



The effects of firm aspirational performance on changes in leadership structure

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ABSTRACT

Despite the popularity of CEO duality as a research topic, relatively few empirical studies have explored the antecedents of this leadership structure. Prior research has generally produced null findings concerning the role of firm performance in predicting whether firms decide to separate (or combine) the CEO and board chair roles. We consider CEO ownership to be an important boundary condition that will help explain why the direct effects of these relationships lack significant results. Using a sample of S&P 1500 firms over a ten year span that begins with the 2008 financial crisis—a period in which CEO duality has experienced renewed scrutiny—we find that there is no direct effect between a firm's performance and the likelihood that the board will separate (or combine) the CEO and board chair roles. However, we find that CEO ownership is a significant moderating factor when observing how poor (good) performance can affect the likelihood of separating (combining) these roles.

1. Introduction

Scholars have debated the merits of chief executive officer (CEO) duality (*i.e.*, the CEO of a firm also serves as the chair of the board of directors). While opposing sides debate the pros and cons of this leadership structure using either agency theory (Daily & Dalton, 1994; Jensen, 1993) or the unity of command perspective (Fayol, 1949; Finkelstein & D'aveni, 1994), both groups agree that the presence of duality results in a CEO having more power and less oversight from the board of directors (Finkelstein, Hambrick, & Cannella, 2009; Kim, Al-Shammari, Kim, & Lee, 2009; Krause, Semadeni, & Cannella, 2014). Although many studies have focused on the performance consequences of duality (see Duru, Iyengar, & Zampelli, 2016; Jackling & Johl, 2009; Krause & Semadeni, 2013), researchers have more recently made a call to better understand its antecedents (*e.g.*, Krause *et al.*, 2014).

The duality leadership structure can impact the board's ability to monitor CEOs and prevent their entrenchment and pursuit of self-serving actions. Finkelstein and D'aveni (1994) contrasted agency and organization theory views and found that board vigilance was positively associated with duality. However, they conclude that vigilant boards, in the presence of informal CEO power and high performance, tend to resist duality. In fact, Wang, DeGhetto, Ellen, and Lamont (2019) found that board ownership negatively influenced the likelihood of CEO duality.

While prior research has generally focused on antecedents determining whether or not duality is in place (*e.g.*, Finkelstein & D'aveni, 1994), our study examines how these antecedents influence the likelihood of a change in such leadership structures. The financial crisis of 2008 brought about an increased urgency to amend governance models within organizations. During this time, multiple CEOs in the banking industry—such as Bank of America's Ken Lewis and Wachovia's Ken Thompson—were stripped of the chair title to signal to the market that their firms were tightening corporate governance structures and seeking greater accountability from management (Basar, 2009). Moreover, in the decade since the onset of the financial crisis, the percentage of S&P 500 firms deciding to separate the CEO and board chair position increased from 37 to 53 percent (SpencerStuart, 2019).

While there is scant evidence indicating whether or not a firm's performance will influence its probability of initiating a change in leadership structure (*i.e.*, either combining or separating the CEO and board chair roles), the few studies that do exist have generally produced nonsignificant results. For example, Iyengar and Zampelli (2009) tested four different performance measures—market return, earnings per share, Tobin's *q*, and return on assets (ROA)—to examine whether or not a firm's choice to either separate or combine the two roles is driven by its performance. The authors determined that no such evidence exists. Furthermore, Harrison, Torres, and Kukalis (1988) tested a sample of U.

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S. manufacturing firms during the late 1970s, a period when there was a strong tendency to combine these roles rather than separate them, and found that strong accounting performance is unlikely to lead to a combination of the two positions. Though it seems theoretically intuitive to reason that poor (good) performance would eventually result in a separation (combination) of the CEO and board chair roles, empirical evidence has suggested that this is not necessarily what happens in practice. This prompts the question: *under what specific performance conditions is a change in leadership structure most likely to occur, and does this relationship depend on other factors?*

We posit that these null results can be attributed to two factors. One relates to the firm's performance, and the second relates to the level of CEO ownership in the firm. First, we invoke performance feedback theory to address the antecedents of a change in duality. Performance feedback theory is rooted in the behavioral theory of the firm (BTF), and focuses on explaining firm behavior, actions, and organizational change from the perspective of boundedly rational managers (Cyert & March, 1963; Posen, Keil, Kim, & Meissner, 2018). According to the BTF, managers compare firm performance with their aspirations. The aspiration level is the lowest level of performance deemed satisfactory by managers (Schneider, 1992), and comparing performance to the aspiration level allows managers to categorize their situation as a success or failure. When their performance is below aspirations, firms engage in problemistic search—*i.e.*, a search for solutions to the performance shortfall. Scholars have found that problemistic search induces organizational changes such as increased risk-taking (Bromiley, 1991), increased investments in research and development (R&D) (Chen & Miller, 2007; Greve, 2003), new product introductions (Greve, 2003), growth (Audia & Greve, 2006; Greve, 2011), organizational learning (Levitt & March 1988), and acquisitions (Iyer & Miller, 2008). We argue that performance with respect to aspirations will also influence the adding or removing of CEO duality, as altering the leadership structure can be considered a form of problemistic search (*i.e.*, a search for solutions to performance shortfalls).

Second, we contend that a CEO's ownership in the firm will have a moderating impact on the relationship between performance feedback and duality. CEO ownership is noteworthy because increased ownership reduces board monitoring effectiveness, thus enabling the CEO to have greater influence over the board (Petrenko, Aime, Ridge, & Hill, 2016) and decreasing the likelihood of CEO dismissal (Cao, Pan, Qian, & Tian, 2017). Hence, as CEOs increase their ownership stake in the firm, they gain greater power to make self-serving decisions. Furthermore, having a high ownership stake enables the CEO to become more entrenched within the firm (Kumar & Rabinovitch, 2013). For example, Morck et al. (1988) found that managerial ownership in firms had a non-monotonic relationship with their market valuations. They suggest that anything more than nominal ownership by managers leads to an entrenchment effect. Accordingly, we expect that CEOs with high-ownership will be less likely to be relieved of the board chair role when experiencing poor performance and will be more likely to gain this role when performance is strong. Furthermore, we suggest that CEO ownership serves as a potential boundary condition which will help clarify the generally null results found in previous studies exploring the effects of performance on duality. We also suggest that a more recent time frame is needed to examine corporate governance's current environment. Prior studies examining this phenomenon have generally used samples from a pre-SOX or pre-2008 financial crisis context. As such, they are unable to investigate how a more current environment, a time in which CEO duality "has come under renewed scrutiny because of the perceived loss of checks and balances and resultant abuse of power," may have distinct effects (Carty & Weiss, 2012: 26).

Consistent with prior studies, our analysis fails to find support for the direct effect of performance on changes in CEO duality. However, we also theorize that CEO ownership is a critical moderator of this relationship. Our results provide strong support for these arguments, suggesting that not only are CEOs with greater ownership more likely to

retain the board chair role when experiencing poor performance relative to aspirations, they are also more likely to become board chair when performance exceeds aspiration levels. Our hypotheses were tested on a sample of 3032 CEO-years from 646 firms within the S&P 1500 over the years 2008–2017.

Our study offers two key contributions. First, we argue that it is not necessarily just performance that increases the likelihood of separating or combining the CEO and board chair roles, but performance relative to the firm's aspiration level that drives this change. Thus, we contribute to the extant literature on both corporate governance and BTF by integrating these frameworks. Second, although we find null results for direct effects between performance and changes in leadership structure, we find strong empirical support for CEO ownership being a critical moderator of this relationship.

2. Theory and hypotheses development

2.1. Behavioral theory of the firm and performance feedback

The BTF considers managers to be boundedly rational, meaning that while they may intend to act rationally, their rationality is limited by the available information, their cognitive limitations, and the time constraints they have to make a decision. Hence, their actions and responses are triggered by certain heuristics. Most pertinent to our study is the idea that performance is always evaluated relative to an aspiration level, which generally depends on both the firm's own prior performance level and the performance of its industry peers. Accordingly, change is triggered when organizations compare their current performance to these aspiration levels and find themselves performing below the desired (or minimum satisfactory) level of performance. As performance declines below their aspiration levels, firms engage in 'problemistic' search for solutions to counteract their performance decline. In sum, the BTF suggests that performance below aspirations triggers problemistic search and incites organizational change and risk-taking (Bromiley, 1991; Greve, 1998, 2003).

The BTF further suggests that when firms engage in problemistic search, the search boundaries are initially locally bounded—meaning that firms tend to rely on potential solutions that are readily available—and search is only expanded when no satisficing solutions are found (Levinthal & March, 1981; Rosenkopf & Nerkar, 2001; Stuart & Podolny, 1996). This search gradually expands to consider options of increasing risk when a solution to the problem is not identified. Hence, the search begins by looking for local solutions, and then broadens to include progressively more distant possibilities as solutions if the initial efforts of local search fail to uncover a satisfactory solution (Cyert and March 1963). Here, we apply performance feedback theory to examine whether performance below aspirations leads to separation of duality, while performance above aspirations leads to the combination of these roles. We first theorize the case for duality separation and then combination.

2.2. Problemistic search and CEO-board chair separation

Members of the top management team generally determine which actions the firm initiates to correct performance shortfalls (e.g., the decision to allocate additional resources to either R&D or advertising), although the board of directors may challenge the CEO and make decisions when no satisficing solutions have been found (Pugliese et al., 2009; Zahra & Pearce, 1989). Prior studies have shown that most organizations take a proactive stance in responding to performance problems, even though the effects of these responses are often symbolic (Pfeffer, 1981). When performance is poor, boards increase their level of monitoring (Tuggle, Sirmon, Reutzler, & Bierman, 2010). One particular path that boards generally view as a viable solution to problemistic search is to change the firm's leadership structure, which typically signals that the firm is attempting to implement a change in strategy

(Wiersema & Zhang, 2011). This change can occur through the removal of duality, or separating the CEO and board chair roles and assigning them to two separate people.

Because CEOs are the public face of the firm, they generally shoulder the blame when performance does not meet expectations (Love, Lim, & Bednar, 2017). For example, consider the case of Dennis Muilenburg, former CEO of Boeing, who lost the chair title due to the crisis triggered by problems with the 737 Max aircraft (Slotnick, 2019). While the chain of events that led to such outcomes may have been the fault of many individuals throughout the organization, Muilenburg was the public face of Boeing throughout the crisis. Although it may be difficult to ascertain exactly how much of an effect the CEO has on the firm's performance, directors often feel the need to use the CEO as a scapegoat by attributing poor performance to the individual leading the firm, even though the firm's performance may be due to external causes (Haleblian & Rajagopalan, 2006; Ranft, Zinko, Ferris, & Buckley, 2006). Thus, the CEO takes "symbolic responsibility for the woes of the organization," and is punished accordingly (Ward, Bishop, & Sonnenfeld, 1999: 770). This consequently signals to the firm's stakeholders that the board is attempting to solve the performance issue at hand by actively monitoring—and demanding greater accountability from—management (Iyengar & Zampelli, 2009).

Moreover, duality may create agency concerns when the CEO also serves as the board chair because CEOs who possess duality are less worried about the consequences of their actions than those who do not, since duality shifts structural power to favor the CEO (Cannella & Lubatkin, 1993; Tuggle et al., 2010). This makes the board's task of monitoring substantially more difficult (Boivie, Bednar, Aguilera, & Andrus, 2016), even though it is arguably the most important function that this group of individuals is expected to fulfill (Daily, Dalton, & Cannella, 2003; Hambrick, Misangyi, & Park, 2015). Directors are entrusted with the responsibility to prevent management from participating in activities that result in adverse outcomes for the firm's shareholders (Dalton, Hitt, Certo, & Dalton, 2007). Moreover, this task becomes much easier—and perhaps even necessary—when the firm experiences poor performance, as the board then gains the requisite legitimacy to effectively question the tactics the CEO is currently employing (Pfeffer, 1992).

Consistent with the BTF literature, we contend that it is not merely performance, but performance relative to a firm's aspiration level that drives change (e.g., the removal of duality). Consider a firm that fails to reach its performance forecast due to an economic downturn outside of the CEO's control, but still ranks as one of the top performers within the industry. While the firm's overall performance may be lackluster, it is in a much better position than many of its peers. In similar fashion, it is also necessary to consider a firm that is currently operating at a loss, but has been able to gradually attenuate that loss in each successive year. By taking into account both the historical performance of the firm and the performance of industry peers, a board can construct an aspiration level against which the firm's performance can be assessed. The board of directors will evaluate the efficacy of the CEO to improve firm performance (Wiersema & Zhang, 2011) and may impose additional independent oversight of the CEO—given the firm's recent performance discrepancies—by separating the CEO and board chair roles. As such, we hypothesize:

Hypothesis 1a. *Performance below aspirations increases the probability of CEO-board chair separation.*

2.3. Performance above aspirations and CEO-board chair combination

While the majority of studies using the BTF as a theoretical framework have focused on performance below aspirations (e.g., Gavetti, Greve, Levinthal, & Ocasio, 2012; Posen et al., 2018), relatively less work has examined firms operating above their performance aspirations. The board of directors makes decisions on whether to fire, retain,

or promote the CEO by considering several factors (Goel & Thakor, 2008). Based on our previous arguments, we reason that just as the board of directors is likely to decide to separate the CEO and board chair roles based on the firm's inability to attain its aspirational performance levels, they are also more likely to combine the roles when performance exceeds aspirations.

Krause and Semadeni (2013) suggested that CEOs must 'earn' the board chair role by exhibiting elevated levels of firm performance, thereby indicating their competence. This logic further aligns with the notion that even though CEOs are assigned the blame when performance is poor, they are also given credit when performance is strong (Love et al., 2017). For example, Bank of America's board of directors granted duality to current CEO Brian Moynihan after its recovery from the financial crisis. Inside personnel indicated that Moynihan was given the additional role of board chair because "no [other] company has dug [itself] out of a deeper hole since the financial crisis, turned back to health with solid earnings, and accumulated record levels of capital and liquidity" (Lublin, 2015). Moreover, Bank of America director Chad Holliday Jr. further noted support for combining the two roles by highlighting that "Brian's strategy...continues to build value for shareholders" (Hall, 2014), which was in stark contrast to the lackluster performance experienced by Bank of America during the financial crisis. As such, we posit that when a firm exceeds its aspirational performance levels, directors will be more likely to bestow the board chair role upon the CEO. Accordingly, we hypothesize:

Hypothesis 1b. *Performance above aspirations increases the probability of CEO-board chair combination.*

2.4. The effect of CEO ownership

We have theorized that it is not the absolute performance that leads to separation or combination of the CEO and board chair roles, but performance relative to aspirations. In this section, we argue that some CEOs may be able to protect themselves from being subject to such a separation, or gain duality, depending on the extent to which they have equity ownership. Prior work in the area of corporate governance shows that CEO ownership has a prominent effect on duality, in that there is a positive relationship between CEO equity holdings and the likelihood that the CEO also occupies the board chair role (Beatty & Zajac, 1994; Zajac & Westphal, 1994). Furthermore, CEOs with high ownership can exert a significant amount of influence over the board of directors because of the structural power that comes from having a high ownership stake in the firm (Petrenko et al., 2016). High CEO ownership often leads to entrenchment (Loureiro, Makhija, & Zhang, 2020; Morck et al., 1988), which allows the CEO to gain significant power to pursue self-interests instead of the interests of the other shareholders (Weisbach, 1988). For example, shareholders of Facebook have made repeated attempts to remove the board chair role from the firm's CEO, Mark Zuckerberg. However, Zuckerberg's sizeable ownership in the company—in addition to his 10-1 unequal Class B share voting rights—has thus far inhibited their ability to do so (Hiltzik, 2019).

Strong firm performance further enables CEOs to entrench themselves within their respective organizations—which frequently results in increased power, status, and tenure for the CEO—while poor performance prevents them from doing so (Finkelstein & D'aveni, 1994). Thus, when taken together with high CEO ownership and potential managerial opportunism, this significant rise in power makes CEOs much more firmly entrenched in their positions (Shen, 2003). While Sundaramurthy and Lewis (2003: 402) suggest that weak performance generally leads to an increase in board of director monitoring and control, and that strong performance leads the board to "bask in past successes," prior studies have suggested that high CEO ownership reduces board monitoring effectiveness (e.g., Finkelstein & D'aveni, 1994). Additionally, CEO ownership is likely to lead to even greater acquiescence when performance exceeds aspirations.

Since substantial ownership shifts structural power in the favor of CEOs—thus making it even more difficult for the board to monitor and discipline them—we posit that there will be a decreased probability that the CEO and board chair roles will be separated due to negative performance feedback when CEO ownership is high. Moreover, when firm performance is above the aspiration level, a high ownership stake will increase the CEO's ability to push for a combination of the roles of CEO and board chair. Therefore, at high levels of CEO ownership, internal monitoring mechanisms may not be effective because of the power which stems from their ability to have significant voting rights (e.g., Denis, Denis, & Sarin, 1997), thereby decreasing the likelihood of CEO-board chair separation and increasing the likelihood of CEO-board chair combination. Accordingly, we hypothesize the following:

Hypothesis 2a. *CEO ownership will moderate the relationship between performance below aspirations and the probability of CEO-board chair separation, such that when CEO ownership levels are high the relationship will be attenuated.*

Hypothesis 2b. *CEO ownership will moderate the relationship between performance above aspirations and the probability of CEO-board chair combination, such that when CEO ownership levels are high the relationship will be strengthened.*

3. Methods

3.1. Sample and analysis

Our sample consisted of all firms listed in both the *Compustat* and *ExecuComp* databases that had data available on CEO ownership from the years 2008 to 2017. We considered this time period to be particularly salient to studying CEO-board chair separation and combination because CEO duality had “come under renewed scrutiny” as a consequence of the 2008 financial crisis (Carty & Weiss, 2012: 26). Furthermore, because prior studies examining the relationship between performance and leadership structure took place before SOX was enacted, a regulatory environment vastly different from today, we concluded that a more recent timeframe would be necessary to account for significant changes in the environment. Consistent with the prior literature, we excluded firms operating in the highly regulated utility (SIC 4000–4999) and financial (SIC 6000–6999) industries (Deb, David, & O'Brien, 2017). Additionally, we eliminate instances in which an interim or acting CEO is leading the firm, as theory suggests that such appointments lead to disruption in organizational processes and subsequently harm firm performance (Ballinger & Marcel, 2010). In doing so, our study eliminates any bias that may result from the performance of CEOs considered to be short-term appointments.

We obtained CEO data from *ExecuComp*, board of director data from Institutional Shareholder Services (ISS), institutional ownership data from Thomson Reuters Institutional (13f) Holdings, and all other firm data from *Compustat*. Our final sample is an unbalanced panel consisting of 3302 CEO-years from 646 firms within the S&P 1500 over the years 2008 to 2017. Because our dependent variable is binary, we use logistic regression with random firm effects to predict whether or not there will be a CEO-board chair separation or combination. We perform our analyses using logistic regression instead of survival analysis because firms continue to remain in our sample even after the change in leadership structure occurs. For example, boards could change their minds and reverse their decision to separate or combine the CEO-board chair roles later. Additionally, panel data analysis traditionally employs either fixed-effects or random-effects models because models that are “estimated with ordinary least squares (OLS) often experience problems with heteroscedastic error terms and autocorrelation, which can lead to biased and inconsistent results” (Martin, Gomez-Mejia, & Wiseman, 2013: 460). We employed random-effects models rather than fixed-effects models because Hausman tests failed to reject the random-effects specification (Hausman, 1978). Furthermore, we reduce the

likelihood that outliers have biased our results by winsorizing our observations at the 1st and 99th percentiles.

3.2. Dependent variables

Our first dependent variable, *CEO-Board Chair Separation*, is a binary variable with 1 signifying that the firm changed from a combined leadership structure in the year prior to a separated leadership structure in the current year, and 0 signifying that there was no such change. Likewise, our second dependent variable, *CEO-Board Chair Combination*, is also a binary variable with a value of 1 indicating that the firm changed from a separated leadership structure in the year prior to a combined leadership structure, and 0 indicating that there was no change.

3.3. Independent variables

Our primary independent variable of interest is a firm's performance relative to aspirations. We follow prior BTF work by utilizing return on assets (ROA) as an appropriate performance feedback measure (Greve, 2003; O'Brien & David, 2014). A firm's ROA in a given year was measured as operating income divided by total firm assets. We then constructed the firm's aspiration level by incorporating a weighted measure of both the performance levels of its peers (*i.e.*, the social aspiration level) in conjunction with its own recent past performance (*i.e.*, the historical aspiration level). We measured the social aspiration level (SA) as the average ROA of all firms within the focal firm's industry (3-digit SIC), excluding the focal firm. Following Greve (2003), the historical aspiration level (HA) of a firm was measured with a weighted average of past performance. In doing so, we weighted the firm's most recent performance more heavily, since a firm is most likely to make future decisions based on more recent trends in performance measures. More specifically, we calculated this as: $HA_t = 0.6(ROA_{t-1}) + 0.3(ROA_{t-2}) + 0.1(ROA_{t-3})$. Similar to other studies (e.g., O'Brien & David, 2014), we found that results are stable when weighting recent performance more heavily or by solely using the prior year's performance as a proxy. We then constructed our final measure for a firm's aspiration level (AL) as: $AL = (0.8 \times SA) + (0.2 \times HA)$. This particular weight allocation was selected by performing a grid search with different weights to find the most appropriate combination to maximize model fit (*i.e.*, by comparing each model's AIC and BIC) and ensure the most accurate measurement (Vissa, Greve, & Chen, 2010). We then subtracted the AL variable from the firm's actual ROA to construct a *Performance – Aspiration* variable.

In order to determine whether or not the slope of the relationship between performance relative to aspirations and CEO-board chair separation is different when a firm's performance is above the aspiration level versus when it is below the aspiration level, we utilize a spline within our regression analysis (Greene, 2003). We do this by creating a second variable, *Performance > Aspiration*, which was equal to $ROA - AL$ if $ROA > AL$ and given a value of zero otherwise.

3.4. Moderating and control variables

We measure our moderating variable, *CEO Ownership*, as the percentage of company stock owned by a CEO in the previous year. We additionally include control variables in the analysis that we believe could affect our results, and these can be grouped within the categories of Firm, CEO, Board, and Industry controls. We measured each of our control variables at $t - 1$ to mitigate endogeneity concerns. In terms of firm controls, we use an *Industry Adjusted Tobin's q* to control for the firm's stock market performance, relative to other firms operating in the same industry, since decisions about leadership structure may be based on market-based performance as well as accounting-based performance. This was operationalized as the focal firm's Tobin's q minus the industry average Tobin's q. We controlled for *Firm Size* by taking the log of assets

for the firm. We conceptualize and define organizational slack following the prior literature on slack (O’Brien & David, 2014). We control for *Available Slack*, which we operationalized as the current ratio, or the ratio of current assets to current liabilities, since firms with more available slack could pursue a greater number of search solutions. We also controlled for *Institutional Ownership*, because those with significant ownership stakes in the firm have considerable power to recommend changes in leadership structure to the board. As this information is reported quarterly in 13f holdings reports, we operationalized this variable as the firm’s average ownership of institutional owners divided by total shares outstanding in a given year.

Our CEO control variables include *CEO Change*. The board of directors may have new CEOs gradually transition into their roles before additionally bestowing the board chair position, or they may give them the title immediately upon appointment (Harris & Helfat, 1998). We also controlled for *CEO Tenure Relative to Average Director Tenure*. The time a CEO is with a company relative to the other members of the board may correlate with succession and changes in a firm’s governance structures (Walters, Kroll, & Wright, 2007), and is a further indication of the number of individuals that the CEO has appointed to the board since taking office. We further control for *Board Independence*, which is measured as the number of independent directors divided by the total number of directors. Boards with low independence may not monitor the CEO’s actions as well as those with high independence, which increases the likelihood that the CEO will additionally be appointed to the role of board chair. Finally, year dummies were included to control for macroeconomic conditions and potential contemporaneous correlation (Certo & Semadeni, 2006).

4. Results

Descriptive statistics of our sample are presented in Table 1. In order to check for multicollinearity, we computed variance inflation factors (VIFs) and found no variable in our model with a score above 4.51, while the mean VIF for all variables included in our models was 1.73, well below accepted standards. Results from our analyses are reported in Tables 2 and 3. Model 1 in each table indicates our base results, which report only the control variables used in our study. Model 2 of Table 2 shows the results for Hypothesis 1a, which argues that firms performing below aspirations have an increased probability of separating the CEO-board chair position. We find no significant relationship between Performance-Aspirations and CEO-Board Chair Separation. Thus we find no support for Hypothesis 1a. Interestingly, we also find that no significant direct effect exists with regard to the relationship between CEO Ownership and CEO-Board Chair Separation in this model. This deviates from the traditional view that the power obtained from having a high

ownership stake in the firm protects the CEO from a change in leadership structure. Model 2 of Table 3 tests Hypothesis 1b, which posited that as performance improves above the firm’s aspiration level, the likelihood of combining the CEO and board roles increases. Similar to the prior hypothesis, we find no statistically significant relationship between these two variables, thus providing no support for Hypothesis 1b.

We next tested Hypothesis 2a, which argued that the relationship between performance below aspirations and CEO-board chair separation would be weakened as CEO ownership increases. Model 3 of Table 2 reveals a strong interaction between Performance-Aspirations and CEO Ownership ($\beta = 90.36$; $p < 0.05$). Fig. 1 shows that there are economically significant differences in the likelihood of CEO-board chair separation when CEO ownership is low compared to when CEO ownership is high. More precisely, we see that when a CEO has a low ownership stake in the company, the probability of separating the CEO and board chair roles becomes several times more likely as performance falls from well above aspirations to well below aspirations. Conversely, when CEO ownership is high, there is very little probability of CEO-Chair separation, regardless of how well or how poorly the firm performs. Our results show that there is a relationship between performance below aspirations and CEO-board chair separation, but that it is heavily contingent upon CEO ownership. As such, we find strong support for Hypothesis 2a.

Finally, we tested Hypothesis 2b, which predicted that the positive relationship between performance above aspirations and the likelihood that a firm will combine its CEO-board chair leadership structure would be strengthened as a CEO’s ownership in the firm increases, and results are presented in Model 3 of Table 3. Our results indicate strong support for Hypothesis 2b ($\beta = 69.40$; $p < 0.05$), and Fig. 2 further depicts economically significant differences between low and high CEO ownership levels. Our results indicate that as a firm’s performance increases above its aspiration levels, and when its CEO has a high level of ownership in the firm, the CEO is far more likely to additionally obtain the title of board chair when compared to a CEO who has a low ownership stake in the firm.

4.1. Endogeneity and robustness analyses

Because our interaction term, CEO ownership, may be an endogenous moderator, we further examined whether endogeneity was biasing our study’s results. We followed the process outlined by Semadeni, Withers, and Certo (2014) by first identifying two relevant, exogenous instrumental variables (IVs): *CEO Age* and *Industry-Average CEO Ownership*. CEO age should be exogenous because only the passing of time can alter its nature. Likewise, average industry CEO ownership should be exogenous because it is an industry-level variable and thus changes with shifts in the industry. Additionally, we believe that older

Table 1
Summary statistics and correlations.

Variable	Mean	S.D.	Min	Max	1	2	3	4	5	6	7	8	9	10	11
1 CEO-Board Chair Separation	0.02	0.15	0.00	1.00											
2 CEO-Board Chair Combination	0.01	0.09	0.00	1.00	-0.01										
3 Performance - Aspirations	0.04	0.08	-0.40	0.56	-0.02	0.02									
4 Performance > Aspirations	0.05	0.06	0.00	0.56	0.00	0.03	0.91								
5 CEO Ownership	0.04	0.07	0.00	0.65	-0.01	0.04	-0.04	-0.03							
6 Industry Adjusted Tobin’s q	0.41	0.96	-2.07	7.37	-0.01	0.02	0.41	0.45	0.06						
7 Firm Size	7.90	1.56	4.08	10.86	-0.02	-0.02	0.02	-0.02	-0.37	-0.17					
8 Potential Slack	1.00	1.27	0.00	5.00	-0.02	-0.01	0.07	0.11	0.10	0.20	-0.30				
9 CEO Change	0.05	0.22	0.00	1.00	0.00	0.14	-0.01	-0.01	-0.06	-0.02	0.07	-0.02			
10 CEO/Board Relative Tenure	0.87	0.53	0.03	9.00	0.02	-0.04	0.00	-0.01	0.01	-0.02	0.07	0.01	-0.28		
11 Board Independence	0.80	0.11	0.14	1.00	0.00	-0.04	0.04	0.02	-0.38	-0.06	0.37	-0.17	0.01	0.12	
12 Institutional Ownership ('000 s)	0.79	0.18	0.01	0.99	-0.03	-0.02	0.01	-0.03	-0.22	0.00	-0.05	0.02	0.01	0.06	0.13

Note: n = 3032. All correlations greater than |0.02| are significant at the 0.05 level.

Table 2
Logistic regression results for CEO-board chair separation.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Aspir. (Soc/Hist)	80/20	80/20	80/20	80/20	80/20	100/0	50/50
Model	Logit (RE)	Logit (RE)	Logit (RE)	2SCML	IV-Probit	Logit (RE)	Logit (RE)
Industry Adjusted Tobin's q	-0.06 (0.16)	-0.06 (0.16)	-0.12 (0.18)	-0.05 (0.18)	-0.05 (0.08)	-0.13 (0.12)	-0.08 (0.18)
Firm size	-0.23 ** (0.12)	-0.22 * (0.11)	-0.22 * (0.13)	-0.10 * (0.13)	-0.08 * (0.05)	-0.22 * (0.04)	-0.23 ** (0.12)
Available slack	-0.17 (0.14)	-0.18 (0.14)	-0.15 (0.14)	-0.07 (0.14)	-0.07 (0.06)	-0.15 (0.05)	-0.15 (0.14)
CEO change	0.00 (0.66)	0.00 (0.66)	-0.04 (0.66)	0.00 (0.65)	0.00 (0.30)	-0.04 (0.26)	-0.04 (0.66)
CEO/Board Relative Tenure	0.13 (0.25)	0.13 (0.25)	0.12 (0.26)	0.06 (0.25)	0.04 (0.12)	0.12 (0.09)	0.12 (0.25)
Institutional Ownership	0.00 * (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 * (0.00)
Board Independence	1.45 (1.60)	1.42 (1.60)	1.27 (1.63)	0.65 (1.60)	0.43 (1.85)	1.26 (1.61)	1.30 (1.62)
CEO Ownership	-2.66 (2.78)	-2.54 (2.78)	-8.15 * (2.80)	-3.45 * (4.50)	-2.81 (4.61)	-8.62 * (4.61)	-6.50 * (3.83)
Perform.-aspir.	-3.63 (4.41)	-3.63 (4.41)	-5.47 * (4.55)	-2.65 * (4.72)	-2.23 * (4.72)	-5.74 * (4.81)	-4.67 * (5.45)
Perform. > aspir.			3.20 ** (90.36)	1.75 ** (36.29)	1.60 ** (17.51)	4.22 ** (31.54)	0.46 ** (45.37)
Perf > asp × CEO own.				41.68 ** (4.30)	34.67 ** (4.30)	77.70 ** (31.54)	103.60 ** (45.37)
CEO own. residuals				-0.65 X			
Year Dummies	X	X	X	X	X	X	X
Observations	3,032	3,032	3,032	3,032	3,032	3,032	3,032
Number of firms	646	646	646	646	646	646	646
Log-likelihood	-289.11	-288.44	-285.03	-284.96	4521.35	-284.82	-285.79
Wald χ^2	25.43	26.75	31.76	26.18	38.65	32.05	30.77

Coefficients reported in Log Odds Ratios. SEs in O.
*** p < 0.01, ** p < 0.05, * p < 0.10

Table 3
Logistic regression results for CEO-board chair combination.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Aspir. (Soc/Hist):	80/20	80/20	80/20	80/20	80/20	100/0	50/50
Model:	Logit (RE)	Logit (RE)	Logit (RE)	2SCML	IV-Probit	Logit (RE)	Logit (RE)
Industry Adjusted Tobin's q	0.24 (0.18)	0.14 (0.18)	0.06 (0.22)	0.03 (0.22)	0.03 (0.09)	0.07 (0.23)	0.09 (0.22)
Firm size	-0.14 (0.15)	-0.13 (0.15)	-0.07 (0.17)	-0.03 (0.15)	-0.05 (0.06)	-0.08 (0.18)	-0.09 (0.15)
Available slack	-0.26 (0.21)	-0.28 (0.21)	-0.20 (0.22)	-0.08 (0.21)	-0.07 (0.08)	-0.19 (0.21)	-0.22 (0.21)
CEO change	2.52 *** (0.52)	2.51 *** (0.52)	2.46 *** (0.53)	1.03 *** (0.53)	0.94 *** (0.23)	2.48 *** (0.53)	2.42 *** (0.53)
CEO/Board Relative Tenure	-0.02 (0.47)	-0.04 (0.47)	-0.14 (0.47)	-0.04 (0.50)	-0.02 (0.19)	-0.12 (0.49)	-0.17 (0.50)
Institutional Ownership	0.00 (1.70)	0.00 (1.70)	0.00 (1.72)	0.00 (1.75)	0.00 (0.73)	0.00 (1.75)	0.00 (1.75)
Board Independence	-2.68 (2.14)	-2.76 (2.14)	-2.78 (2.17)	-1.23 * (3.10)	-1.72 * (1.49)	2.81 (3.32)	-2.69 (2.94)
CEO Ownership	1.92 (2.14)	2.21 (2.14)	-1.07 (5.65)	-1.04 (5.52)	6.14 * (2.22)	-1.31 (5.16)	-0.22 (5.84)
Perform.-aspir.	-1.34 (4.57)	-1.34 (4.57)	-1.75 (7.25)	-0.71 (7.48)	-0.84 (14.74)	-1.82 (27.59)	-0.80 (43.88)
Perform. > aspir.			1.98 ** (69.40)	1.04 ** (33.13)	-0.15 *** (28.36)	1.78 ** (27.59)	1.74 * (43.88)
Perf > asp × CEO own.				30.78 ** (4.21)	74.63 *** (4.21)	59.94 ** (27.59)	74.14 * (43.88)
CEO own. residuals				2.42 X			
Year Dummies	X	X	X	X	X	X	X
Observations	3,032	3,032	3,032	3,032	3,032	3,032	3,032
Number of firms	646	646	646	646	646	646	646
Log-likelihood	-131.92	-131.45	-129.18	129.36	5125.53	-129.08	-129.90
Wald χ^2	49.79	50.68	54.87	49.43	128.84	55.38	53.27

Coefficients reported in Log Odds Ratios. SEs in O.
*** p < 0.01, ** p < 0.05, * p < 0.10

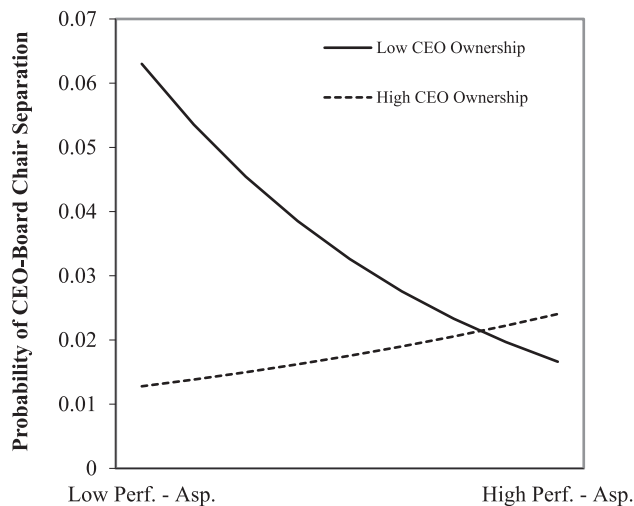


Fig. 1. Performance relative to aspiration, CEO ownership and the probability of CEO-board chair separation. Figure depicts the predicted probability of CEO and board chair separation for firms with high and low levels of CEO ownership, as given by Model 3 of Table 2. Low ownership is defined as zero ownership, while high ownership refers to ownership at one standard deviation above the mean. Additionally, the X-axis plots *Performance-Aspirations* from one standard deviation below the mean to one standard deviation above. All other variables were held constant at their mean.

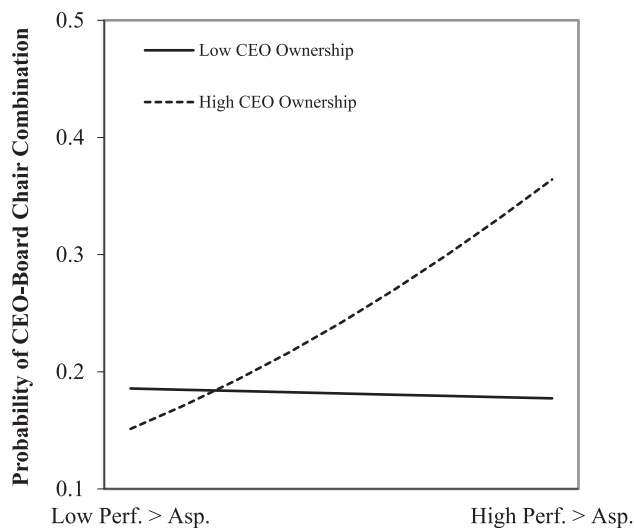


Fig. 2. Performance relative to aspiration, CEO ownership and the probability of CEO-board chair combination. Figure depicts the predicted probability of CEO and board chair combination for firms with high and low levels of CEO ownership, as given by Model 3 of Table 3. Low ownership is defined as zero ownership, while high ownership refers to ownership at one standard deviation above the mean. Additionally, the X-axis plots *Performance > Aspirations* from one standard deviation below the mean to one standard deviation above. All other variables were held constant at their mean.

CEOs will have had greater time and opportunity to accumulate ownership within a firm than younger CEOs, and that standard industry practices will likely impact how much stock a CEO owns. Hence, both variables should be good predictors of *CEO Ownership*. Unreported models confirmed that both variables were strong predictors of *CEO Ownership* but not of *CEO-Board Chair Separation or Combination*, and therefore should serve as strong and valid IVs.

We then used two different approaches to check for endogeneity. The first was the two-stage conditional maximum likelihood (2SCML) approach developed by Rivers and Vuong (1988). To implement this

approach, we first regressed *CEO Ownership* on all of the independent variables plus the two instruments. We then took the residuals from this regression and included them in a probit model with random firm effects predicting both *CEO-Board Chair Separation and Combination*. As shown in Model 4 of both Table 2 and Table 3, our substantive results are unchanged. Moreover, the lack of statistically significant residuals in this model indicates that endogeneity is unlikely to be a concern. As an alternative approach, we employed the IV-probit model using the *ivprobit* command in Stata, and incorporated robust standard errors with clustering by firm to account for the panel data nature of our sample. Once again, the substantive results, which are shown in Model 5 of Table 2 and Table 3, are similar to their Model 3 counterparts in those tables, respectively. Additionally, Bun and Harrison (2019) have developed a mathematical proof which argues that scholars are often-times able to proceed as if the interaction term in the analysis was exogenous, which further suggests that endogeneity is not an issue in our study.

Furthermore, to control for any bias in our sample, we wanted to verify the robustness of our results by integrating Goertz's (2006) 'possibility principle' into our analysis. In doing so, we test our models using two separate samples. The first sample was used to test the dependent variable CEO-board chair separation, and excluded any firms that never exhibited CEO duality, and hence could not have possibly separated the roles of CEO and board chair (Krause & Semadeni, 2013). The second sample tested the dependent variable CEO-board chair combination, and excluded any firms that continuously operated under a duality structure throughout the course of our sample, and thus could not combine the two roles. We find that our results remain consistent using this specification and thus showing additional support for our findings.

Most of our variables are calculated in accordance with standard procedures in the management literature. As noted earlier, our results are robust to employing alternative weightings when calculating historical aspirations. However, we also examine whether our results are robust to alternative weightings on the mix of social and historical aspirations when calculating the overall aspiration level. Model 6 of Table 2 and Table 3 indicate that results are similar if we use solely the social aspiration level, and Model 7 of these tables demonstrates that the results are also similar if we use a 50/50 split of social and historical aspirations.

5. Discussion and conclusion

BTF research has been instrumental in explaining why organizations enact change when there is a performance shortfall (Cyert & March, 1963; Greve, 1998; Posen et al., 2018). Though scholars have previously examined a number of different actions that a firm is likely to pursue when instigating problematic search, such as new product introductions (Greve, 2003), increased R&D intensity (Chen & Miller, 2007), or increased risk taking (Bromiley, 1991), the BTF literature is somewhat limited on search actions with outcomes related to corporate governance. In this study, we consider the BTF to be an appropriate framework to better understand how a firm's performance relative to aspiration impacts the likelihood that the firm will separate its CEO and board chair roles. We believe that this study has several implications for both researchers and practitioners.

First, we contribute by integrating literatures on the BTF and corporate governance. Prior research fails to account for the idea that it is not simply a firm's performance that is likely to lead to significant leadership changes, but the performance relative to an aspiration level. The automotive industry during the great recession of 2008–2009 is a prime example. Although the entire industry took a significant hit financially during this economic downturn, some CEOs were able to help their companies weather the storm better than others. Consider Alan Mulally, CEO of Ford Motor Company, who was at the helm when the company lost approximately \$15 billion in 2008. Because he was able to

withstand the recession without receiving a substantial government bailout like many of his industry peers, he was effectively able to retain his role within the company. Thus, performance relative to aspirations—especially social aspirations—is a major determining factor that boards consider when making changes to leadership structure.

Second, we contribute to the BTF literature by showing the effect that CEO ownership has when identifying solutions to performance attainment discrepancies. Our results show that as firm performance decreases below the aspiration point, separating the roles of CEO and board chair becomes more difficult as the CEO gains greater power by increasing his or her ownership within the firm. Similarly, when performance is above the aspiration level, CEO ownership in the firm increases the likelihood of being granted duality. Our findings underscore the importance of considering CEO ownership when evaluating the impact of performance on duality. Thus, while problemistic search and slack search have been shown to be an integral part of an organization's continued viability, potential search solutions with regard to changes in leadership structure are likely to be influenced by the CEO when he or she has a substantial ownership stake in the firm.

Our study also has limitations that warrant discussion and may provide potential for further research in the BTF and corporate governance literatures. First and foremost, because our measure for performance relative to aspirations requires a substantial amount of data from several industries and historical time points, our sample includes only publicly-traded firms from the S&P 1500 that were available via the *Compustat* database. This restriction may limit the generalizability of our results, since our sample did not include firms that are either private or non-U.S. based. Second, though we make associations between performance relative to aspirations and the separation of the CEO and board chair roles, there may be other reasons for doing so, such as corporate fraud or alternative forms of personal scandal. We also assume that all separations are forced demotions, though prior research has suggested that other types of separation exist (e.g., departure or apprentice; Krause & Semadeni, 2013). However, because we observe antecedents of separation, we can say with some confidence that poor performance relative to aspirations is more likely to lead to separation by demotion, rather than a departure to another more prestigious firm or taking on an apprentice to carry out current strategies.

In conclusion, our study aimed to integrate the literature on corporate governance and the BTF by showing that the separation of the CEO and board chair roles increases in likelihood as a firm operates below its aspiration levels and that the combination of the CEO and board chair roles increases in likelihood as a firm operates above its aspiration levels. While we were unable to find support for these hypotheses, we observed an important boundary condition to explain the null results in our study and mixed results in the prior literature. In doing so, we determined that these relationships are significantly affected by CEO ownership, such that CEOs become less likely to lose the board chair role after poor performance relative to aspirations when they have high ownership within the firm. Furthermore, CEOs become more likely to gain duality when the firm's performance exceeds its aspiration levels when they have high ownership in the firm. Although prior research has suggested that performance has no relationship with leadership structure, these studies fail to incorporate the relative performance aspect (i.e., social and historical) into their models. Applying the BTF framework and methodology provides substantially different outcomes and helps scholars understand *when* the positions of CEO and board chair are separated, not just *whether* they are.

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