence. Post-SOX, the firms that lowered board independence observed reduced performance – CEO turnover sensitivity, whereas highly independent boards significantly increased CEO turnover (Dah, Frye, & Hurst, 2014). With the passage of SOX, exaggeration of short-term performance became harder, leading to discounted firm value and underperformance (Wang et al., 2014). Since investor myopia and short-termism of investors in public firms result in higher short-term performance-turnover sensitivity compared to private firms, public companies observed more early CEO dismissals post-SOX (Gao, Harford, & Li, 2017).

2.4 Hypothesis development

In this research, I have two primary and one exploratory hypotheses. The main hypotheses predict the direction of the relationship between CEO power and tenure, and the moderation effect of CEO power on performance–turnover relationship, respectively. The exploratory hypothesis identifies the relationship between CEO power and excess turnover. I investigate both tenure and excess turnover as my dependent variables since they explore different dimensions of the same variable, turnover. Using tenure as the dependent variable helps observe the effects of power on CEO tenure at the individual level, whereas the total turnover is calculated for the firm years (Han et al., 2016). Excess churn is frequent CEO turnover over a 5-year period, which allows us to focus on the individual firms with dangerous levels of turnover.

The literature uses different measures from Finkelstein's (1992) executive power

[1] The firms which already had more than 50% proportion of independent directors

dimensions to identify the relationship between CEO power and turnover. Powerful CEOs can influence the board decisions with their voting powers and personal relationships and remain in the position regardless of their performance (Baulkaran, 2014; Denis et al., 1997; Fredrickson et al., 1988). However, there is little or no information on CEO power's influence on tenure, as tenure is mainly used as a power measure[2]. There is also a need to identify the moderation effect of underperformance in this relationship. Hence, I formulate the following:

H1: CEO power is positively related to tenure.

H2: Underperforming CEOs are likely to have longer tenure at increasing levels of CEO power.

Shareholder activism, a quickly changing, innovative, and competitive business environment put CEOs under scrutiny and limit their power to impact board decisions on dismissal when they do not act in shareholders' interest (Bennis & O'Toole, 2000; Kaplan & Minton, 2012; Parrino et al., 2003). Tighter regulations on financial reporting limit CEO influence by holding them accountable for earnings manipulation (Wang et al., 2014). I attempt to answer whether the positive changes in the financial world cause excessive CEO dismissals. Additionally, to identify the relationship between power and the probability of excess turnover, I hypothesize the following:

H3: CEO power is negatively related to excess turnover.

[2] In Tables A1 and A2, I justify why I do not use tenure as a power measure. A detailed explanation is in the Discussion section.

CHAPTER 3: METHODOLOGY

3.1 Research design

I used the following panel regression with the firm- and year-fixed effects to measure the relationship between CEO power and CEO tenure[3]:

$$\boldsymbol{Tenure_{i,t+1} = \alpha + \beta_1 CEO\ Power_{i,t} + \beta_j CEO\ characteristics_{j,i,t}} \\ \boldsymbol{+ \gamma_j Board\ characteristics_{j,i,t} + \delta_j Firm\ characteristics_{j,i,t} + u_{i,t}} \ (\mathbf{1})$$

Tenure is measured for the firm *i* at the time *(t+1)*. Several measures proxy CEO power, such as founder, ownership, pay slice, dual-class, duality, and power indexes. There are three power indexes used in this model. Two are based on predicted scores from Principal Component Analysis (power index$_1$ and power index$_2$), and one is the linear combination of dummy variables (power index). To avoid multicollinearity, I run separate panel regressions for each independent variable that proxies CEO power. CEO characteristics include CEO age, gender, and type of recruitment (outside/insider) (Fredrickson et al., 1988). Board characteristics consist of average board tenure, board size, the proportion of outsiders in the board, board ownership, and board age (Fredrickson et al., 1988; Mace, 1971; Weisbach, 1988). I also control for firm characteristics; return on assets (ROA), size, leverage, market-to-book ratio, ROA, volatility, firm age, and competition (Bae, Kim, & Oh, 2017; Dang, Li, & Yang, 2018; Dikolli et al., 2013; Fredrickson et al., 1988; Han et al., 2016).

To provide evidence in support of H2, I interact the underperformance dummy with CEO power measures and regress **(2)** the dependent variable – "tenure" on the interaction. The firms are

[3] Hausman (1978)'s specification test indicated that using fixed effects is more appropriate than random effects in my panel data analysis (Table 5).

treated as underperforming if their stock returns for two consecutive years are less than the median industry stock return.

$$Tenure_{i,t+1} = \alpha \quad + \beta_1 CEO\ Power_{i,t} + \beta_2 Underperformance_{i,t} + \beta_3 \left(CEO\ Power_{i,t} \times Underperformance_{i,t}\right) + \beta_j Controls_{j,i,t} + u_{it} \quad (2)$$

In this model, I include the interaction of CEO power and underperformance to determine the effects of CEO power on tenure when the CEOs underperform for two consecutive years – t and (t-1) periods. Control variables are CEO, board, firm, and industry characteristics described above. β_3 is the slope difference of CEO power- tenure relationship due to the inclusion of the moderating variable – underperformance.

In order to examine excess churning, I use the fixed effects logit regressions as follows:

$$P\left(Excess\ turnover_{i,t+1} = 1 \mid average\ CEO\ power_{i,t}\right) = \frac{e^{\beta_0 + \beta_1 average\ CEO\ power_{i,t} + \beta_j average\ Controls_{i,t}}}{1 + e^{\beta_0 + \beta_1 average\ CEO\ power_{i,t} + \beta_j average\ Controls_{i,t}}} \quad (3)$$

The left side of the equation $P(\text{Excess turnover}_{it+1} = 1 \mid \text{CEO power}_{it})$ shows the probability of excess turnover[4] given the different levels of independent variables- CEO power proxies. In this regression, I use 5-year averages of both independent and control variables used in the panel regressions. Excess churning is determined by the number of turnover events within a 5-year period; therefore, the coefficients from regressing it on a single-year observation would have little to no statistical significance. The right-hand side of the equation gives us the probability of excess turnover at different levels of CEO power. The probability effect of one unit change of independent

[4] Excess turnover is determined at (t+1). For example, if we calculated CEO ownership as the mean value of the 2001-2005 period, the excess turnover was calculated for the period of 2002-2006

and control variables (CEO Power, CEO, Board, and firm and industry characteristics) on the dependent variable- excess turnover is expressed as $\boldsymbol{\beta_1}$ and $\boldsymbol{\beta_j}$.

Endogeneity Issue

The endogeneity issues arise when there is a correlation between the error term and the independent variables, distorting the direct relationship between the explanatory and dependent variables. The three causes are omitted variables, measurement error, or reverse causality (Li, 2016). I employ 2 step system-GMM method to control for the lags of the tenure at time t and (t-1). I use a different method than 2 SLS (IV) method as it is hard to find appropriate instrumental variables in corporate finance. This is consistent with Li's (2016) finding, which suggests that GMM gives better corrected coefficients than IV and fixed effects model.

The first endogeneity issue I tackle is reverse causality. In my context, the CEOs with higher tenure build relationships with the board of directors, and they are more likely to become chairperson or a major stockholder of the company, which enable them to stay in the position even longer. Thus, the average tenure in the previous years affect the tenure at the time (t+1).

Another endogeneity issue is an omitted variable bias. Omitted variables, different from independent and control variables, are unobservable exogenous variables that can affect both the independent and dependent variables. However, finding a strictly exogenous and valid instrumental variable is difficult (Roberts & Whited, 2013). ISS data contains a variable called "nominating" that could be used as a weak instrument to capture the exogenous effects on the power-tenure relationship. The "Nominating" variable is a dummy variable equal to one if the CEO is a member or the chair of the nomination committee, which nominates board members and zero otherwise. Consistent with Roodman (2009)'s approach, I use the "nominating" variable as an exogenous instrument to solve for omitted variable bias and two lags of the dependent variable

(L.tenure, L2.tenure) to solve for reverse causality issue by using the following 2 step system-GMM model:

$$\boldsymbol{Tenure_{i,t+1} = \alpha \quad + \sum \varphi_1 Tenure_{i,t} + \sum \varphi_2 Tenure_{i,t-1} + \beta_1 CEO\ Power_{i,t}}$$

$$\boldsymbol{+ \beta_j Controls_{j,i,t} + Year_i + C_i + u_{i,t}} \quad \mathbf{(4)}$$

On the left side of the equation, tenure is at *(t+1)*, and it is regressed on tenure at *t* and *(t-1)* periods. "CEO power" is several different proxies for CEO power. Control variables are grouped by CEO, board, and firm characteristics. $Year_i$, C_i , and $u_{i,t}$ are year dummy, unobserved effects, and random errors, respectively.

3.2 Data

I utilize several data sources for my analysis. Executive characteristics data are from Execuomp; accounting data are from Compustat; stock return data are from CRSP; and firm age data are from Jay Ritter's website. Director characteristics data are from Institutional Shareholders Services (ISS) database.

The final Execucomp data consists of 49,252 executives and 298,768 firm-year observations. Execucomp CEO data comprised 7,919 CEOs[5] in 3,606 unique firms for 1992-2018, totaling 52,949 firm-year observations. CEO data is merged with accounting from that Compustat database. I retrieve firm's foundation date data from Jay Ritter's website and CRSP database (Loughran and Ritter (2004). The firm's first appearance in CRSP is considered the foundation year if Loughran and Ritter's (2004) firm age data are not missing. As director data are available

[5] As Execucomp's CEO title data (pceo) is not accurate and have many missing values, I assign the CEO title to executives if the year from "becameceo" variable matches the fiscal year. Around 8 percent of firms does not have any CEOs for the year as the "becameceo" variable is missing. If a CEO has a value for "leftofc" variable and has a missing observation for "becameceo", respectively, I determine that it is due to an error. To partially fix the error, I sort the data by firm, year, and dismissal date, and replace missing "becameceo" variable with the previous CEO's "leftofc" date.

only after 1997, the years before this period are dropped. After winsorizing at 1st and 99th percentiles and dropping missing observations for regression variables, we have a final sample size of 13,515 firm-year observations with 3164 unique[6] CEOs.

The dependent variable, tenure, is the difference between the fiscal yearend and the date the executive became CEO (Goyal & Park, 2002). For the last fiscal years (when the CEO left office before the yearend), the values of tenure are replaced with the difference between the date CEO left the office and became CEO. As I need only one tenure per firm year to run the panel regressions, for the firm years with multiple CEOs, I keep the CEO who served till the end of the firm-year and consider it the CEO's tenure for the year. Interim CEOs[7] are excluded from the calculation of tenure. However, some CEOs transition to permanent positions if boards cannot find suitable candidates. In such cases, a year of incumbency is the threshold to identify interim CEOs who held the job permanently (He & Zhu, 2020). Following Goyal and Park (2002), I exclude the CEOs at the retirement age of 63-65 from my analysis.

The second dependent variable is excess churning. There is not enough information on the calculation of excess turnover in the literature. I calculated excess turnover if there were more than 2 CEO replacements in a company within five years, excluding interim CEOs and CEOs at retirement age.

Independent variables. I regress tenure and excess turnover[8] on eight CEO power proxies. Finkelstein (1992) argues that top executive power consists of 4 dimensions (structural, ownership, expert, and prestige power). The explanatory variables in this study cover two of those dimensions; CEO ownership and founder variables belong to the ownership dimension of power, and duality

[6] "Co_per_rol" (CEO id for each company) variable is used to count.
[7] Interim CEOs are identified if Execucomp's "titleann" variable contains "interim CEO" or " acting CEO".
[8] The regressors and controls for excess turnover regressions were 5-year averages, t being the last year of the period.

and relative compensation are part of the structural dimension of CEO power (Daily & Johnson, 1997; Finkelstein, 1992).

As in Bebchuk et al. (2011), the CEO pay slice (CPS) is the ratio of CEO compensation to the total compensation of the top 5 executives. If the firm had more than five executives for the year, the ratio with top 5 compensations is included. If the firm had less than three executives, I do not include them in the calculation. Bebchuk et al.'s (2011) recommendation on CPS calculation is to exclude periods where CEO did not remain in the position for an entire year. As the observations are not at the CEO level but at the firm level, I calculate the total CPS of both CEOs in turnover years. Both CRSP and Loughran and Ritter's (2004) data have share class information for dual-class. As Loughran and Ritter's (2004) data have many missing values (I used non-missing values to validate my code to create a dual-class dummy from CRSP), CRSP's "share class" variable is converted to a dual-class dummy variable. Dual-class is assigned if a company has more than 1 class of ordinary shares (Baulkaran, 2014). I use a founder dummy for the CEOs when a company's most recent file indicates that the executive was the founder or co-founder[9]. Duality is assigned if a firm's annual proxy statements[10] indicate that the CEO holds a chairperson[11] position in the same company (Goyal & Park, 2002). CEO ownership is the number of common shares owned by CEOs divided by the common shares outstanding. I also construct the CEO Power index using the abovementioned independent variables as proxies. Since CEO pay slice and CEO ownership are not dummy variables, I assigned a value of 1 if their value was more than the median

[9] Execucomp's "title" variable had to contain "Founder", "founder", "Founding", "founding" words. If the year of the "becameceo" variable was equal to the year of foundation year, the CEO was also considered a founder.
[10] variable "titleann"
[11] "chmn", "Chairman", "chairman", "chairwoman", "chairperson", "chariman", "chairamn", "chairma", "Chair of the Board" , "Chiarman", "Chmn", "Chairwoman", "Chairperson", "Chaiman" are all possible versions in titleann variable.

value and 0 otherwise. A Sum of all dummy variables, founder, duality, dual-class, pay slice, and ownership, constructs the Power Index (Finkelstein, 1992; Han et al., 2016; Sheikh, 2019).

Additionally, I use principal component analysis to capture different dimensions of CEO power measures. The analysis predicts the scores for "Power Index1" and "Power Index2" if the respective loadings of power proxies (founder, duality, dual class, pay slice, ownership) have more than the threshold weight (0.5) in a component. For example. "Power Index1" is predicted based on "founder" and "CEO ownership" variables, whereas "Power Index2" score is based on "duality," "dual-class," and "pay slice" variables.

Control variables. I control for CEO characteristics using: CEO age, outside hire, and gender. The age variable is the CEO's age as of the fiscal year. Outsider (outside CEO) is a dummy variable that equals one if the CEO has joined the company 365 or fewer days before becoming CEO (Fredrickson et al., 1988). Male is a dummy variable, with 1 for male and 0 for female.

I also use the board and firm characteristics as controls. The fraction of outsider directors (board independence) on boards is calculated as the number of outsiders divided by board size, where board size is the number of directors in the firm-year. Board ownership is the ratio of the number of shares owned by directors to the total shares outstanding. Board age is the average age of directors as of the fiscal year (Fredrickson et al., 1988; Mace, 1971; Weisbach, 1995).

The difference between the company's founding year and the fiscal year is the firm age (Fredrickson et al., 1988). The ratio of net income to total assets (ROA) controls for firm performance (Dikolli et al., 2013). I use total assets to measure the firm size (Dang et al., 2018). Bae et al. (2017) calculate leverage as the ratio of (long-term debt + current debt) to total assets. However, the summary statistics in this study show a ratio of 0 from the first to the 10^{th} percentile; thus, I calculate it as the ratio of total liability to total assets. I use the previous year's stock return

volatility as the risk measure, calculated as the monthly standard deviation of the prior year multiplied by the square root of 12 (Han et al., 2016). The book-to-market ratio determines the growth of each firm. Finally, as a control for product market competition, I use Herfindahl – Hirschman index – HHI (DeFond & Park, 1999).

CHAPTER 4: RESULTS AND DISCUSSION

4.1 Descriptive statistics

Table 2 reports the summary statistics for all the variables used in the regressions (the description of the variables is in Table 1). Panel A reports that the average tenure for the sample is 8.18 years. After excluding interim CEOs, the shortest term of a CEO is 0.4 years, and the longest term is around 36 years. The second dependent variable, excess churn, averages 0.016, which means that, on average, 1.6% of companies replaced more than 2 CEOs over any five-year periods.

Panel B describes the independent variables used in this research. Duality, Founder, Dual Class, Pay Slice, and CEO ownership are all proxies for CEO power and are ultimately used to construct the Power Index variable. The power index varies between 0 and 5, as I used five dummy variables[12] to construct it. In this sample, the average power index is 1.67 – fewer than two power indicators, meaning an average CEO is not too powerful in public companies. However, there is some entrenchment at the top. In 55.3% of firm fiscal years, CEOs are also the chairperson of the company. 6% of the CEOs founded or co-founded the company. 5.2% of the companies have more than one class of shares. The average pay slice is 0.4, meaning the average CEO compensation is 40% of the total compensation received by the top 5 executives. An average CEO owns 2.2% of the company. The minimum ownership is close to 0, and the maximum is 34.5% of the company shares. Both components, "Power Index1" and "Power Index2," have a mean value close to 0.00. The minimum score for the first component is (-1.44), and the maximum value is 7.76. The respective values for the second component are (-5.21) and (2.75).

[12] Pay slice and CEO ownership turned 1 if the observations were above median.

Panel C summarizes the variables I use to control for CEO characteristics. The CEO age range is between 40 and 76 years, whereas the mean age is 56. 97.1% of the CEOs in the sample are male. According to the sample, boards employed 13.8% of CEOs externally.

Panel D shows the descriptive statistics of the control variables for board characteristics. The boards in this sample have 5 to 17 members with a mean value of 9.45, and 83% of them are outsiders. Board members own 3.7% of the company shares, on average. The youngest board member is 50, and the oldest member is 71. On average, a board member is around 61 years old.

Panel E reports control variables for firm characteristics. Return on assets (ROA) for the best-performing company is 25%, and -28.5% for the worst, averaging 4.8 % over the sample. The mean leverage ratio is 0.553, meaning an average firm's total liability comprises 55.3% of its total assets. The maximum leverage of 1.009 indicates that some firms have negative equity as their total liability exceeds 100%. The market-to-book ratio accounts for growth, which averages at 2.93. The firm with the negative growth has a -0.637 market-to-book ratio (negative book value), whereas the most valued company has a market value 23.36 times bigger than the book value. Sample firms have returns between -46.9% and 51.9%, with a mean return of 1.89%. 36.7 % of them have less than median industry stock returns for two consecutive years. The average firm age is 35 years. Finally, annualized monthly stock return volatility averages 34.7%.

Figure 1 and Figure 2 show the respective trends for tenure and excess turnover in the 1998-2017 period. According to Figure 1, the average CEO tenure was the lowest in 2001 and highest in 2011-2014. The average tenure of large company CEOs was about two years lower than small and medium-cap companies. In the 2015-2017 period, there was a decline in the average CEO tenure of all firm sizes.

Figure 2 reports that SP 500 companies had the highest excess turnover in 2001-2004. In 2001, 4% of large-cap firms faced excessive CEO turnover. In 2007-2009, excess churning remained relatively high for big companies. Starting from 2015, excess turnover began to climb for all firms.

4.2 Principal Component analysis

Table 4 shows that the variables used to build Power Index are significantly correlated. I use Principal Component Analysis (PCA) to eliminate the multicollinearity issue while building the Power Index. Consistent with Veprauskaitė and Adams (2013), I keep two components with an Eigenvalue higher than one as the measure of the Power Index. I use the absolute value of 0.5 as the threshold to determine which component the power variables should belong to while predicting the scores. Power_Index1 consists of "founder" and "CEO ownership" variables. Power_Index2 consists of "duality," "dual class," and "pay slice" variables, as the absolute weights of these variables in this component are higher than the 0.5 thresholds.

4.3 Panel and Logit regressions

Table 6 shows the panel regression results for the impact of CEO power on CEO turnover. The results support my first hypothesis (H1) as 7 of 8 power measures significantly affect tenure. The first proxy, the founder variable, is significant at 1% ($\beta = 5.49$, $t = 5.28$). The interpretation of the coefficient is as follows; if a CEO founded the company, they would have 5.49 years longer tenure than non-founders. Tsai, Kuo, and Hung's (2009) analysis of turnover in large family-owned corporations produces similar results. Duality ($\beta = 1.98$, $t = 8.87$) was highly significant, meaning if a CEO also held the chairperson position, he could hold the position for 1.98 years longer. Unlike Baulkaran's (2014) findings on a significant positive relationship between dual-class and tenure, my coefficient (-0.60) suggests that multiple classes of shares do not contribute to tenure since the

dual-class variable is insignificant (t = -0.60) at all levels. However, a higher pay slice and CEO ownership guarantee longer CEO tenure with respective coefficients of 3.28 and 32.06, both significant at 1%. Therefore, a 1% increase in pay slice will increase tenure by 0.033, and a 1% increase in CEO ownership will add 0.34 years to CEO tenure. Bebchuk et al. (2011) and Denis et al. (1997) report similar results on pay slice and ownership results. The Power Index also has a highly significant relationship with CEO tenure (β = 1.41, t = 15.37). A CEO who has very high power (Power index = 5) will have seven years (5 x 1.41) longer tenure than a CEO with absolutely no power (Power index = 0). "Power Index1" (β = 1.67, t = 8.51) and "Power Index2" (β = 0.80, t = 8.77) are both significant at 1%. Overall, the results support positive and significant effect of power on tenure.

Table 6 also indicates the effects of other CEO, firm, and board characteristics on tenure. The following explanations on control variables refer to the coefficient in model 6. The results suggest that outside hires remain in the CEO position significantly longer than inside hires (β = 2.21, t = 4.91). An external hire with 2.21 years longer tenure than insiders is consistent with Allgood and Farrell (2000)'s findings, who argue that boards are more lenient on newly hired outsiders since they need time to learn about the new hire's skills. A strong relationship (t = 17.16) between CEO age and tenure partially comes from the fact that each year tenure and age increase by one year for an incumbent CEO; therefore, the differences are highly correlated. The result is consistent with the literature (Goyal & Park, 2002; Weisbach, 1988). Interestingly, my regression results show an insignificant relationship (t = -1.40) between board independence and CEO tenure, unlike Kaplan and Minton (2012) and Weisbach (1988), who find significant positive effects. Consistent with Goyal and Park (2002), high product market competition significantly shortens CEO tenure.

Table 7 reports that two years' stock underperformance across all the models significantly decreases the CEO tenure. The insignificant coefficient (t = 1.26) of interaction between the founder and underperformance indicates that underperforming founder CEOs do not stay in the position longer due to their founder status. This finding is inconsistent with Chen, Cheng, and Dai's (2013) conclusion, which reports a higher rate of performance-turnover sensitivity in family-owned firms. The moderating effect of duality on the performance-tenure relationship is significant at 5% (β = 0.44, t = 2.53). According to the insignificant interaction coefficient (t = -0.96), the effect of underperformance on tenure is not different for single-class and dual-class firms. At different levels of CEO ownership and pay slice, an underperforming CEO's tenure does also not change. However, the "Power index" (β = 0.26, t = 2.25), "Power Index1" (β = 0.22, t = 2.02), "Power Index2" (β = 0.31, t= 2.89) interactions have high significance, meaning at increasing levels of Power indexes, underperforming CEOs have longer tenure. The results suggest that underperforming incumbent CEOs can influence board decisions on their replacement when they are also the chairperson or when they benefit from multiple power variables. For example, per the coefficients, high ownership alone does not increase an underperforming CEO's tenure; however, if the CEO is also highly compensated, they can delay the board's decision on turnover. Similarly, being a founder alone does not moderate the performance-tenure relationship, but an underperforming founder–chairperson CEO will stay in the position longer. Therefore, the significant effect of the four interaction coefficients provides enough evidence to support H2. The results are similar to Dikolli et al.'s (2013) findings on the impact of power on performance-turnover sensitivity.

My logit regression with fixed effects in Panel A of Table 8 reports significant negative coefficients for seven independent variables. In companies with a high rate of founder CEOs,

excessive turnover of CEOs is less likely to happen (β = -2.43, t = -3.64). The number of CEO-chairpersons within a five-year period decreases the probability of excess churn (β = -1.10, t = -4.73). Dual-class has an insignificant effect on the likelihood of excess churn with a t-statistics of 0.73. However, high average CEO ownership (β = -27.99, t = -1.85) and pay slice (β = -3.97, t = -2.95) decreases the probability of frequent CEO removals. The power indexes — "Power Index" (β = -1.07, t = -8.87), "Power Index1," (β = -0.79, t = -4.48) and "Power Index2" (β = -0.51, t = -4.44) are negatively associated with excessive turnover. In all the models, the independent and control variables are aggregated at five years. These results are robust at 4- and 6-year aggregations as well. Panel B of Table 8 reports significant negative marginal effects of power proxies on excess churning, except for dual-class.

4.4 Endogeneity Test

Table 9 reports the results for the first stage of the two-step system-GMM regressions. One lag of tenure as a regressand significantly affects the dependent variable. "Founder" loses its significance in this model. The table shows that all other models maintained similar significance of coefficients. The power indexes are the most important independent variables since they account for the effects of all other measures. Thus, their significant coefficients prove that the CEO power has a significant positive effect on tenure after accounting for omitted variables and reverse causality issues by including the instrumental variable—"nominating" and lags of tenure in the equation, respectively.

4.5 Robustness check

Jenter and Kanaan (2015) argue that boards pay more attention to CEO underperformance when peer groups also underperform. Therefore, CEOs tend to be under greater scrutiny in recessionary periods, when most peers underperform, than in good times. CEO turnover during

bad times are significantly higher than in good times. Based on the National Bureau of Economic Research data, I use the 2007-2009 and 2001-2003 recessionary periods for the subsample analysis to check for the robustness of the previous regression results.

Table 10 shows that 6 of 7 significant variables from Table 6 remain significant in the subsample analysis. During crisis periods, "duality" (t = 6.10), "CEO ownership" (t = 3.95), "Power Index" (t = 6.70), "Power Index1" (t = 5.10), "Power Index" (t = 3.64) variables are still highly significant. Only the pay slice variable becomes insignificant across models. These results prove that our results are robust in crisis subsamples, where CEOs face exogenous shocks that are not observed during non-recessionary periods (Jenter & Kanaan, 2015).

4.6 Discussion

The literature on this topic has used turnover as a dependent variable. It has been empirically proven that governance mechanisms, type of ownership, firm and CEO characteristics significantly affect CEO turnover. This paper uses tenure as a new alternative to turnover and equips more robust measures of CEO power. The significant positive relationship between the two variables is consistent with the literature (Denis et al., 1997; Dikolli et al., 2013; Goyal & Park, 2002; Kaplan & Minton, 2012). If a CEO holds the chairperson position, consistent with the agency theory, he is likely to influence board decisions. Founders can achieve longer tenure as they build up the company from the ground and build relationships even before the company goes public. Unless the firm faces severe public scrutiny, it is unlikely a founder's "friends" will "turn their back" on him and remove him. Regardless of the class share, high CEO ownership of shares allow more board members to be appointed by the CEO. Consistent with managerial power theory, CEOs can force boards to make inefficient decisions in favor of them (Bebchuk & Fried, 2003). The significance of more robust measures, the power indexes, show that when CEOs have a

combination of the abovementioned power measures, they can more effectively manipulate the board's actions on turnover. However, one of the independent variables, dual class, had an insignificant effect on tenure across all models. One explanation is that CEOs do not always own multiple classes of shares in dual-class firms (Baulkaran, 2014). Another possible explanation is the missing values in my dual-class data. When I analyze the Execucomp data, I assume the firms with missing values for dual-class variable have a single class of stocks. This assumption ignores the fact that some values are truly missing.

Even though public attention and media coverage are likely to focus on short-term board decisions, boards and institutional owners evaluate the performance for multiple years, as the learning curve of CEO skills takes years. Therefore, this paper uses multiple years of underperformance. In the results that are not reported, one year's underperformance has an insignificant effect on tenure in different measures of performance (stock return and ROA). It is highly unlikely that the board will make their replacement decision based on one year's stock return. However, I find that two years of consecutive industry-adjusted stock underperformance significantly negatively affects tenure and moderates the power-tenure relationship. Even though two years are not long enough, short-term pressures on public company CEOs and boards seem to cause more frequent dismissals (Dikolli et al., 2013; Goyal & Park, 2002)

The excess turnover can be explained by increasing regulations in financial markets from 1998 to 2017. The passage of SOX and the 2010 Dodd-Frank act increased scrutiny of CEO competence (Wang et al., 2010; Wang et al., 2014). The data also show high board independence across the period, which explains the frequent firings. For example, a founder CEO is less likely to golf with an outsider director than an insider director; therefore, he is evaluated by outsiders with less bias (Finkelstein, 1992; Kaplan & Minton, 2012). The relationship between power and excess turnover

is similar to the power-tenure relationship. Powerful CEOs exert influence that delays the decision on CEO removal leading to fewer dismissals within five years.

The focus of the extant literature has primarily been CEO turnover as a dependent variable instead of tenure. For power-turnover relationship regressions, the literature aggregates the CEO power at firm-year since total turnover is measured at firm-year (Denis et al., 1997; Dikolli et al., 2013; Han et al., 2016). This approach fails to draw a clear picture of how an individual CEO's power would affect their own tenure. In this paper, the significant power-tenure relationship, however, has more straightforward practical implications at an individual level. Similarly, news articles define excess churn as a significant increase in turnover. In the power-excess churn relationship, cross-sectional aggregation of CEO power would ignore the industry effects and possibly weigh the heavily entrenched industries more in the calculation of the power (Chuck & Jan, 2007; Khurana, 2004). In this study, using the new definition (5-year aggregation), I find a significant negative relationship between a firm's average power and its excess turnover. This method also allows observing CEO power's effect on an individual firm's excess churn.

Tenure, by itself, is considered a measure of power based on Finkelstein's (1992) model. Multiple studies use tenure as a proxy for CEO power (Allgood & Farrell, 2000; Baulkaran, 2014; Lewellyn & Muller-Kahle, 2012). However, this study focuses on CEO power as a mechanism CEOs exploit to remain in position. The first part of this study (H2) examines whether the CEOs take advantage of their power during underperformance to avoid turnover. Therefore, I expect the power proxies to have a negative connotation. However, as reported in the subsample analysis in Tables A1 and A2, the correlation between tenure and power is significantly positive regardless of performance. Thus, I do not consider tenure as a robust proxy for CEO power in this paper.

4.7 Limitations and Future Research

One of the limitations is the survivorship bias. There is no data on CEO tenure for the companies that get delisted. CEO removal is more likely in the delisted companies, so not including those firms in the analysis can make the data biased toward longer tenure.

The second limitation is the determination of forced/ voluntary turnover. Due to the limited resources, I only remove CEOs likely to retire and interim CEOs from the data. However, the literature advises checking news/ reports manually to identify forced turnovers.

My data only consists of public companies under constant scrutiny by shareholder activism, media, and quarterly financial reports (Huson et al., 2001). CEOs in private companies get less pressure and can focus on long-term strategies, avoiding the detrimental effects of short-terminism. Therefore, they are less likely to be forced out after two years of underperformance. It is hard to get access to private data.

The final limitation is using power proxies instead of direct power measures. The variables I use only proxy for CEO power, meaning a CEO with none of these characteristics can still be powerful and vice versa.

For future research, doing a similar study only for involuntarily dismissed CEOs could have better practical implications. If a company has multiple CEOs, who left the company for personal reasons, my study includes those CEOs in the excessive turnover calculation. However, by definition, excess turnover is frequent early dismissals of CEOs due to failure to meet boards' expectations. Therefore, understanding the moderating effect of CEO power on underperformance –forced turnover would help boards and shareholder activists to take appropriate measures.

CHAPTER 5: CONCLUSION

This paper examines the effects of CEO power on CEO tenure and excess CEO turnover in a sample of small, medium, and large US companies (S&P 1500) from 1998 to 2017. The CEO tenure has a steady and gradual increase from average of 8 years to 9 years starting from the dot-com bubble. I aim to identify the determinants of tenure in this period. Allowing underperforming CEOs to remain in the position can harm shareholders. Therefore, I determine why the underperforming firms fail to discipline their CEOs. Additionally, this study addresses the growing concern about excessive CEO replacements and how CEOs avoid pre-mature disciplinary actions against them.

While I do not find evidence on dual class – tenure relationship, my evidence suggests that founder, chairperson, large stockholder, and highly compensated CEOs have significantly longer tenure than their counterparts. The Power Indexes from linear combination of these proxies and indexes built from Principal Component Analysis show similar significant effect (Han et al., 2016).

Consistent with Dikolli et al.'s (2013) findings, I find that an underperforming CEO can have longer tenure at increasing levels of CEO power. Non-powerful CEOs frequently take the blame for underperformance while the entrenched CEOs keep their position at significantly higher rate regardless of stock underperformance.

My study also provides empirical evidence on excess churn and identifies the underlying reasons. Although discussed in articles without enough empirical evidence, the literature has not identified excess turnover as a variable before. Excessive CEO turnover in the US happens at around 1.6% of the companies. Using logit models, I find a significant negative relationship between excess turnover and power, meaning that in companies with powerful CEOs excess churn is significantly less likely.

The results for power – tenure and power – excess churn naturally have coefficients with opposite signs, as tenure explains the longevity of CEOs. In contrast, excess turnover is one of the direct reasons for short average tenure for a given period.

To solve for endogeneity issue, I use 2-step SYS-GMM consistent with Roodman (2009). After accounting for omitted variables and causality, my results remain significant. I also do a robustness check by using subsamples of crisis periods. The relationship between CEO power and tenure is still significant during crisis periods.

This study has several implications. Firstly, the significant effect of duality on underperformance- tenure relationship suggests that boards should avoid having CEOs as the chairperson of the board unless it is necessary for the firm's survival. Additionally, the significant positive effect of CEO power on tenure after two years of stock underperformance implies that boards should avoid enabling multiple power variables that would lead CEOs to gain power. For example, if a CEO is rewarded with high compensation, the compensation should not be in stock options but in cash. CEOs who are founders will easily cover up their underperformance if they simultaneously have higher ownership, high compensation, etc. Finally, the logit models suggest that CEOs who lack power are usually scapegoated in crisis periods since the excess churn happens mostly due to the turnover of non-powerful CEOs. Boards should not rush into making decisions about such CEOs and allow them to prove themselves over time. The powerful CEOs with a Power Index of 2 or higher should be closely monitored by the activist shareholders and disciplined more frequently by boards.

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TABLES AND FIGURES

Table 1. Variable definitions

This table describes all the variables used in the main regression. All independent and control variables are contemporaneous. Dependent variables are defined at (t+1), and the moderator – underperformance is a dummy variable determined at t and t-1. Note that the variables used for excess turnover regression involve 5-year averages (last period being t) of all explanatory and control variables since 5-year period (last period being t+1) are used to define excess turnover.

Variables	Definitions
	Dependent variables
Tenure (t+1)	Fiscal year-end - CEO's appointment day
Excess turnover (t+1)	Dummy variable that turns one if there are more than 2 CEO dismissals within 5 years
	Independent variables
Founder	Dummy variable that turns one if the annual report indicates the CEO as the founder
Duality	Dummy variable that turns one if CEO is also the chairperson
Dual class	Dummy variable that turns one if the company has more than one class of shares
Pay slice	$\frac{\text{CEO compensation}}{\text{Total top five executive compensation}}$
CEO ownership	$\frac{\text{CEO shareholdings}}{\text{Total shares outstanding}}$
Power Index	Founder + Duality + Dual class+ Pay slice dummy (1 if over median value)+ CEO ownership dummy (1 if over median value)
Power Index1	The predicted score of the component based on "founder" and "CEO ownership" from Principal Component Analysis
Power Index2	The predicted score of the component based on "duality", "dual class", "pay slice" from Principal Component Analysis
	Control variables – CEO characteristics
Age	CEO age as of year
Male	Dummy variable that turns 1 if CEO is male

Outside hire	Dummy variable that turns 1 if the CEO joins company less one year prior to their appointment date

Control variables – Board characteristics	
Board independence	$\frac{\sum \text{Outside director dummy}}{\text{Total number of directors}}$
Board size	Total number of directors
Board ownership	$\text{Total shares owned by board members}_t - \text{CEO's stockholdings}_t$
Board age	$\frac{\sum_{i=1}^{n} \text{Director age}}{\text{Total number of directors}}$

Control variables – Firm and industry characteristics	
ROA	$\frac{\text{Net Income}_t}{\text{Total Assets}_t}$
Firm age	$\text{Fiscal year}_t - \text{Firm's foundation year}$
Market to Book	$\frac{\text{Stock price}_t}{\text{Book value per share}_t}$
Size	Total assets_t
Leverage	$\frac{\text{Total liabilities}_t}{\text{Total assets}_t}$
Volatility	$\sqrt{12} * \sum_{i=1}^{n} \sigma_{\text{monthly return}}$
Herfindahl-Hirschman Index (HHI)	$\sum \left(\frac{\text{Firm sales}}{\text{Industry Sales}}\right)^2$

Moderators	
Underperformance	Dummy variable that turns 1 if the stock returns of a company are less than median industry return for 2 consecutive years, t and (t-1)

Table 2: Summary Statistics of CEO, Board, and Firm characteristics in 1998-2017 period

The table presents summary statistics for dependent variables – tenure and excess turnover; independent variables – CEO power proxies; control variables – CEO, board, firm, and industry characteristics. All the continuous variables are winsorized at 1% and 99%.

	N	mean	Sd	Min	Max
Panel A: Dependent variables					
Tenure	13,515	8.176	6.544	0.405	36.02
Excess churn	13,515	0.016	0.127	0	1
Panel B: CEO power					
Founder	13,515	0.060	0.236	0	1
Duality	13,515	0.553	0.497	0	1
Dual class	13,515	0.052	0.221	0	1
Pay slice	13,515	0.399	0.095	0.102	0.709
CEO ownership	13,515	0.022	0.042	0	0.345
Power Index	13,515	1.668	1.017	0	5
Power Index1	13,515	4.91e-10	1.189	-1.441	7.755
Power Index2	13,515	-1.51e-10	1.055	-5.210	2.757
Panel C: other CEO characteristics					
Age	13,515	55.80	6.294	40	76
Male	13,515	0.971	0.167	0	1
Outside hire	13,515	0.138	0.345	0	1
Panel D: Board characteristics					
Board independence	13,515	0.830	0.088	0.500	0.933
Board size	13,515	9.444	2.266	5	17
Board ownership	13,515	0.037	0.068	0.000	0.452
Board age	13,515	61.36	3.735	50.29	71.14
Panel E: Firm and industry characteristics					
ROA	13,515	0.048	0.061	-0.285	0.250
Firm age	13,515	34.99	21.77	2	111
Market to Book	13,515	2.934	2.486	-0.637	23.36
Size	13,515	10.20	24.61	0.125	276.55
Leverage	13,515	0.553	0.206	0.092	1.009
Volatility	13,515	0.347	0.176	0.101	1.143
Herfindahl-Hirschman Index (HHI)	13,515	0.018	0.014	0.003	0.087

Table 3: Correlation Matrix

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.
1.	1.00																						
2.	0.38***	1.00																					
3.	0.26***	0.12***	1.00																				
4.	0.01	0.02*	-0.05***	1.00																			
5.	0.02**	-0.05***	0.08***	-0.03***	1.00																		
6	0.42***	0.30***	0.16***	0.07***	-0.10***	1.00																	
7	0.44***	0.38***	0.63***	0.18***	0.40***	0.35***	1.00																
8.	0.51***	0.73***	0.47***	0.12***	-0.20***	0.78***	0.55***	1.00															
9.	0.11***	-0.01	0.59***	-0.53***	0.69***	-0.09***	0.47***	0.00	1.00														
10.	0.31***	0.06***	0.27***	-0.00	0.03***	0.12***	0.23***	0.18***	0.15***	1.00													
11.	0.04***	0.04***	0.03**	-0.01	-0.02**	-0.00	0.04***	0.03***	0.00	0.04***	1.00												
12.	0.15***	0.19***	0.05***	-0.06***	-0.00	0.07***	0.09***	0.15***	0.05***	0.01	0.05***	1.00											
13.	-0.15***	-0.11***	0.05***	-0.11***	0.22***	-0.28***	-0.03***	-0.23***	0.24***	-0.01	-0.03***	-0.04***	1.00										
14.	-0.12***	-0.16***	0.09***	0.03**	-0.01	-0.19***	-0.14***	-0.15***	0.04***	0.08***	0.01	-0.12***	0.23***	1.00									
15.	-0.00	0.01	-0.13***	0.14***	-0.14***	0.19***	-0.04***	0.10***	-0.24***	-0.06***	0.01	-0.00	-0.31***	0.03***	1.00								
16.	0.12***	-0.05***	0.01	0.01	0.06***	-0.05***	-0.00	-0.06***	0.04***	0.36***	-0.00	-0.11***	0.15***	0.11***	-0.02*	1.00							
17.	0.03**	0.00	0.01	0.04***	0.05***	0.05***	0.04***	0.03***	0.01	0.01	-0.03**	-0.03***	-0.08***	-0.06***	0.04***	-0.04***	1.00						
18.	-0.08***	-0.16***	0.06***	0.00	0.05***	-0.06***	-0.07***	-0.11***	0.07***	0.10***	-0.04***	-0.09***	0.12***	0.21***	-0.01	0.12***	0.04***	1.00					
19.	-0.01	0.02	-0.02	0.04***	0.04***	-0.03***	0.01	-0.01	0.00	-0.04***	-0.02**	-0.03***	-0.01	-0.01	-0.02*	-0.08***	0.38***	0.01	1.00				
20.	-0.11***	-0.14***	0.15***	0.06***	0.09***	-0.19***	-0.07***	-0.06***	0.06***	0.10***	0.00	-0.14***	0.18***	0.47***	-0.13***	0.13***	0.10***	0.31***	0.10***	1.00			
21.	-0.07***	-0.15***	0.10***	-0.00	0.05***	-0.17***	-0.05***	-0.15***	0.10***	0.08***	-0.01	-0.08***	0.20***	0.41***	-0.07***	0.10***	-0.31***	0.13***	0.03**	0.31***	1.00		
22.	0.01	0.07***	-0.02**	-0.02**	-0.09***	0.08***	0.02**	0.08***	-0.06***	-0.10***	0.03***	0.13***	-0.15***	-0.22***	0.05***	-0.20***	-0.15***	-0.12***	-0.04***	-0.22***	-0.16***	1.00	
23.	0.02*	-0.01	0.01	0.03***	-0.02*	0.05***	0.02*	0.02**	-0.02*	0.06***	0.00	-0.06***	0.01	0.01	0.03**	0.04***	0.06***	0.05***	-0.00	0.12***	0.01	0.01	1.00

1.Tenure	7. Power Index	13.Board independence	19. Market to Book
2. Founder	8. Power Index1	14.Board size	20. Size
3. Duality	9. Power Index2	15.Board ownership	21. Leverage
4. Dual class	10. Age	16.Board age	22. Volatility
5. Pay slice	11. Male	17.ROA	23. HHI
6.CEO ownership	12. Outside hire	18. Firm age	

Table 4. Principal Component analysis.

Panel A shows the correlation among CEO power proxies used to predict the scores of components. Panel B reports all the possible components with their eigen values and respective proportions. Panel C indicates the components with respective loadings. Panel D summarizes the two components—"Power Index1" and "Power Index."

A. Correlation matrix	Founder	duality	Dual-class	Pay slice	CEO ownership
Founder	1				
Duality	0.12***	1			
Dual class	0.02*	-0.05***	1		
Pay slice	-0.05***	0.08***	-0.04***	1	
CEO ownership	0.30***	0.16***	0.06***	-0.10***	1

B. All components	Eigenvalue	Difference	Proportion	Cumulative
Comp1	1.41	0.30	0.28	0.28
Comp2	1.11	0.14	0.22	0.50
Comp3	0.97	0.14	0.19	0.70
Comp4	0.82	0.14	0.16	0.86
Comp5	0.68	.	0.14	1

C. Power Index loadings	Founder	Duality	Dual-class	Pay slice	CEO ownership
Comp1 (Power_Index1)	0.62	0.39	0.10	-0.17	0.66
Comp2 (Power_Index2)	-0.01	0.56	-0.50	0.65	-0.08
Unexplained	0.46	0.43	0.71	0.49	0.38

D. Summary stats for components	Obs	Mean	Std.	Min	Max
Comp1 (Power_Index1)	13,515	4.91E-10	1.19	-1.44	7.76
Comp2 (Power_Index2)	13,515	-1.51E-10	1.05	-5.21	2.76

Table 5. Hausman test

The table reports the results of the Hausman test to determine whether the random effects or fixed effects model is necessary for the main regression reported in Table 6. The null hypothesis is to use the random effects model. If "Prob > chi" is higher than 0.05, we fail to reject $H_{0;}$ otherwise, H_1 is supported; therefore, we use fixed effects. For simplicity, the results for control variables are not reported.

Variables	fe	re	difference	S.E	Prob > chi
Founder	5.95	6.91	-0.96	0.16	0.00
Duality	2.01	2.07	-0.07	0.04	0.00
Dual class	-0.61	-0.05	-0.66	-0.52	0.00
Pay slice	3.51	3.43	0.08	0.12	0.00
CEO ownership	34.80	41.97	-7.17	0.88	0.00
Power Index	1.45	1.61	-0.16	0.02	0.00
Power Index1	1.66	1.88	-0.22	0.03	0.00
Power Index2	0.80	0.75	0.05	0.02	0.00

Table 6: Impact of CEO Power on Tenure

The panel regression indicates the relationship between CEO power variables— "founder," "duality," "dual class," "pay slice," "CEO ownership," "Power Index," "Power Index1", "Power index2," and the dependent variable, tenure. All variables are winsorized at 1% and 99%. The panel regression includes firm fixed effects and robust standard errors adjusted for firm-level clustering. The robust t-statistics are in parantheses. ***p<0.01, ** p<0.05, * p<0.1

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Founder	5.49***							
	(5.28)							
Duality		1.98***						
		(8.87)						
Dual class			-0.60					
			(-0.60)					
Pay slice				3.28***				
				(5.03)				
CEO ownership					34.20***			
					(6.28)			
Power Index						1.41***		
						(15.37)		
Power Index1							1.67***	
							(8.51)	
Power Index2								0.80***
								(8.77)
Age	0.40***	0.38***	0.43***	0.43***	0.39***	0.35***	0.35***	0.41***
	(17.91)	(18.88)	(20.92)	(20.92)	(17.78)	(17.16)	(16.18)	(20.64)
Male	0.96	0.89*	0.88	0.91	0.85	0.93*	0.77	0.73
	(1.55)	(1.67)	(1.58)	(1.64)	(1.63)	(1.89)	(1.60)	(1.43)
Outside hire	2.14***	2.34***	2.60***	2.57***	2.48***	2.21***	1.90***	2.34***
	(4.93)	(4.79)	(5.12)	(5.03)	(5.30)	(4.91)	(4.29)	(4.50)
Board independence	-0.04	-0.88	-0.11	-0.66	0.10	-1.95	-0.03	-1.42
	(-0.03)	(-0.63)	(-0.07)	(-0.46)	(0.07)	(-1.40)	(-0.02)	(-0.98)
Board size	-0.14**	-0.12**	-0.14**	-0.13**	-0.13**	-0.09	-0.11**	-0.12**
	(-2.14)	(-2.17)	(-2.48)	(-2.33)	(-2.42)	(-1.62)	(-2.17)	(-2.16)
Board ownership	-3.20*	-3.06	-3.71*	-3.74*	-1.95	-2.96	-1.86	-3.53*
	(-1.77)	(-1.56)	(-1.84)	(-1.86)	(-1.13)	(-1.58)	(-1.13)	(-1.79)
Board age	0.05	0.06	0.05	0.05	0.06	0.06*	0.06*	0.05
	(1.48)	(1.61)	(1.21)	(1.29)	(1.51)	(1.75)	(1.76)	(1.37)
ROA	3.97***	3.74***	3.92***	3.59***	3.57***	2.92***	3.97***	2.97***
	(4.03)	(3.31)	(3.41)	(3.16)	(3.13)	(2.75)	(3.87)	(2.76)
Firm age	-0.01	0.01	-0.02	-0.03	0.00	0.01	0.03	-0.03
	(-0.46)	(0.31)	(-0.84)	(-1.12)	(0.10)	(0.45)	(1.25)	(-1.47)
Market to Book	0.01	0.02	0.02	0.01	0.02	0.01	0.03	0.02
	(0.43)	(0.67)	(0.49)	(0.33)	(0.59)	(0.41)	(0.82)	(0.64)
Size	-0.00	-0.06	-0.00	0.00	0.25	0.13	0.00	0.00
	(-0.02)	(-0.30)	(-0.02)	(0.02)	(1.17)	(0.63)	(0.06)	(0.27)
Leverage	0.48	0.47	0.49	0.49	0.12	0.24	0.06	0.24
	(0.54)	(0.65)	(0.65)	(0.66)	(0.16)	(0.35)	(0.09)	(0.33)
Volatility	-0.37	-0.21	-0.26	-0.22	-0.06	-0.01	-0.18	-0.12
	(-1.39)	(-0.72)	(-0.86)	(-0.73)	(-0.22)	(-0.03)	(-0.61)	(-0.39)
HHI	61.74***	53.51***	58.58***	58.65***	49.17***	56.78***	50.40***	54.73***
	(4.98)	(4.16)	(4.64)	(4.66)	(3.86)	(4.72)	(3.96)	(4.30)
Constant	-18.34***	-17.83***	-18.80***	-19.74***	-20.51***	-16.98***	-16.50***	-16.27***
	(-8.11)	(-7.47)	(-7.63)	(-8.03)	(-8.92)	(-7.95)	(-8.05)	(-7.05)
Observations	13,515	13,515	13,515	13,515	13,515	13,515	13,515	13,515
R-squared	0.28	0.28	0.26	0.27	0.29	0.31	0.31	0.27
Number of firms	1,945	1,945	1,945	1,945	1,945	1,945	1,945	1,945
Firm fixed effect	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.281	0.282	0.261	0.264	0.286	0.312	0.304	0.270

Table 7: Moderating effect of CEO power on performance and tenure relationship

This panel regression examines the moderating effect of underperformance on the relationship between CEO power and CEO tenure. *Underperformance* is a dummy variable that turns one if a company stock underperformed the industry median for two consecutive years. All the variables (including controls) are winsorized at 1% and 99%. Independent variables are the same CEO power proxies (founder, duality, pay slice, dual class, CEO ownership, Power Indexes) used in Table 5 and their respective interactions with the underperformance dummy. The dependent variable tenure is measured at the time (t+1). All other variables are contemporaneous at t. The coefficients for interaction terms represent the moderating effect of underperformance on the power-tenure relationship. Robust t-statistics are in parentheses. ***p<0.01, ** p<0.05, * p<0.1. The panel regression includes firm and year-fixed effects.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Underperformance	-0.25***	-0.47***	-0.22***	-0.78**	-0.28***	-0.57***	-0.16**	-0.13*
	(-3.22)	(-3.77)	(-2.96)	(-2.05)	(-3.62)	(-2.85)	(-2.00)	(-1.74)
Founder	5.43***							
	(5.20)							
Founder*Underperformance	0.55							
	(1.26)							
Duality		1.89***						
		(7.88)						
Duality*Underperformance		0.44**						
		(2.53)						
Dual class			-0.56					
			(-0.68)					
Dual class*Underperformance			-0.43					
			(-0.96)					
Pay slice				3.08***				
				(3.89)				
Pay slice* Underperformance				1.41				
				(1.49)				
CEO ownership					33.74***			
					(5.88)			
CEO ownership* Underperformance					2.03			
					(0.55)			
Power Index						1.37***		
						(16.03)		
Power Index*Underperformance						0.26**		
						(2.25)		
Power Index1							1.77***	
							(7.55)	
Power Index1 * Underperformance							0.22**	
							(2.02)	
Power Index2								0.79***
								(5.67)
Power Index2 * Underperformance								0.31***
								(2.89)
Age	0.40***	0.38***	0.43***	0.43***	0.39***	0.35***	0.34***	0.40***
	(17.76)	(19.43)	(20.11)	(20.09)	(17.83)	(16.26)	(14.99)	(19.46)
Male	0.92	0.84	0.83	0.87	0.79	0.89	0.75	0.66
	(1.50)	(1.43)	(1.32)	(1.38)	(1.45)	(1.64)	(1.40)	(1.07)
Outside hire	2.11***	2.31***	2.56***	2.53***	2.43***	2.18***	1.68***	2.12***
	(4.85)	(5.11)	(5.56)	(5.46)	(5.93)	(5.48)	(3.78)	(4.40)
Board independence	-0.25	-1.09	-0.32	-0.91	-0.20	-2.17*	0.22	-1.69
	(-0.19)	(-0.88)	(-0.25)	(-0.70)	(-0.16)	(-1.79)	(0.19)	(-1.40)
Board size	-0.14**	-0.11*	-0.14**	-0.13*	-0.12*	-0.08	-0.09*	-0.10*
	(-2.07)	(-1.86)	(-2.03)	(-1.92)	(-1.90)	(-1.39)	(-1.75)	(-1.68)
Board ownership	-3.17*	-3.07	-3.73*	-3.77*	-1.97	-2.93	-2.24	-3.45*
	(-1.74)	(-1.64)	(-1.94)	(-1.96)	(-1.05)	(-1.63)	(-1.35)	(-1.82)
Board age	0.06*	0.07*	0.06	0.06*	0.06*	0.07*	0.06*	0.07*
	(1.69)	(1.94)	(1.58)	(1.70)	(1.71)	(1.91)	(1.97)	(1.86)
Firm age	0.03	0.05**	0.02	0.01	0.05*	0.05**	3.73***	2.87***
	(1.08)	(2.09)	(0.84)	(0.60)	(1.90)	(2.06)	(3.92)	(2.76)
Market to Book	0.03	0.05*	0.04	0.03	0.04*	0.03	0.07***	0.01

	(1.21)	(1.95)	(1.52)	(1.18)	(1.81)	(1.30)	(3.19)	(0.55)
Size	0.07	0.00	0.05	0.05	0.28	0.16	0.04	0.02
	(0.30)	(0.01)	(0.21)	(0.21)	(1.10)	(0.78)	(1.44)	(0.92)
Leverage	-0.11	-0.05	-0.10	-0.06	-0.37	-0.18	0.00	0.00
	(-0.14)	(-0.07)	(-0.12)	(-0.07)	(-0.48)	(-0.26)	(0.43)	(0.15)
Volatility	-0.15	-0.03	-0.04	0.00	0.11	0.10	0.24	0.49
	(-0.53)	(-0.12)	(-0.15)	(0.00)	(0.36)	(0.41)	(0.30)	(0.57)
HHI	57.78***	49.49***	54.45***	54.25***	44.70***	53.09***	-0.03	0.23
	(4.21)	(3.44)	(3.84)	(3.86)	(2.98)	(4.08)	(-0.12)	(0.89)
Constant	-20.07***	-19.70***	-20.74***	-21.62***	-22.28***	-19.77***	47.00***	53.03***
	(-9.52)	(-8.75)	(-9.08)	(-9.58)	(-9.66)	(-9.08)	(3.31)	(4.22)
Observations	13,515	13,515	13,515	13,515	13,515	13,515	13,515	13,515
R-squared	0.28	0.28	0.26	0.26	0.28	0.31	0.29	0.27
Number of firms	1,945	1,945	1,945	1,945	1,945	1,945	1,945	1,945
Firm fixed effect	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.278	0.280	0.258	0.261	0.283	0.311	0.290	0.268

Table 8: Excess churn logit panel regression

This logit regression on Panel A estimates the probability of turnover (excess churn) during the 1998-2017 period. Independent and control variables are averages at a 5-year period. The dependent variable is a dummy variable that turns 1 if there are more than 2 CEO dismissals. Interim CEOs are excluded from the calculation of excess churn as their positions are mostly intended to be temporary. Panel B reports the marginal effects of explanatory variables on tenur**e.** Robust t-statistics are in parantheses. ***p<0.01, ** p<0.05, * p<0.1

Panel A. Logit regression	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Founder (5-year avg)	-2.43***							
	(-3.643)							
Duality (5-year avg)		-1.10***						
		(-4.738)						
Dual class (5-year avg)			0.36					
			(0.725)					
Pay slice (5-year avg)				-3.97***				
				(-2.951)				
CEO ownership (5-year avg)					-27.99*			
					(-1.849)			
Power Index (5-year avg)						-1.07***		
						(-8.874)		
Power Index1 (5- year avg)							-0.79***	
							(-4.481)	
Power Index2 (5-year avg)								-0.51***
								(-4.443)
Age	0.02	0.04*	0.01	0.01	0.03*	0.05***	0.04**	0.03
	(0.840)	(1.942)	(0.732)	(0.775)	(1.657)	(2.706)	(1.990)	(1.382)
Male	0.28	0.27	0.25	0.17	0.30	0.28	0.34	0.22
	(0.463)	(0.435)	(0.409)	(0.282)	(0.509)	(0.436)	(0.552)	(0.350)
Outside hire	0.10	0.11	-0.02	0.01	-0.01	0.18	0.14	0.11
	(0.346)	(0.368)	(-0.067)	(0.020)	(-0.020)	(0.571)	(0.459)	(0.350)
Board independence	2.80**	3.06**	3.18**	3.97***	1.96	3.16**	1.87	4.26***
	(2.182)	(2.439)	(2.506)	(2.946)	(1.464)	(2.401)	(1.447)	(3.166)
Board size	0.10*	0.12**	0.11**	0.10*	0.06	0.05	0.09*	0.10*
	(1.829)	(2.216)	(2.026)	(1.824)	(1.033)	(0.997)	(1.674)	(1.900)
Board ownership	-0.68	-1.31	-0.76	-0.88	0.23	-0.86	-0.46	-1.62
	(-0.447)	(-0.813)	(-0.497)	(-0.569)	(0.148)	(-0.527)	(-0.298)	(-0.975)
Board age	-0.06*	-0.07***	-0.06**	-0.05*	-0.07**	-0.08***	-0.07***	-0.06**
	(-1.949)	(-2.699)	(-1.977)	(-1.836)	(-2.400)	(-2.754)	(-2.590)	(-2.313)
ROA	-5.24**	-4.38*	-5.12**	-4.94**	-4.68**	-4.00*	-4.56**	-4.63*
	(-2.244)	(-1.894)	(-2.173)	(-2.054)	(-2.064)	(-1.726)	(-2.024)	(-1.943)
Firm age	-0.00	0.00	0.00	0.00	-0.00	-0.00	-0.00	0.00
	(-0.218)	(0.312)	(0.158)	(0.279)	(-0.151)	(-0.116)	(-0.186)	(0.348)
Market to Book	0.03	0.02	0.03	0.03	0.02	0.02	0.02	0.03
	(0.662)	(0.367)	(0.519)	(0.643)	(0.391)	(0.497)	(0.396)	(0.491)
Size	-0.00	0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(-0.074)	(0.089)	(-0.141)	(-0.318)	(-0.332)	(-0.442)	(-0.014)	(-0.164)
Leverage	-1.07	-0.77	-0.92	-0.82	-0.98	-0.77	-0.97	-0.78
	(-1.637)	(-1.212)	(-1.434)	(-1.268)	(-1.496)	(-1.213)	(-1.503)	(-1.209)
Volatility	1.59**	1.70**	1.67**	1.56**	1.70**	1.68**	1.67**	1.68**
	(2.288)	(2.469)	(2.406)	(2.246)	(2.465)	(2.366)	(2.434)	(2.419)
HHI	-2.39	-3.64	-2.92	-3.27	-2.18	-3.17	-2.23	-4.18
	(-0.285)	(-0.428)	(-0.343)	(-0.383)	(-0.264)	(-0.376)	(-0.268)	(-0.485)
Constant	-6.46***	-6.46***	-6.64***	-6.24***	-5.22***	-5.80 ***	-6.03***	-8.13***
	(-2.86)	(-2.86)	(-2.96)	(-2.80)	(-2.30)	(-2.47)	(-2.67)	(-3.49)
Observations	13,515	13,515	13,515	13,515	13,515	13,515	13,515	13,515
Number of firms	1,945	1,945	1,945	1,945	1,945	1,945	1,945	1,945

Panel B. Marginal Effects	dy/dx	Delta Std. Error	P>|z|	z
Founder	-0.037***	0.011	0.00	-3.47
Duality	-0.017***	0.004	0.00	-4.43
Dual Class	0.005	0.008	0.47	0.72
Pay slice	-0.060***	0.021	0.00	-2.89
CEO ownership	-0.423*	0.226	0.06	-1.87
Power Index	-0.016***	0.002	0.00	-7.37
Power Index1	-0.012***	0.003	0.00	-4.32
Power Index2	-0.008***	0.002	0.00	-4.21

Table 9: 2 step SYS-GMM

This table reports the results from the two-step system-GMM. The dependent variables are CEO power proxies. The "Nominating" variable is used as an instrument. The CEO power proxies are "founder," "duality," "pay slice," "dual class," "CEO ownership," "Power index," and the components of "Power Index1," "Power Index2". All models are panel regressions with fixed year and firm effects. The continuous variables are winsorized at 1% and 99%. Robust t-statistics are in parentheses. ***p<0.01, ** p<0.05, * p<0.1

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
L.tenure	0.88***	0.86***	0.88***	0.89***	0.83***	0.88***	0.85***	0.88***
	(32.00)	(32.05)	(31.25)	(35.53)	(22.55)	(35.43)	(24.85)	(35.39)
L2.tenure	-0.05**	-0.03	-0.06**	-0.03	-0.06**	-0.03	-0.05*	-0.04
	(-2.23)	(-1.36)	(-2.28)	(-1.45)	(-2.61)	(-1.33)	(-2.12)	(-1.56)
Founder	1.38							
	(0.79)							
Duality		1.04**						
		(2.31)						
Dual class			-0.32					
			(-0.11)					
Pay slice				3.35**				
				(2.47)				
CEO ownership					24.71*			
					(1.91)			
Power Index						0.22***		
						(2.64)		
Power Index1							0.57*	
							(1.65)	
Power Index2								0.31**
								(2.37)
Age	0.04	0.01	0.04	0.02	0.03	0.02	0.03	0.02
	(1.50)	(0.39)	(1.56)	(0.85)	(1.21)	(0.65)	(1.07)	(0.78)
Outsider	0.05	-0.01	0.05	-0.07	0.24	0.06	0.11	-0.09
	(0.13)	(-0.03)	(0.12)	(-0.18)	(0.64)	(0.17)	(0.27)	(-0.22)
Outsider proportion	5.14***	4.79***	5.24***	4.72***	4.93***	4.97***	4.98***	4.75***
	(3.32)	(3.10)	(3.40)	(3.12)	(3.11)	(3.29)	(3.17)	(3.12)
Board ownership	3.13**	3.76***	3.33**	3.72***	1.98	3.38***	2.68	3.82***
	(2.34)	(2.82)	(2.45)	(2.89)	(1.20)	(2.67)	(1.88)	(2.94)
Board age	0.11**	0.14***	0.13***	0.13***	0.11**	0.13***	0.11**	0.13***
	(2.43)	(3.18)	(2.79)	(3.07)	(2.34)	(3.07)	(2.43)	(3.07)
Board size	-0.08	-0.09	-0.08	-0.09	-0.07	-0.09	-0.08	-0.10
	(-1.37)	(-1.55)	(-1.33)	(-1.60)	(-1.09)	(-1.56)	(-1.32)	(-1.60)
Size	-0.00	-0.00	-0.00	0.00	0.00	0.00	0.00	-0.00
	(-0.16)	(-0.62)	(-0.47)	(0.13)	(0.70)	(0.28)	(0.10)	(-0.27)
HHI	23.98***	23.60***	24.98***	22.39**	21.80**	24.37**	23.22***	23.52***
	(2.76)	(2.62)	(2.67)	(2.56)	(2.34)	(2.78)	(2.64)	(2.66)
Constant	21.88	-4.47	19.44	38.88	-28.93	24.15	-11.29	23.57
	(0.77)	(-0.15)	(0.62)	(1.37)	(-0.73)	(0.88)	(-0.32)	(0.85)
Observations	8,021	8,021	8,021	8,021	8,021	8,021	8,021	8,021
Number of cusipsix	1,348	1,348	1,348	1,348	1,348	1,348	1,348	1,348
cusipsix FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Table 10: Subsample analysis. Impact of CEO Power on Tenure - Crisis periods

This panel regression shows the relationship between tenure and CEO power during crisis periods (2001-2003, 2007-2009). Robust t-statistics are in parantheses. *** p<0.01, ** p<0.05, * p<0.1

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Founder	5.24**							
	(2.60)							
Duality		1.95***						
		(6.10)						
Dual class			-1.40					
			(-1.18)					
Pay slice				1.38				
				(1.22)				
CEO ownership					30.84***			
					(3.95)			
Power Index						1.15***		
						(6.70)		
Power Index1							1.63***	
							(5.10)	
Power Index2								0.59***
								(3.64)
Age	0.33***	0.30***	0.35***	0.35***	0.32***	0.29***	0.27***	0.34***
	(8.69)	(7.67)	(8.81)	(8.76)	(8.07)	(6.77)	(7.69)	(7.99)
Male	2.15**	2.22**	2.12**	2.10**	2.18**	1.97**	1.99**	1.79**
	(2.27)	(2.39)	(2.17)	(2.18)	(2.30)	(2.25)	(2.50)	(2.13)
Outside hire	1.89**	2.22**	2.46**	2.45**	2.45**	2.08**	1.78*	2.34**
	(2.08)	(2.29)	(2.39)	(2.40)	(2.49)	(2.34)	(1.87)	(2.14)
Board independence	1.22	0.93	1.57	1.39	1.04	0.59	0.90	1.31
	(0.68)	(0.53)	(0.84)	(0.75)	(0.55)	(0.35)	(0.49)	(0.73)
Board size	-0.11	-0.08	-0.11	-0.11	-0.10	-0.08	-0.09	-0.11
	(-1.21)	(-0.84)	(-1.15)	(-1.14)	(-0.99)	(-0.87)	(-0.96)	(-1.23)
Board ownership	-2.21	-2.10	-2.61	-2.60	-2.84	-2.35	-2.36	-2.46
	(-1.34)	(-1.27)	(-1.54)	(-1.56)	(-1.51)	(-1.40)	(-1.36)	(-1.52)
Board age	0.06	0.06	0.05	0.05	0.03	0.06	0.06	0.06
	(0.70)	(0.74)	(0.52)	(0.55)	(0.41)	(0.79)	(0.73)	(0.66)
ROA	2.39	1.98	2.36	2.30	2.64	1.50	2.61*	1.79
	(1.47)	(1.15)	(1.37)	(1.33)	(1.58)	(0.90)	(1.77)	(1.12)
Firm age	0.13**	0.14***	0.13**	0.12**	0.16***	0.12**	0.17***	0.12**
	(2.61)	(3.02)	(2.52)	(2.50)	(3.05)	(2.64)	(3.76)	(2.59)
Market to Book	0.09	0.09	0.10	0.10	0.09	0.08	0.09	0.10
	(1.31)	(1.32)	(1.54)	(1.45)	(1.43)	(1.24)	(1.21)	(1.53)
Size	0.16	-0.00	0.12	0.15	0.28	0.20	-0.01	0.00
	(0.35)	(-0.01)	(0.24)	(0.30)	(0.62)	(0.45)	(-0.58)	(0.06)
Leverage	2.43*	3.04**	3.02**	3.03**	2.73**	2.84**	2.11	3.10**
	(1.89)	(2.24)	(2.17)	(2.21)	(2.03)	(2.31)	(1.60)	(2.33)
Volatility	-0.32	-0.25	-0.15	-0.14	0.11	-0.19	-0.25	-0.30
	(-0.90)	(-0.77)	(-0.42)	(-0.39)	(0.30)	(-0.59)	(-0.74)	(-0.82)
HHI	52.81***	45.99***	52.77***	52.41***	40.32**	51.58***	44.37***	52.53***
	(2.99)	(2.76)	(2.95)	(2.94)	(2.30)	(3.34)	(2.77)	(3.11)
Constant	-24.08***	-23.82***	-25.05***	-25.78***	-24.73***	-24.09***	-20.17***	-23.11***
	(-5.79)	(-5.25)	(-5.57)	(-5.85)	(-5.80)	(-5.75)	(-5.76)	(-5.68)
Observations	3,857	3,857	3,857	3,857	3,857	3,857	3,857	3,857
R-squared	0.27	0.27	0.25	0.25	0.27	0.29	0.30	0.26
Number of firms	1,259	1,259	1,259	1,259	1,259	1,259	1,259	1,259
Firm fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.266	0.271	0.245	0.246	0.269	0.290	0.295	0.253

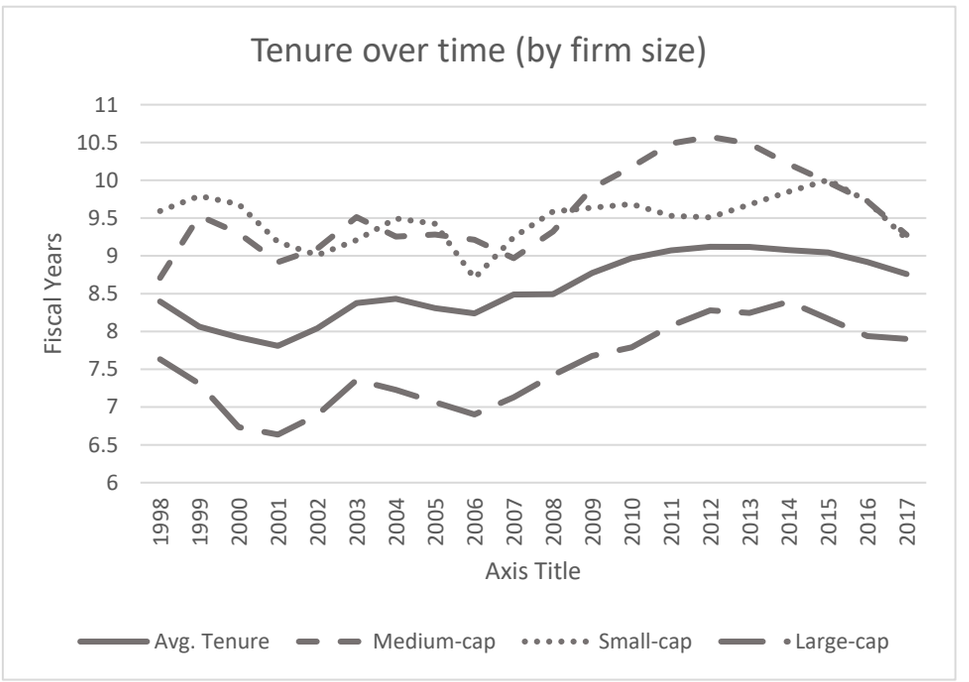

Figure 1. CEO tenure in 1998-2017

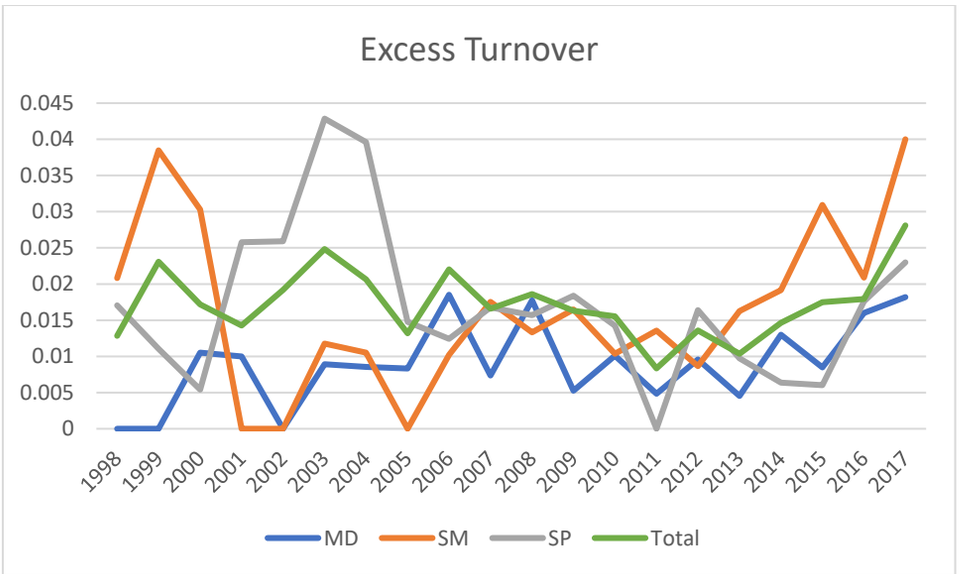

Figure 2. Excess turnover in 1998- 2017.

APPENDIX

Table A1. Impact of CEO power on tenure during good performance

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Founder	5.29***							
	(3.97)							
Duality		1.99***						
		(6.26)						
Dual class			-0.84					
			(-1.21)					
Pay slice				3.45***				
				(4.10)				
CEO ownership					33.26***			
					(6.07)			
Power Index						1.33***		
						(13.62)		
Power Index1							1.55***	
							(7.70)	
Power Index2								0.76***
								(5.69)
Age	0.41***	0.30***	0.44***	0.44***	0.40***	0.36***	0.36***	0.42***
	(19.89)	(7.42)	(22.75)	(22.40)	(19.44)	(17.97)	(17.15)	(21.11)
Male	1.06	1.93**	0.95	0.96	0.92	0.94	0.97	0.91
	(1.42)	(2.35)	(1.24)	(1.25)	(1.43)	(1.40)	(1.58)	(1.24)
Outsider	2.40***	2.22**	2.86***	2.84***	2.74***	2.42***	2.24***	2.66***
	(4.70)	(2.09)	(5.52)	(5.43)	(5.74)	(5.16)	(4.63)	(5.13)
Outsider proportion	-0.07	1.16	-0.20	-0.83	0.00	-1.95	0.07	-1.39
	(-0.06)	(0.65)	(-0.16)	(-0.67)	(0.00)	(-1.63)	(0.06)	(-1.14)
Board size	-0.13*	-0.09	-0.13*	-0.12*	-0.11*	-0.07	-0.10*	-0.11*
	(-1.98)	(-1.10)	(-1.97)	(-1.83)	(-1.73)	(-1.13)	(-1.72)	(-1.69)
Board ownership	-3.11	-2.28	-3.50*	-3.52*	-2.33	-3.13	-1.88	-3.14
	(-1.60)	(-1.45)	(-1.71)	(-1.72)	(-1.15)	(-1.62)	(-0.97)	(-1.53)
Board age	0.05	0.06	0.05	0.05	0.06	0.07*	0.07*	0.06
	(1.42)	(0.72)	(1.25)	(1.37)	(1.64)	(1.92)	(1.96)	(1.58)
ROA	2.36**	1.87	2.06*	1.65	2.22*	1.35	2.63**	1.25
	(2.09)	(1.15)	(1.76)	(1.40)	(1.92)	(1.26)	(2.34)	(1.06)
CRSP age	-0.03	0.14***	-0.04*	-0.05**	-0.01	-0.01	0.02	-0.04**
	(-1.43)	(3.10)	(-1.99)	(-2.33)	(-0.36)	(-0.45)	(0.92)	(-2.14)
Market to Book	0.04	0.10	0.05*	0.05	0.05*	0.05	0.05	0.04
	(1.34)	(1.40)	(1.76)	(1.57)	(1.69)	(1.58)	(1.62)	(1.50)
size	-0.00	-0.00	0.00	0.00	0.00	0.00	-0.00	0.00
	(-0.03)	(-0.16)	(0.12)	(0.23)	(0.26)	(0.42)	(-0.04)	(0.27)
leverage	0.03	2.94**	-0.05	-0.08	-0.25	-0.22	-0.15	-0.06
	(0.03)	(2.14)	(-0.06)	(-0.09)	(-0.27)	(-0.24)	(-0.17)	(-0.07)
volatility	-0.18	-0.36	-0.05	0.01	0.09	0.15	-0.08	0.04
	(-0.63)	(-1.06)	(-0.19)	(0.05)	(0.34)	(0.53)	(-0.29)	(0.12)
HHI	59.65***	49.16***	56.90***	57.12***	48.36***	56.31***	49.75***	54.34***
	(3.87)	(3.03)	(3.53)	(3.50)	(2.67)	(3.66)	(2.97)	(3.47)
Constant	-18.18***	-23.06***	-18.46***	-19.41***	-19.20***	-17.81***	-17.34***	-16.90***
	(-8.28)	(-5.77)	(-8.18)	(-8.64)	(-8.67)	(-8.29)	(-8.35)	(-7.56)
Observations	10,819	10,819	10,819	10,819	10,819	10,819	10,819	10,819
R-squared	0.29	0.27	0.27	0.27	0.29	0.32	0.31	0.28
Number of cusipsix	1,868	1,868	1,868	1,868	1,868	1,868	1,868	1,868
cusipsix FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
adjusted R-squared	0.287	0.269	0.267	0.270	0.291	0.314	0.309	0.280

Table A2. Impact of CEO power on tenure during bad performance

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Founder	8.95***							
	(4.27)							
Duality		1.68***						
		(3.90)						
Dual class			1.81					
			(0.63)					
Pay slice				3.73**				
				(2.41)				
CEO ownership					30.19***			
					(3.02)			
Power Index						1.50***		
						(7.05)		
Power Index1							1.85***	
							(4.68)	
Power Index2								0.74***
								(4.86)
Age	0.38***	0.38***	0.42***	0.42***	0.39***	0.33***	0.33***	0.40***
	(7.99)	(8.29)	(8.77)	(8.72)	(7.95)	(6.99)	(6.92)	(8.50)
Male	0.27	0.34	0.18	0.24	0.22	0.40	0.35	0.34
	(0.33)	(0.42)	(0.22)	(0.29)	(0.27)	(0.50)	(0.43)	(0.42)
Outsider	0.81	1.18*	1.35*	1.31*	1.16*	1.07*	0.75	1.22*
	(1.37)	(1.82)	(1.97)	(1.92)	(1.87)	(1.88)	(1.30)	(1.82)
Outsider proportion	-0.52	-1.84	-1.41	-1.51	-1.43	-2.71	-1.36	-1.75
	(-0.20)	(-0.71)	(-0.49)	(-0.53)	(-0.53)	(-1.00)	(-0.56)	(-0.63)
Board size	-0.30***	-0.29***	-0.30***	-0.30***	-0.23**	-0.24**	-0.23**	-0.29***
	(-2.80)	(-2.84)	(-2.81)	(-2.77)	(-2.14)	(-2.30)	(-2.21)	(-2.79)
Board ownership	-0.23	-1.39	-2.02	-2.01	0.15	-0.19	1.61	-1.82
	(-0.09)	(-0.44)	(-0.63)	(-0.63)	(0.06)	(-0.07)	(0.68)	(-0.56)
Board age	0.11	0.10	0.09	0.10	0.09	0.11	0.11	0.11
	(1.47)	(1.23)	(1.01)	(1.15)	(1.12)	(1.38)	(1.40)	(1.29)
ROA	8.87***	9.40***	9.97***	9.81***	9.75***	9.05***	8.82***	9.48***
	(3.71)	(4.00)	(4.06)	(3.97)	(4.03)	(3.76)	(3.80)	(3.92)
CRSP age	0.02	0.02	0.01	-0.00	0.04	0.05	0.07	-0.00
	(0.26)	(0.37)	(0.16)	(-0.02)	(0.59)	(0.81)	(0.93)	(-0.01)
Market to Book	-0.15**	-0.12	-0.15**	-0.15**	-0.15**	-0.12*	-0.12*	-0.14*
	(-2.43)	(-1.61)	(-2.14)	(-2.22)	(-2.18)	(-1.76)	(-1.77)	(-1.97)
Size	0.00	-0.00	-0.00	0.00	0.00	0.00	0.00	0.00
	(0.18)	(-0.06)	(-0.07)	(0.13)	(0.43)	(0.33)	(0.39)	(0.19)
Leverage	1.81	1.52	1.75	1.77	1.33	0.74	1.12	1.68
	(1.25)	(0.99)	(1.15)	(1.17)	(0.87)	(0.50)	(0.75)	(1.13)
Volatility	-0.11	0.18	0.01	-0.01	0.22	0.37	0.28	0.06
	(-0.16)	(0.24)	(0.01)	(-0.02)	(0.30)	(0.52)	(0.40)	(0.08)
HHI	55.02*	46.05	50.86*	48.17*	44.20*	37.93	45.94	44.98
	(1.91)	(1.61)	(1.83)	(1.76)	(1.68)	(1.43)	(1.60)	(1.61)
Constant	-20.57***	-19.21***	-19.83***	-21.24***	-20.20***	-18.79***	-18.20***	-19.07***
	(-4.29)	(-3.97)	(-3.72)	(-4.16)	(-4.21)	(-4.15)	(-4.03)	(-3.90)
Observations	2,696	2,696	2,696	2,696	2,696	2,696	2,696	2,696
R-squared	0.29	0.26	0.25	0.25	0.26	0.30	0.30	0.26
Number of cusipsix	1,221	1,221	1,221	1,221	1,221	1,221	1,221	1,221
cusipsix FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
adjusted R-squared	0.282	0.251	0.237	0.241	0.254	0.289	0.287	0.248