**CEO Succession Gap and Firm Performance**

Renzhu Zhang\*, Gurmeet S. Bhabra, Hsin-I Chou, and Eric K.M. Tan

**Abstract**

In this study, we examine the effect of succession-induced gaps in CEO characteristics on subsequent firm performance. We show that a gap index constructed using differences in CEO attributes between the predecessor and the successor leads to deteriorating subsequent firm performance when the succession event itself is characterized as disruptive. However, under non-forced succession and when pre-succession performance has been good, a change in characteristics contributes positively in enhancing subsequent firm performance. Further analysis of the channels suggest that radically different CEOs are more likely to bring with them a higher proportion of co-opted directors, make downsizing and business divesting decisions, and lead firms characterized by higher levels of post-succession strategic instability when there is a mandate for change. Overall, our findings demonstrate that tapping successors who bring in a new set of attributes that are markedly different from their predecessors are not always value enhancing and more so under forced succession and when the pre-succession firm performance is poor.

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# 1. Introduction

CEO succession is a topic of considerable interest to academics and practitioners alike; it has been the subject of intense academic research in both the finance and management literatures. Boards worldwide spend considerable time and effort ensuring that the succession process identifies the right skill set in the incoming CEO. Extant research has invested considerable effort in exploring the topic of CEO succession, seeking to underpin CEO succession planning, the reasons behind leadership changes, and whether such changes add value to the enterprise.[[1]](#footnote-1) For example, Zhang and Rajagopalan (2004) show that the relay succession method allows the heir apparent the opportunity to learn firm and position-specific skills which leads to better post-succession performance, especially when performance leading up to the succession is poor and when firm and/or industry strategic instability has been high. In a related study, Naveen (2006) finds that a firm’s probability of grooming an internal candidate is positively related to firm size and organizational complexity.

We step back from the value implications of the process of succession and focus instead on the *outcome* of the succession planning i.e. on the differences in personal traits of the person that is finally chosen relative to the outgoing CEO. In other words, we are interested in the value-implications of a shift in corporate culture brought about by CEO turnover. Our interest in studying the impact of a turnover-driven shift in corporate culture is motivated by the recent burgeoning literature that links CEO personal characteristics to firm policy choices and performance.[[2]](#footnote-2) Given that boards scouting for talent look for indicators, any association between personal traits/experiences and firm performance is likely to provide invaluable insight into hiring the right person to help take the firm forward. There is, however, a significant void in the CEO succession literature. The literature hitherto has limited its attention to examining the cross-sectional association between CEO characteristics and future firm risk and performance and to the best of our knowledge, almost none focuses on how differences in personal traits between the predecessor and successor (“succession gaps” hereafter) could affect firm performance.[[3]](#footnote-3)

However, notwithstanding the oft held belief that change is good, the consequence of leadership change on firm performance has been reported as largely inconclusive in past literature. As such, there is reason to believe that the performance of new CEOs with large succession gaps could either help or hurt firm performance. On one hand, successors with large succession gaps may introduce different management philosophies and succeed, given that shake-up is necessary to move the firm forward to keep up with competitors. Examples include America’s first female Fortune 500 CEO - Washington Post’s Katharine Graham and Xerox’s Ursula Burns, who in July 2009 became America’s first Fortune 500 African-American female CEO and the first woman to succeed a female predecessor,[[4]](#footnote-4) both of whom serve as an everlasting role model for other women top executives in the male-dominated business world. Another example is Alan Mulally, who was tapped as CEO of Ford and quieted the talk that an airplane expertise could not lead an automobile manufacturing company.[[5]](#footnote-5)On the other hand, the succession process could be fraught with risks of hiring the wrong person who could potentially do more harm than good. This can be particularly deleterious when the outcome of the hiring process cannot easily be reversed. For instance, some new CEOs bring with them their own management team when taking over the top leadership position and make efforts to shake up the culture which may further exacerbate an already weak morale. Some are just not suitable for running a different business, such as Gap’s Paul Pressler, the Disney veteran who was ousted after failing to save the floundering business due to his lack of appreciation and creativity of the fashion industry.[[6]](#footnote-6) Johnson & Johnson’s former CEO William Perez is another example, who resigned after a short stint at the world’s largest shoemaker Nike following disagreements with the firm’s founder over management philosophy.

In this paper, we seek to identify characteristics of succession events when the impact of hiring a CEO with radically different personal traits could benefit the firm and conditions when such differences could potentially be harmful to firm value. A natural subset of successions potentially more prone to adverse cultural shocks are the ones in firms already reeling under disruptive conditions while the reverse would be true for the complementary subset. These include successions where the outgoing CEO is forced out and when the succession was preceded by poor firm performance. Therefore, given this dichotomy in the possible outcome of the succession process, we add to this literature by examining whether succession-induced gaps in CEO characteristics have any influence on post-succession firm performance.[[7]](#footnote-7)

To test our hypotheses, we use data on a sample of S&P 500 companies spanning the period 1996 to 2016. We construct an index of CEO characteristics comprising hand-collected data on CEO gender, age, career variety, cultural background, highest education level, and social status (‘eliteness’) of undergraduate school. Each of these has already been individually shown to impact firm performance. We construct the index by adding +1 for every difference between the predecessor and the successor with regards to the aforementioned six attributes. Index values therefore range from zero to six, with zero indicating close alignment between the personal traits/experiences of the successor and the predecessor, while six suggests that the outgoing and incoming CEOs are totally different along these six dimensions. Future performance of the firm undergoing a succession (i.e., a treatment firm) is measured relative to others that do not experience such an event (i.e., a matched sample). To minimize the effect of any sample selection bias, we use a propensity score matching methodology, where for every firm experiencing a leadership change (i.e., in the treatment group), five matching firms that did not go through such an event, but share similar pre-succession characteristics, are identified among the matched firms. In other words, the treatment and matched samples have similar pre-succession firm characteristics, with the only difference being that treated firms have a change in top management.

Our main findings can be summarized as follows. For the full sample of CEO successions, we do not find evidence that the succession gap index impacts on future firm performance. Shifts in cultural mores can be beneficial or harmful to performance, and in a portfolio, the positive effect in some firms is neutralized by the adverse effect in others. We next split the sample into firms that were the subject of disruptive changes leading up to the succession event and those that were not. Interestingly, we find that when the succession involves a forced removal of the CEO, or when pre-succession firm performance has been poor, an attempt to further shake up the status quo through a radical shift in the personal traits/experiences of the CEO leads to worse subsequent firm performance. This result is even stronger in the long term. Consistent with our conjecture, the adverse impact of the succession is limited only to the set of successions that are either disruptive or had poor pre-succession performance while firms in the complementary subsample (i.e. non-disruptive successions) showed significant improvement in performance in the years following the succession event. In our further tests, we find that successor CEOs who differ considerably from their predecessors tend to co-opt a greater proportion of the board one year after assuming office, have greater discretion to make far-reaching changes regarding downsizing and business divesting, and lead firms characterized by higher levels of post-succession strategic instability. This suggests that successor-induced personnel, structural and strategic alterations are likely to be higher when the event itself signals a change in firm policy or post-succession redirection.

Overall, we find evidence that appointing a successor with a gap in characteristics is not always value-enhancing. In fact, it can be harmful when the succession event is disruptive in nature. Our empirical findings have strong implications for how firms manage the succession especially when the succession is forced or when a leadership change is preceded by poor firm performance. In particular, our findings suggest that under disruptive circumstances a firm should not appoint a new CEO who wants to stamp a mark on the firm by being different (i.e., by having a high succession gap). Instead, what such firms truly need is a newcomer who possesses an in-depth industry knowledge and has a good understanding and appreciation of the corporate culture. Such successors will be less likely to demand drastic changes and will experience less resistance within the organization thereby enhancing rather than disrupting the existing relationships. Such a successor can proactively seek help from incumbent board members and top managers to successfully implement value-adding reforms.

To the best of our knowledge, this is the first paper that considers the combined effect of various differences in CEO characteristics between the predecessor and successor simultaneously in a succession context and examines whether such succession gaps have any influence on subsequent firm performance. This is also the first paper that looks into the difference between the predecessors’ and successors’ characteristics by distinguishing between different types of succession events. Our research is associated with the growing body of literature that examines the importance of a change in leadership on subsequent firm performance and the implications for firms’ hiring and firing decisions in the labor market.

The remainder of the paper is organized as follows. Section 2 provides a comprehensive literature review surrounding CEO succession events and firm performance and our hypotheses development. Section 3 describes our sample and methodology, while section 4 presents the empirical results, robustness tests, and further tests. Finally, section 5 concludes our paper.

# 2. Literature Review and Hypothesis Development

A neoclassical view of the firm is that top management is homogeneous providing selfless inputs into the production process. Under this view, different managers are regarded as perfect substitutes for one another. Two firms sharing similar technologies, factors and product market conditions will make similar choices, whether or not they share the same management team. An even more extreme assumption is that top managers simply do not matter for the operational activities within a firm. Existing empirical studies typically rely on firm, industry, or market-level characteristics to explain corporate behavior and performance but largely ignore the role that individual managers could play in shaping these outcomes. While executives may differ in their preferences and levels of risk-aversion or skills, none of this will translate into actual corporate policy if individuals cannot easily influence these policies. Gamson and Scotch (1964)’s Ritual Scapegoating Hypothesis supports this argument by stating that a succession event serves as a means to provide a target when there is a decline in a firm’s performance. Therefore, rather than actually enhance post-succession performance, a succession event just gives the public an illusion that a change in leadership could determine the company’s fortune. Furthermore, in some circumstances, the hiring of incoming CEOs with succession gaps might be mere tokenism. For instance, corporate social responsibility of a firm may be called into question following a scandal. As a response, female executives may be installed strategically as a signal that the firm is attempting to become more “socially responsible”. Skaggs (2009) finds that after a racial discrimination lawsuit, firms respond to external pressure by becoming disproportionately more likely to promote African-Americans into management positions. The visibility of a scandal and the public perception of mismanagement should act as a threat to executive office holders, and thus create opportunities for appointments of CEOs with succession gaps. Under such circumstances, the effect of CEO succession gaps on subsequent firm performance would be inconclusive.

In contrast, others insist succession is adaptive since CEO succession is an error-correcting process serving as a response to sagging profitability. Therefore, a change in leadership is an indication of the firm’s effort in improving its performance and a favorable shift in firm-environment fit (Pfeffer & Salancik, 1978; Allen et al., 1979; Brown, 1982). Other studies, however, argue that succession is a vicious circle whereby low firm efficiency cause such events to happen in the first place (Grusky, 1963; Cannella & Lubatkin, 1993). Instead of improving efficiency, a change in leadership could only cause more disruptions and further destabilize the firm (Ballinger & Marcel, 2010). As such, the consequence of CEO successions on post-succession firm performance remains an open empirical issue.

From a radical ecological perspective, succession is an event that indicates a more fundamental underlying structural/strategic change which is substantial enough to result in a deleterious misalignment with a firm’s environment. From a bureaucratic theory point of view, successions could disturb internal stability, disrupt relations and work patterns within a firm (Friedman & Singh, 1989). CEO succession gaps would be more disruptive than adaptive when the succession event itself is already disruptive in nature. Under such circumstances, when someone with succession gaps is tapped as CEO, reactions inside the organization could range from suspicion to outrage. Discontent in the management team could set in, especially in those who were fighting for the top executive job themselves. For companies that are bureaucratic, hostile to new ideas, and have a history of resisting external candidates, the incoming CEO with succession gaps is highly likely to be isolated. Besides, it takes time: (1) for the incoming CEO, especially with succession gaps, to learn about how the system works as well as his/her roles and responsibilities in the new position, and (2) for internal and external stakeholders to get familiar and bond with the new leader (Karaevli, 2007). As such, a loss in firm value is expected because a succession event would not only result in the loss of firm-specific knowledge and human capital, but the difficulty in managing internal and external relations which also makes it harder for the successor to gain support from the top management team, build a power-base, and understand how to establish relationships with external forces (e.g. regulatory parties, suppliers, customers) to achieve performance goals (Greiner et al., 2003; Zhang & Rajagopalan, 2004). This is especially true when the incoming and outgoing CEOs differ widely in characteristics and backgrounds. Miller (1993) argues that a decrease in firm integration would be expected following a succession event and the incoming CEO’s ideas are less likely to be precisely articulated and converted into actions, and this is more pronounced when the incoming CEO differs significantly from the previous one.

Succession events serve as a means for breaking with the past with regards to regime and management styles, existing structure, as well as cultures and customs within an organization. As a consequence, turnaround strategies would be expected (Schepker et al., 2017). From a personnel perspective, if the managerial succession rate is low and the original management team is left in place, it is possible that the existing management team may romanticize the past (a strong conservative force influencing peoples’ behavior) and may be reluctant to accept radical changes, so that the new CEO would find it difficult to push through his/her ideas (Schepker et al., 2017). The successor would be in for an uphill battle to overcome this handicap. In addition, for incoming CEOs with a succession gap, their functional expertise could be quite different from the skill sets and background deemed essential in the traditional promotion channel, leading to negative reactions by employees. Company morale would also be adversely affected if radical changes are made by the incoming CEO (which is more likely in the existence of succession gaps). Such drastic changes may upset the perceived probability of company goals being reached, and a perception that employees' efficiency may not improve. The complexities of the company, the sheer number of internal and external vested interests, and the various stakeholders involved could collectively prevent effective strategic changes (Dalton & Kesner, 1983). As a result, worse subsequent firm performance is likely to ensue under such circumstances.

On the other hand, if successors with succession gaps bring with them a group of managers and the rate of executive turnover is high, existing managers might find it hard to accommodate new practices and policies introduced by the incoming CEO. For example, they might feel that opportunities for promotion have become unattractive under the new CEO, where he/she will be highly likely to make drastic personnel changes in the top executive team, or the promotion channel would change if the leader possesses a skill set that is quite different relative to the traditional criteria (Friedman & Saul, 1991). The vacancies left by departing executives and the uncertainties created as new ones replace them lead to instability, insecurity, and disruptions in relations and work patterns within a firm, which would only exacerbate the existing disruptions.

Prior literature suggests that more disruptions would be expected when: (1) the CEO is forced out, and (2) when firm performance is poor before the succession event. Forced succession reflects the board’s intention to engage in drastic organizational change (Friedman & Singh, 1989; Hutzschenreuter et al., 2012). Compared with non-forced successions, a forced removal is more likely to result in more successor-induced changes and therefore more disruptions within the organization see (Friedman & Saul, 1991), especially when the successor differs widely from his/her predecessor. In addition, it would be unlikely for the predecessor to offer suggestions and assistance for the successor if the predecessor is forced out.

Similarly, succession gaps, introduced as a ‘shock’ into the firm in the wake of the new leader, would be more likely to result in drastic changes following a poor pre-succession performance. As a result, disruptions caused by structural or strategic changes introduced by the incoming CEO will be higher when performance has been poor. Previous studies show that unstable or turbulent conditions (deteriorating organizational performance, plummeting stock price, fraud, scandal, restatement of financial statements, etc.) could provide opportunities for firms to break away from the current enterprise habitus and alter hiring and promotion practices (Reskin & McBrier, 2000; Khurana, 2004; Ryan & Haslam, 2005; Haslam & Ryan, 2008),[[8]](#footnote-8) and thus create opportunities for appointments of CEOs with succession gaps. This is consistent with Reskin and Roos (2009)’s queuing theory which argues that instability or scandal can make top leadership positions less desirable (lower job security/earnings) to candidates with high competence. Since a pattern of continuous poor performance is an indication of a mismanaged company resisting improvements, viable successors may be unwilling to take charge and put their reputation at risk if they fail in their attempt to save the declining business. As such, competition from highly competent candidates would be less intense, allowing those less capable to move ahead in the queue to fill these vacancies. Under such circumstances, incoming CEOs with succession gaps might not possess the human capital that is significantly higher than their predecessors and their hiring might not lead to better firm performance as the board intended. The aforementioned two circumstances not only indicate a mandate for change, but also allow the successor enough room and abundant discretion to affect drastic changes. Moreover, the selection process under disruptive circumstances might not be rational enough, so that a successor with gaps might not possess more extensive human capital than his/her predecessor or industry peers. This leads to our first hypothesis as follows:

***H1****: CEO succession gaps are disruptive under turbulent conditions (forced removal and when pre-succession firm performance has been poor) and will produce worse subsequent firm performance relative to an otherwise similar firm that does not experience a succession event.*

On the contrary, under non-forced successions or when pre-succession financial performance has been good, there is a premium on continuity (Friedman & Singh, 1989; Shen & Cannella, 2002), and there is no need to select a new CEO who is radically different from the predecessor. When company performance improves, traditional hiring and promotion norms that have historically tended to favor successors with similar characteristics would be expected. Zajac and Westphal (1996) developed an organizational demography model where they use age, functional background, and educational background as demographic similarity measures and conclude that boards tend to hire a ‘demographically similar’ CEO, indicating that there is a mutual attraction between firms and employees that share similar characteristics. Thus, in order to overcome ‘glass ceiling’ barriers and to attract the attention of director selectors, an incoming CEO with a succession gap when pre-succession firm performance is good may be driven by the needs to acquire more extensive human capital than his/her counterparts. Besides, the selection process is expected to be well-planned under such conditions, which gives the successor enough time to become familiar with the business and allows firms to leverage firm-specific knowledge and resources bases in determining post-succession organizational success. Moreover, Miller (1991) asserts that the fit between firm’s structure and strategies and its environmental contingencies is a declining function of CEO tenure. CEOs are known to cling to policies and actions that led to past successful experience but would not probably work under current situations, commonly known as ‘competency traps’ (Levitt & March, 1988). These ‘competency traps’ will lead to the incumbent CEO’s technical and political obsolescence that is unable to provide suitable solutions to new issues and to maintain a stable political environment within the firm (Ocasio, 1994). Incoming CEOs with succession gaps, however, would alter the firm’s strategies and directions that better suit environmental demands by giving rise to strategic and social novelty and bringing about diverse social and professional networks. Transformational strategies are more likely to be observed in the existence of succession gaps, which would result in strategic actions that are supposed to fundamentally address organizational challenges and improve performance. Non-forced succession and/or good pre-succession firm performance provide a company with a stable internal environment that could serve better in capitalizing on environmental opportunities. This leads to our second hypothesis as follows:

***H2****: Succession gaps are adaptive under non-forced turnover or when pre-succession performance has been good, and will display a positive relationship with firm performance compared to an otherwise similar firm that does not experience a succession event.*

# 3. Research Design

## 3.1. Data

Our starting sample comprises all S&P 500 firms between 1996 and 2016. CEOs’ basic information (including name, gender, age, stock ownership, compensation structure, and tenure) was extracted from Compustat’s ExecuComp database. The additional demographic information (including career history, educational background, and cultural background) was hand-collected from the S&P Capital IQ database, Bloomberg’s online executive profile webpage, NNDB.com, Ancestry, and Wikipedia in the last instance. The classification of succession events into forced and non-forced follows the method described in Parrino (1997)[[9]](#footnote-9), which has been widely adapted in recent CEO succession studies (Huson et al., 2004; Hazarika et al., 2012; Guo & Masulis, 2015; Jenter & Kanaan, 2015). The demographic information on S&P 500 top executives was then merged with Compustat’s annual fundamental data and BoardEx’s Director and Director Legacy database, with the latter containing information on board size and board independence. We dropped financial services firms and utilities from the sample (two-digit SIC Code 60-69 and 49), given that firms in these sectors are heavily regulated which may lead to performance outcomes following a succession to differ from those of non-regulated companies. We also excluded all cases followed by merger & acquisition or spin-offs, since it is difficult to separate the impact of leadership change from a major organizational restructure on subsequent firm performance after the succession event. After dropping firms without the CEO’s full name in the given fiscal year, the final sample contains 7,141 firm-year observations to conduct our analyses.

## 3.2. Variables Construction

The dependent variable, firm performance, is the return on total assets (ROA) over the year following the succession event. To construct our primary explanatory variable, a measure for the succession-induced gap in CEO characteristics, we draw upon prior literature that has demonstrated that CEO’s gender, age, career variety, cultural background, highest education level, and social status (eliteness) of undergraduate school affect firm performance. First, as suggested by Adams and Funk (2012), women on boards of publicly listed companies emphasize different values in that female directors are more open to change and less conservative than both male directors and women in the general population. Moreover, female directors are particularly stakeholder-oriented (Adams et al., 2011; Matsa & Miller, 2013). Carol (1982) documents that men tend to address rules, justice, and individual rights when considering moral dilemmas whereas women are more likely to consider the impact of relationships when facing such issues. However, a feminine leadership style characterized by empathy, effective communication, and sharing of information and power could be effective in mid-level management, but may not necessarily work when serving as CEOs of large companies. Therefore, a change in gender in the top leadership assumes significance with regards to subsequent firm performance. We create a dummy variable, GENDER\_GAP, which takes the value one if there is a gender difference between the predecessor and the successor, and zero otherwise.

Second, we hypothesize that the age difference between the predecessor and successor would impact firm value since younger CEOs emphasize things differently compared to older managers. Younger CEOs are more energetic in terms of physical and mental conditions (Child, 1974) hence more capable of grasping new ideas and learning new behaviors (Chown, 1961). Moreover, younger managers tend to be less risk-averse as they put less emphasis on career and financial security (Barker & Mueller, 2002). Also, innovative and risky strategies are more likely to be considered by young leaders (Serfling, 2014) leading to higher growth and variability in profitability compared with their older counterparts in the same industry (Hambrick & Mason, 1984). On the other hand, younger leaders may be more conservative and may not deviate from industry benchmarks as they have greater reputational and job concerns (Hirshleifer & Thakor, 1992; Zwiebel, 1995; Holmström, 1999). Chevalier and Ellison (1999), and Hong et al. (2000) find evidence that due to a more sensitive termination-performance relationship, younger managers are encouraged to take on less unsystematic risk, and generally tend to exhibit higher levels of career concern-motivated herding behaviour. In addition, older CEOs may have higher intellectual capabilities and make corporate policies based on experience, skills, and knowledge gained from the position and/or advanced education (Sitthipongpanich & Polsiri, 2015). We calculate the standard deviation of the age distribution of all CEO in our sample and then create a dummy variable AGE\_GAP that takes the value one when there are at least two standard deviations of age difference between the predecessor and the successor, and zero otherwise.[[10]](#footnote-10)

Third, career variety can also impact firm value, since it represents personal biases favoring experimentation and change and is positively related to personality traits such as extraversion and openness to experience (Judge et al., 2002; Judge et al., 2004). A multi-industry career experience could possibly contribute to future feasible strategic and social novelty within a company thereby directing the firm down on the novel paths. However, replacing an ‘industry specialist’ with a ‘general manager’ might not necessarily be beneficial, since drifting from job to job could result in superficial cognitive breadth instead of being proficient in a certain area. In addition, career variety may be positively related to a person’s degree of anxiety, avoidance of commitment, and/or lack of contentment (Mowday & Spencer, 1981; Barrick & Mount, 1996; Judge & Bono, 2001). We therefore create a dummy variable CAREER\_VARIETY\_GAP which takes the value one if either one of the outgoing and the incoming CEOs is a ‘general manager’ (i.e., had previously worked in another GICS sector and/or moved across different functional areas), while the other one is an ‘industry specialist’ (had spent his/her entire career in one industry and/or even in just one company), and zero otherwise.

Fourth, CEOs with different ethnicities or cultural backgrounds may see things differently compared to CEOs born and raised in the U.S., especially regarding knowledge of global markets and the skills to target customers in different cultural settings. Similar to career variety, cultural variety helps to shape managers’ cognitive map and conveys a broad cognitive and experiential stock which the CEO could draw upon. Multicultural experience has been shown to be positively associated with creativity (Maddux & Galinsky, 2009; Tadmor et al., 2009). On the other hand, Graham et al. (2013) argue that compared with their native American counterparts, non-US CEOs are more conservative with regards to sure losses, less optimistic, and less willing to take chances. Furthermore, the potential clash between global economic interests and local political interests and the loss of connection to local political parties/suppliers/business partners could be challenging when a non-native CEO takes charge of the firm. We capture this through a dummy variable CULTURAL\_GAP that equals one if either one of the predecessor or the successor is a native American and the other is not born and raised in the US, and is set equal to zero otherwise.

Finally, as for the last two attributes regarding educational quality, they serve as a component of a person’s cognitive ability and are a signal of a person’s capability to persevere in challenging intellectual activities. We distinguish high education gap from the ‘eliteness’ education gap given that the former gap measure emphasizes the difference between the knowledge base and mind-set of the incoming and outgoing CEOs, while the latter measure emphasizes the CEO’s social capital. Kish-Gephart and Tochman Campbell (2015) postulate that for CEOs with highly placed parentage, an elite education makes them better connected to people across different industries, gives them more exposure to new business opportunities, and easier access to cutting-edge technologies which encourages the CEOs’ risk-taking behavior. Their assertion is consistent with Cao et al. (2015) that while both internal and external social capital matters, CEOs’ outside connections (‘bridging capital’) function better than their internal network (‘bonding capital’) in promoting entrepreneurial innovation and firms’ strategic risk-taking. Moreover, wide connections creates a safety net for potential failure, which allows CEOs to take on more risks and therefore influence subsequent firm performance. On the other hand, Antonakis et al. (2017) document that CEOs with high IQs tend to adopt less effective leadership methods, and they generally exhibit lower levels of transformational and instrumental leadership skills. Furthermore, CEOs with lower educational qualifications would over-compensate through superior performance when compared with their counterparts with more prestigious educational backgrounds. A higher educational profile may make it easier for someone to win a CEO slot due to a stronger social network and the board’s perception of a superior education as an appropriate proxy for managerial ability. Executives with no advanced degree, however, must work their way up through a hierarchy in a process that does better at weeding out good CEOs from bad than any other superior education ever could.

As such, we create two dummy variables associated with CEO educational background: the first dummy, HIGHEST\_EDUCATION\_GAP, takes the value of one if there is a difference in the level of educational qualifications between the predecessor and the successor. We set ‘level’ to zero if the CEO does not attend university or college, to one if the CEO’s highest qualification is ‘LLB/Bachelor’, to two if the CEO has ‘LLM/Master/MBA’ degree and to three if he/she has achieved a qualification of ‘Juris Doctorate/PhD’. Any difference in the level between the incoming CEO and the outgoing one is regarded as a ‘highest education gap’. The second dummy, ELITE\_EDUCATION\_GAP, takes the value of one if either one of the predecessor’s or the successor’s undergraduate school is in the top-20 list of the Best National/Global University rankings as defined by U.S. News & World Report’s 2016 rankings, while the other’s undergraduate school is not in the list.[[11]](#footnote-11)

We also construct a succession gap index (GAP\_INDEX) to illustrate the aggregate measure of difference between the predecessor and successor. We add one point for every difference between the predecessor and the successor with regards to the aforementioned six attributes. The maximum value for the index is six if the outgoing and incoming CEOs are different in every one of the six attributes. Likewise, the minimum value is zero if the outgoing and incoming CEOs share similar characteristics in all those traits. The GAP\_INDEX in our sample has a mean value of 1.817 and a median value of 2. Among all of the 659 succession events, 32 cases involve a gender gap (23 cases are female replacing male and 9 are male replacing female), 193 successions result in an age gap (185 cases involve younger successors replacing older predecessors and 9 cases where older successors replace younger predecessors), 275 cases involve a career variety gap (146 cases are generalists replacing industry specialists and 129 cases are industry specialists replacing generalists), 106 are characterized as successions that lead to significant cultural gap (63 successors born or raised outside U.S replacing native Americans and 43 American CEOs replacing non-Americans), in 355 successions there was a significant education gap (193 successors with higher educational qualification replacing predecessors with lower qualification and 162 cases being the other way around), and 178 successions are characterized by significant shift in the ‘eliteness’ of the CEOs undergraduate education (78 cases are successors with elite undergraduate degree replacing those without, and 100 cases where successors without elite undergraduate degree replacing those with elite undergraduate degree).

To examine the first and the second hypothesis, we construct two additional independent variables. The first is a dummy variable, FORCED, that equals one if the predecessor was forced out (board-initiated succession) and zero otherwise (customary, CEO-initiated, or death/health-related disability-initiated succession). Our second variable, POOR\_PRE\_PERF, is a dummy variable that takes the value of one if the firm’s pre-succession firm performance is lower than its industry median in the given fiscal year and zero otherwise, with industry defined at the two-digit SIC code. Of the 659 succession events, 179 are forced turnovers (27.2%)[[12]](#footnote-12) and 309 are turnovers were characterized by pre-succession firm performance that was below industry median (46.9%). We expect to find a negative coefficient on GAP\_INDEX for forced succession and when performance leading up to the succession is poor*,* and a positive coefficient on GAP\_INDEX for non-forced turnover and those with good pre-succession performance, According to our first and second hypothesis, respectively.

We control for firm characteristics (Himmelberg et al., 1999; Frank & Goyal, 2009), corporate governance mechanism (Coles et al., 2006; Guest, 2009), and CEO characteristics (Boyd, 1995; Fahlenbrach, 2009; Fahlenbrach & Stulz, 2009) in our models, since these variables have been shown to impact firm performance. For firm characteristics, we include eight variables, including past firm performance (PRE\_PERFORMANCE), the number of years since the firm was established (FIRM\_AGE), leverage (LEV), firm size (SIZE), market-to-book ratio (MTB), capital expenditure ratio (CAPEX), free cash flow ratio (FCF), and fixed tangible assets (TANG). Corporate governance related control variables include board size (BOARD\_SIZE) and board independence (BOARD\_INDEPENDENCE). Control variables that capture CEO characteristics include the percentage of outstanding shares owned by the CEO (OWNERSHIP), the proportion of total annual CEO compensation that comes from option grants and stocks (EQUITY\_INTENSITY), CEO-chairman indicator (DUALITY), founder-CEO indicator (FOUNDER), and family-member-CEO indicator (FAMILY\_MEMBER). All control variables are winsorized at the top and bottom 1% level to minimize the influence of potential outliers. The definitions of control variables are explained in Appendix A.

## 3.3. Methodology – Propensity Score Matching (PSM) Regression

By comparing the outcome of firms that experienced succession in a given fiscal year with those that did not, we could estimate the actual effect of the succession on firm performance. This approach could only work under the condition that firms that went through a succession are randomly assigned, which however, is not the case in our sample. Firms, for example, with worse past performance are more likely to replace their CEOs. Should the trend continue, ‘treated’ firms (firms that experienced CEO successions) would be expected to produce worse subsequent performance than their counterparts, on average, regardless of whether they actually went through a change in their top executives or not. Under such circumstances, the estimated coefficient would be incorrect due to potential sample selection bias, which arises when the key determinants of why a firm goes through a succession are also related to firm performance.

To address this potential sample selection bias, our identification strategy relies on the propensity score matching (PSM) method to investigate the influence of CEO succession gaps on subsequent firm performance. We follow Malmendier and Tate (2009) by matching treated and untreated observations based on the estimated probability of being treated. We adopt this method where we match each firm that goes through a succession event with firms with otherwise similar characteristics but did not experience CEO turnover. In our study, instead of matching one to one, we match each treatment firm to five nearest match firms, so that the coefficient would be less sensitive to the matching criteria chosen. Once matches are made, the impact is then calculated by comparing the means of outcomes across treated observations and their matched pairs.

Guided by economic theory and prior literature (Brown, 1982; Friedman & Singh, 1989; Coles et al., 2014), several variables are used as matching criteria. This includes the conditions of the firm during pre-succession periods, such as performance, firm age, firm size, leverage, market-to-book ratio, tangibility, board size, board independence, industry sector, and fiscal year dummies. In addition, we also include the characteristics of the predecessor, such as age, ownership, and CEO duality indicator. We require that there is no leadership change one year after the transition year. The PSM method then uses a logit model to estimate matching firms as a function of the aforementioned matching criteria.

The following regression model was estimated for subsample analysis:

(1)

where PERFORMANCE is the difference in subsequent performance between the treatment firm and the average performance of the matching group *i* in year *t+1*, GAP\_INDEX is succession gap index for firm *i* in year *t*, FIRM is a vector of *N* firm characteristics control variables, GOVERNANCE is a vector of *K* corporate governance control variables, and CEO is a vector of *R* CEO characteristics control variables.

We estimate three separate models with different forms of fixed effects. The first model includes two-digit SIC industry and year fixed effects to control for unobserved heterogeneity across different industries and firms. The second model incorporates industry fixed effects, year fixed effects, and the interactions between industry dummies and year dummies, as industry-specific fixed effects during a particular year could be the driving force behind the negative relationship between our interaction terms and subsequent firm performance. Including the interaction term makes our gap index and the measures of subsequent firm performance comparable across industries in any given year. The third model controls for year and firm-fixed effects due to a possibility that firms under crisis might favour successors with gaps or candidates with high levels of succession gaps might ultimately decide to take the leadership position. Thus, the negative relationship between the CEO gap measure and subsequent firm performance could be driven by time-invariant firm characteristics.

# 4. Empirical Results

## 4.1. Summary Statistics and Correlations

Table 1 displays the descriptive statistics of firm characteristics as well as CEO characteristics that have potential to influence firm performance after the CEO succession. As shown in columns (1) to (3), firms that experienced a succession event do not differ much from those that did not go through such an event (we call this the non-succession group) with regards to subsequent firm performance. Compared to their counterparts, treated firms (i.e., succession firms) are more established as indicated by an older firm age, and have fewer growth opportunities as suggested by a lower market-to-book ratio. For firms belonging to the succession group, their incumbent CEOs have lower ownership but enjoy a higher proportion of equity-based compensation suggesting better incentive alignment in firms which experienced a change in leadership (Mehran, 1995). Besides, the incoming CEOs in the succession group are less likely to be both the CEO and the chairman of the board compared to their counterparts, suggesting firms’ efforts to reduce potential agency problems and to strengthen internal control (Westphal & Zajac, 1995). We also find evidence that firms lead by founder- or family member-CEOs are less likely to experience succession events.

However, when comparing firm-year descriptive statistics of forced and non-forced succession firms (as shown in columns (4) to (6)), it is clear that firms experiencing forced succession are generally less profitable as evidenced by a lower ROA one year prior to the succession event, and that such firms tend to pursue riskier financial but conservative investment policies as suggested by a higher leverage ratio and lower capital expenditure (Coles et al., 2006). Moreover, firms are more likely to hire an outsider to introduce strategic changes when the removals are board-initiated or the outgoing CEO departed under pressure from shareholders. In columns (7) to (9), we compare firms that have performed poorly in the past with those having a pre-succession financial performance that is above the industry average. We find that poorly performing firms are larger in size and possess lower growth opportunities. Moreover, poorly performing firms are associated with higher leverage, which confirms March and Shapira (1987)’s assertion that riskier policies are more likely to be introduced when the business falls into a decline than when the firms are doing well.

*< Insert Table 1 here >*

We construct the correlations matrix of the key independent variables that are subsequently used in the regression models. The results show that most of the independent variables have correlation coefficients less than 0.15. Among all the variables, only the estimated coefficients on (1) pre-succession firm performance and market-to-book ratio and (2) tangibility and capital expenditure have a correlation of more than 0.5. We further use a variance inflation factor (VIF) to evaluate multi-collinearity which has an advantage over pairwise correlations as it simultaneously looks at the correlation between one variable and the rest of the independent variables used in our regression models. The highest value of VIF for each independent variable is 2.70, suggesting that multi-collinearity is not a major concern.[[13]](#footnote-13)

## 4.2. Gap Index and Subsequent Firm Performance

Table 2 presents the results from PSM regression examining the effect of CEO succession gaps on subsequent firm performance. For the full sample, we do not find any meaningful relationship between succession gaps across all three regression models. These results are not surprising given that the consequence of succession on firm performance has been reported as largely inconclusive in past literature, stating that shifts in cultural mores can be both beneficial as well as harmful to performance with the positive effect in some firms being neutralized by the adverse effect of the cultural shift in others.

Most of the control variables in the baseline model display expected signs. For example, PRE\_PERFORMANCE contributes negatively to subsequent performance at less than the 5% level of significance across all models. Indeed, prior performance indicates how efficiently a firm has used its resources. Good pre-succession performance suggests that the firm has the ability to actively seize environmental opportunities and overcome environmental constraints hence, a change in leadership is not desired. Consistent with this, our results show that firms with good pre-succession performance experience a performance decline following a CEO turnover relative to an otherwise similar firm that has not seen a change in leadership.

In addition, our results provide evidence that effective monitoring would be essential in adding value to subsequent firm performance in succession contexts. As shown in Table 2, LEVis positively related to subsequent firm performance at least at the 5% level of significance, which is consistent with the assertion in Jensen (1986) that pre-commitment of interest payments and the risk of potential bankruptcy due to debt financing could discipline managers from shirking, appropriating perquisites, and/or investing in value-destroying projects. Also, we find high market-to-book ratio to be negatively related to subsequent firm performance following a leadership change at least at the 5% statistical significance level across three regression models, which confirms Boone et al. (2007)’s argument that firms with higher growth potentials have high monitoring costs. In addition, we find founder-CEOs to be associated with negative subsequent firm performance in model (1) at the 10% level. Adams et al. (2009) assert that founders are less likely to retain the CEO title when firm performance has been good. As such, founders are more likely to reassume office when the firm is under crisis. Furthermore, founder-CEOs concentrate more on employees and creditors than on shareholders, and they are more reluctant to bring about strategic changes than their counterparts (Mullins & Schoar, 2016). Thus, the reengagement of founder-CEOs might not be ideal and could lead to subsequent performance declines in a succession context.

Consistent with the monitoring role of incentive compensation, we find positive coefficients for both OWNERSHIP and EQUITY\_INTENSITY. Aligning CEOs’ compensation to firm performance by giving them higher share ownership or making their compensation more equity-based could motivate top executives to make value-maximizing decisions.

*< Insert Table 2 here >*

Given the oft held belief that change is good, our finding on the lack of association between change in CEO characteristics and firm performance for the full-sample are intriguing. There is, however, the possibility that the value-implications of a radical shift in CEO characteristics differ across subsamples which get annulled in a portfolio analysis. To test for this possibility, we next analyse the full-sample results further by splitting the sample into firms that were the subject of disruptive changes leading up to the succession event and those that were not. Table 3 illustrates the effect of CEO gap index on subsequent firm performance when the succession is forced relative to firms that experienced a non-forced succession. Once again we estimate three separate regression models: models (1) and (4) controlling for year and industry fixed effects; models (2) and (5) controlling for year, industry, and year-industry fixed effects; and models (3) and (6) controlling for year and firm fixed effects. In sharp contrast to the full-sample results presented in Table 2, results for forced removal strongly suggest that the larger the difference in attributes between the outgoing and incoming CEOs, the worse the firm’s subsequent financial performance would be when compared to an otherwise similar firm that does not experience a succession event. On the other hand, when the succession event is routine, CEO-initiated, or death/health-related disability-initiated, a radical shift in the personal traits/experiences of the predecessor and the successor leads to better subsequent firm performance. These results are consistent with our first and second hypotheses. Unlike non-forced removals, forced successions only allow a very limited time for the incoming CEO to conduct on-the-job training, digest the essence of the business, and bond with internal and external stakeholders. Besides, under forced succession, more successor-induced structure and strategic changes would be expected, which could disturb internal stability and disrupt relations and work patterns within a firm. Moreover, a company’s morale will go down when the incoming CEO’s characteristics and functional expertise differ widely from the skill sets and backgrounds that are deemed very important in the traditional promotion channel.

As discussed earlier, subsequent firm performance depends largely on the ease of monitoring and CEO’s incentive alignment in succession contexts. Firms characterized by a higher total debt ratio and lower growth opportunities are easier to monitor, and therefore produce better firm financial performance following a leadership change. The use of equity-based compensation on the successor again proves to be essential in adding firm value.

*< Insert Table 3 here >*

CEO turnover following poor performance is another set of successions that could potentially destabilize the top management and internal order further. Table 4 presents the sub-sample results (i.e. Poor and Good Pre-Performance) from PSM regression of CEO succession gaps on subsequent firm performance. Again, we adopt year and industry fixed effects for models (1) and (4); year, industry, and year-industry fixed effects for models (2) and (5); and year and firm fixed effects for models (3) and (6). Consistent with our hypotheses, we find succession gaps lead to deteriorating subsequent firm performance when pre-succession firm performance has been poor. In sharp contrast, a drastic difference in the personal traits/past experience between the outgoing and incoming CEOs positively impact performance in firms that were previously doing well. Similar to forced removals, poor past performance indicates a need for a change in mission, vision, and strategy. Successors with gaps are given the motivation and latitude of action to introduce drastic personnel and structural changes, which lead to more disruptions within the organization. Unlike when pre-succession performance is good, an incoming CEO with succession gaps under poor past performance may not be driven to acquire more extensive human capital than their counterparts in order to overcome ‘glass ceiling’ barriers and to attract the attention of director selectors. The instability or scandal not only provides a chance for firms to break away from the traditional recruiting process and end up tapping a successor with large characteristic-gap which might be mere tokenism, but also makes the top leadership position less desirable to acceptable candidates with high competence. This allows those that are less capable to move ahead in the queue to fill these vacancies.

*< Insert Table 4 here >*

## 4.3. Robustness Tests

### 4.3.1. CEO Gap index and subsequent long-term firm performance

We next conduct a series of robustness tests to ensure stability of our primary results reported so far. First, all of the results presented relate our succession-gap measure to firm performance over the one-year period subsequent to the turnover. However, successor-induced structural and strategic changes can take longer than a year and consequently their impact on firm value and financial performance may not show when performance is measured over the twelve months post-succession. We, therefore, re-estimate all our regression models using a three-year pre- and post-succession time frame (Cucculelli & Micucci, 2008) and present our results in Table 5. Panel A of this table reports estimates of the impact of gap index on long-term post-succession firm performance, Panel B reports results for sub-sample of forced/non-forced successions and Panel C reports results for sub-sample when the pre-succession performance is good and bad. Note that firms now belong to the poor pre-succession group if their three-year average pre-succession firm performance is lower than industry median in the given fiscal year in our sample and zero otherwise. As shown in Table 5, results are largely consistent with our previous findings. Consistent with the expectation that changes can take time to show results, the coefficients on the GAP\_INDEX become more significant both in economic and statistical significance compared to results when performance is being measured over a year. These results support the arguments of our first and second hypotheses.

*< Insert Table 5 here >*

### 4.3.2. Alternative performance measures

To test for the robustness of our findings to our primary measure of performance, we next use the following alternative measures of performance: (1) ROA redefined as net income scaled by total assets; and (2) return on equity (ROE) measured as net income divided by common equity. Results using these alternative performance measures over a one-year and three-year post-succession window are reported in Table 6. Columns 1 and 3 report the estimates of treatment effect on subsequent performance using a one-year post-succession window while Columns 2 and 4 report the estimates of treatment effect on subsequent performance by adopting a three-year post-succession time frame. Results for these alternative performance measures are largely consistent with those obtained using ROA, our primary measure of performance albeit being marginally weaker in statistical significance. For example, the importance of succession gaps under forced turnover in explaining subsequent firm performance does not show up one year following the succession event when using ROE as our performance measure, but the negative relation becomes economically and statistically significant in the long-term.

*<Insert Table 6 here>*

### 4.3.3. Endogeneity

A limitation in our propensity matching process is that even after accounting for selection bias by comparing treatment and matched firms, there is a potential endogeneity issue concerning a firm’s decision to choose a successor with different personal and professional backgrounds. As mentioned earlier, a crisis could give opportunities for firms to break away from the current enterprise habitus and alter hiring and promotion practices (Reskin & McBrier, 2000; Khurana, 2004), thereby creating opportunities for appointments of CEOs with succession gaps. If such a trend continues, the subsequent performance of firms with high succession gaps will be lower than firms with no succession gaps on average. Under such circumstances the PSM estimator will produce biased estimates.

We perform a mean-comparison test of pre-succession firm characteristics between firms with high relative to those with low succession gaps (as shown in Appendix B). Our results show that the differences in pre-succession firm age, firm size, tangibility, and CEO duality between these two groups are statistically significant. Firms belonging in the high-gap group are generally younger in age and smaller in size, and that older and more established firms are more bureaucratic and resistant to changes (Hannan & Freeman, 1984). Besides, firms belonging in the high-gap group have a lower predecessor duality ratio than their low-gap counterparts. However, the difference is negligible in scale. Other variables, especially pre-succession firm performance, do not have a significant impact on the successor-selection process. Although firms with both high and low levels of succession gaps share similar pre-succession performance trends, the existence of potential endogeneity problems would still hamper the interpretation of the PSM regressions.

To address such concerns, we adopt an instrumental variable approach using the gap index between potential candidates and the outgoing CEO as our main instrument. We calculate the average value of other CEOs in the same industry (defined by two-digit SIC code), state, and fiscal year for each of the six components of our Succession Gap Index, as they are potential candidates for the CEO position. We then calculate a Gap Index between the departing CEO and industry average characteristics (termed as Candidate Gap Index). Our assumption is that such Candidate Gap Index will be related to our realized Succession Gap Index, but should be reasonably exogeneous to the firm’s performance.

We first regress our gap index on the previously used set of control variables and the instrument: Candidate Gap Index (CANDIDATE\_GAP). Next, we use the instrumented GAP\_INDEX (i.e., the fitted value of the succession gap index from the first-stage regression for firm *i* in year *t*) in the second-stage regressions. We then test our two hypotheses by using this two-stage least square (2SLS) regression. In Table 7, the dependent variable for the second stage regressions in panel A is peer-adjusted subsequent firm performance (i.e., the difference in subsequent performance between the treatment firm and the average subsequent performance of the matching group of each firm *i* in year *t+1*)and in panel B is peer-adjusted subsequent long-term performance. We find that the regression coefficients of CANDIDATE\_GAP variable in the first-stage OLS regression are positive and statistically significant at the 1% level, suggesting that the Candidate Gap Index has a strong explanatory power on the incoming CEO’s level of succession gaps. As shown in Table 7, we find that GAP\_INDEX consistently leads to worse subsequent performance when the predecessor was forced out or when pre-succession performance has been poor. In contrast, when pre-succession performance has been good, successors with drastically different personal traits and past experience from their predecessors lead to enhanced subsequent performance. However, there is not much evidence on GAP\_INDEX affecting subsequent firm performance when firms experience non-forced successions. Overall, our PSM results remain robust.

*< Insert Table 7 here >*

## 4.4. Further Tests

### 4.4.1. Gap Index and Post-Succession Board Co-option

In this section, we examine the channels through which high levels of succession gaps lead to worse subsequent firm performance. We first examine whether successors with gaps would lead to lower monitoring power. Our dependent variable, CO\_OPTED, denotes the proportion of board members appointed within a year after the predecessor CEO is replaced.[[14]](#footnote-14) Board co-option diminishes board monitoring effectiveness (Coles et al., 2014) and therefore leads to higher management discretion.[[15]](#footnote-15) Our main independent variable, HIGH\_GAP, is a dummy variable that takes the value of one if the firm has a GAP\_INDEX greater than the sample mean of 1.82 and zero otherwise. Guided by Linck et al. (2008) among others, our control variables include firm size (SIZE), leverage (LEV), number of business segments (NUM\_SEGMENTS), firm age (FIRM\_AGE), market-to-book ratio (MTB), research and development expense (RND), annualized standard deviation of monthly stock return over the year (STKVOL), firm profitability (ROA), free cash flow ratio (FCF), board size (BOARDSIZE), successor origin (OUTSIDER), CEO share ownership (OWNERSHIP), CEO age (AGE), and CEO duality (DUALITY). We also control for firm and year fixed effects. Results presented in Table 8 show that HIGH\_GAP and/or higher levels of GAP\_INDEX contribute significantly to a higher fraction of co-opted directors one year after the succession event. Our results show that the incoming CEOs with larger gaps would have more discretion in shuffling the firms’ personnel and bring with them newcomers from their previous contacts (Friedman & Saul, 1991). Not only can those CEOs exert influence on the management shake-up, but they are also able to affect the selection of board members, even independent directors (Coles et al., 2014). Such a practice not only intensifies the disruptions within the organization (Shen & Cannella, 2002), but also undermines board independence if board co-option increases in the wake of a new leader (Coles et al., 2014).

*< Insert Table 8 here >*

### 4.4.2. Gap Index and Structural Change

Next,we examine the relationship between gap index and successor-induced structural changes. We follow Denis and Serrano (1996)’s approach in determining firm structural change after a leadership change. The first dependent variable, STRUCTURE\_CHANGE, takes the value of one if an asset sale is announced and a firm’s book value of total assets is reduced by more than 10% during the two-year period after the CEO is replaced and zero otherwise. We also test whether there is a difference in post-succession employee reduction for the high-gap group and their low-gap counterparts. We capture this through a dummy variable, EMPLOYEE\_REDUCTIONwhich is set equal one if a firm’s number of employees is reduced by more than 10% during the two-year period after the CEO is replaced and zero otherwise.

We estimate a logit regression by controlling for successor origin (OUTSIDER), firms’ industry-adjusted debt capacity (LOW\_DEBT\_CAPACITY), interest coverage (INTEREST\_COVERAGE), dividend coverage (DIV\_COVERAGE), dividend cut indicator (DIV\_CUT), return on assets (ROA), size (SIZE), leverage (LEV), market-to-book ratio (MTB), number of business segments (NUM\_SEGMENTS), and sales-based Herfindahl Index (HERF), as these variables have been documented in the prior literature to be determinants of asset sales (Kruse, 2002; Yang, 2008). We further control for the median industry sales growth rate within which the firm operates (IND\_SALES\_GROWTH) (Kruse, 2002).

Table 9 illustrates the effect of gap index on subsequent structural changes after the CEO is replaced. Panel A reports the results when we use STRUCTURE\_CHANGE as our dependent variable, and Panel B reports the results when we use EMPLOYEE\_REDUCTION as our dependent variable. As shown in Table 9, HIGH\_GAP variable does not have any explanatory power on our post-succession structural change measures. However, the positive and significant coefficients on the interactions between FORCED and HIGH\_GAP as well as POOR\_PRE\_PERF and HIGH\_GAP indicate that successors with high levels of gaps have a higher probability to make post-succession downsizing decisions under forced successions and/or when pre-succession performance has been poor. Our findings confirm Lang et al. (1995)’s assertion that poorly performing firms are more likely to make the decision of downsizing and business divesting, as the proceeds from selling existing assets could be used as a cheap way of financing. They argue that managers would be reluctant to divest the firm’s business if they have a vested interest in the firm. In addition, successors, especially those with high succession gaps, might sell some of the firm’s business just to stamp a mark on the firm for being different when there is a mandate for change (i.e., under the circumstances of forced successions and poor prior firm performance), even if such moves are value-destructive (Miller, 1993). In such cases, restructuring is conducted to meet the incoming CEO’s personal ambitions rather than enterprise interests, and therefore would be detrimental to subsequent firm performance.

*< Insert Table 9 here >*

### 4.4.3 Gap Index and Strategic Instability

Finally, we examine the relationship between gap index and post-succession firm strategic instability. We follow Finkelstein and Hambrick (1990) in constructing our Strategic Instability (SI) variable by using only four individual strategic dimensions due to considerable missing data in advertising intensity and R&D intensity.[[16]](#footnote-16) Our individual strategic measures are as follows: (1) plant and equipment newness (net PPE/gross PPE), (2) nonproduction overhead (selling, general and administrative expenses/sales), (3) inventory level (inventories/sales), and (4) financial leverage (total debt/common equity). We first compute the pre-succession three-year variance for each of the aforementioned strategic dimensions. Then we standardize the variance for each dimension by industry at the four-digit SIC code level, using data points from sample firms only. Finally, the strategic instability measure is generated by summing the four standardized variance scores. Guided by Finkelstein and Hambrick (1990) and others, we control for pre-succession firm strategic instability (PRE\_SI), size (SIZE), firm age (FIRM\_AGE), market-to-book ratio (MTB), free cash flow (FCF), return on assets (ROA), board size (BOARD\_SIZE), board independence (BOARD\_IND), CEO age (AGE), CEO share ownership (OWNERSHIP), CEO duality (DUALITY) and CEO origin (OUTSIDER). We also control for firm and year fixed effects.

As shown in Table 10, HIGH\_GAP variable does not have explanatory power on post-succession firm strategic instability. However, the interaction terms between HIGH\_GAP and FORCED and HIGH\_GAP and POOR\_PRE\_PERF significantly contribute to a higher level of firm strategic instability one year after the succession event. Our empirical results suggest that under forced succession and/or when pre-succession firm performance has been poor, successors with high gaps are more likely to make decisions that would lead to an elevated level of subsequent firm strategic instability. Prior literature shows that the effect of strategic change on firm performance is the net effect of both its adaptive (Hambrick & Schecter, 1983; Haveman, 1992; Zajac & Kraatz, 1993) and disruptive side (Jauch et al., 1980; Singh et al., 1986; Kor & Leblebici, 2005). Zhang and Rajagopalan (2010) assert that firm performance increases when the level of strategic change increases from low to moderate while decreases when the level of strategic change increases from moderate to high. Compared to successors with low succession gaps, those with high gaps can amplify either the adaptive or the disruptive effect of strategic change when the succession event itself signals underlying strategic and structural changes. As the ever-changing business environment makes inaction the riskiest strategy (Farjoun, 2007) and demands changes within an organization, a moderate level of strategic change that a successor with high gaps could bring in is highly appreciated under non-forced successions and/or when past performance has been good. However, successors are more motivated to make drastic changes under forced succession and/or when pre-succession firm performance has been poor (Friedman & Singh, 1989; Hutzschenreuter et al., 2012; Schepker et al., 2017), which leads to greater organizational disturbance when successors with gaps have limited understanding of their firms’ external conditions and internal capabilities. The changes induced by successors with high gaps, which are built on new competencies rather than relying on existing competencies, will lead to worse immediate performance and a greater chance of business failure (Haveman, 1992; Sastry, 1997).

*< Insert Table 10 here >*

# 5. Conclusions

Value-implications of a shift in corporate culture brought about by CEO turnover are examined in this study. We employ an evaluation technique that examines the potential interactions between the effect of both the succession event itself and the shift in CEO characteristics it engenders. By employing a propensity score matching approach, the partial effect of succession gaps on the performance of firms that go through a CEO succession could be analysed relative to their matched peers.

Focusing on the nature of the succession event and the differences between the personal traits/experiences of the outgoing and incoming CEOs in large S&P 500 companies over the period 1996-2016, we do not find any relationship between succession gap and firm performance for our full sample. Results, however, are dramatically different when a similar association is examined for subsamples of the data. For example, under forced succession and when pre-succession performance of the firm has been poor, succession gaps are disruptive and lead to worse subsequent firm performance, and this result holds stronger in the long term. In stark contrast however, when the succession itself is not forced or when the pre-succession performance has been good, a drastic change between the predecessor and the successor’s personal traits and past experience contributes towards stability or enhanced subsequent performance. Consistent with the prediction that more successor-induced personnel and structural alterations would be expected when the event itself signals a change in firm policy or post-succession redirection, we find that successors who considerably differ from their predecessors co-opt a greater proportion of the board one year after assuming office, and they have greater discretion to make far-reaching changes regarding business downsizing and strategic shift.

Overall, we find evidence that appointing a successor with gaps in characteristics is not value enhancing when the succession event is disruptive in nature. Our findings have strong implications for how firms manage the succession of CEOs, when dealing with either forced succession or a leadership change under poor pre-succession firm performance. In particular, firms should avoid new CEOs who are likely to stamp a mark on the firm by being different (more likely when the succession gap is high). Instead, what such firms truly need is a newcomer who possesses an in-depth industry knowledge and has a good understanding of the corporate culture. In doing so, successors will be less likely to demand drastic changes and suffer less resistance within the organization which would minimize the disruption on the firm’s structure and existing relationships. Consequently, the successor is able to figure out the exact cause and appropriate treatment for the organization and could proactively seek help from incumbent board members and top managers instead of only giving lip service to reforms.

# References

Adams, R., Almeida, H., & Ferreira, D. 2009. Understanding the relationship between founder-CEOs and firm performance. ***Journal of Empirical Finance***, 16(1): 136-150.

Adams, R. B., Licht, A. N., & Sagiv, L. 2011. Shareholders and stakeholders: How do directors decide? ***Strategic Management Journal***, 32(12): 1331-1355.

Agrawal, A., Knoeber, C. R., & Tsoulouhas, T. 2006. Are outsiders handicapped in CEO successions? ***Journal of Corporate Finance***, 12(3): 619-644.

Allen, M. P., Panian, S. K., & Lotz, R. E. 1979. Managerial Succession and Organizational Performance: A Recalcitrant Problem Revisited. ***Administrative Science Quarterly***, 24(2): 167-180.

Antonakis, J., House, R. J., & Simonton, D. K. 2017. Can super smart leaders suffer from too much of a good thing? The curvilinear effect of intelligence on perceived leadership behavior. ***Journal of Applied Psychology***, 102(7): 1003.

Ballinger, G. A., & Marcel, J. J. 2010. The use of an interim CEO during succession episodes and firm performance. ***Strategic Management Journal***, 31(3): 262-283.

Barker, V. L., & Mueller, G. C. 2002. CEO characteristics and firm R&D spending. ***Management Science***, 48(6): 782-801.

Barrick, M. R., & Mount, M. K. 1996. Effects of impression management and self-deception on the predictive validity of personality constructs. ***Journal of Applied Psychology***, 81(3): 261.

Benmelech, E., & Frydman, C. 2015. Military CEOs. ***Journal of Financial Economics***, 117(1): 43-59.

Bernile, G., Bhagwat, V., & Rau, P. R. 2017. What Doesn't Kill You Will Only Make You More Risk‐Loving: Early‐Life Disasters and CEO Behavior. ***The Journal of Finance***, 72(1): 167-206.

Biggerstaff, L., Cicero, D. C., & Puckett, A. 2016. FORE! An analysis of CEO shirking. ***Management Science***, 63(7): 2302-2322.

Boone, A. L., Field, L. C., Karpoff, J. M., & Raheja, C. G. 2007. The determinants of corporate board size and composition: An empirical analysis. ***Journal of Financial Economics***, 85(1): 66-101.

Boyd, B. K. 1995. CEO duality and firm performance: A contingency model. ***Strategic Management Journal***, 16(4): 301-312.

Brown, M. C. 1982. Administrative succession and organizational performance: The succession effect. ***Administrative Science Quarterly***, 27(1): 1-16.

Cain, M. D., & McKeon, S. B. 2016. CEO personal risk-taking and corporate policies. ***Journal of Financial and Quantitative Analysis***, 51(1): 139-164.

Campbell, T. C., Gallmeyer, M., Johnson, S. A., Rutherford, J., & Stanley, B. W. 2011. CEO optimism and forced turnover. ***Journal of Financial Economics***, 101(3): 695-712.

Cannella, A. A., & Lubatkin, M. 1993. Succession as a sociopolitical process: Internal impediments to outsider selection. ***Academy of Management Journal***, 36(4): 763-793.

Cao, Q., Simsek, Z., & Jansen, J. J. 2015. CEO social capital and entrepreneurial orientation of the firm: Bonding and bridging effects. ***Journal of Management***, 41(7): 1957-1981.

Carol, G. 1982. ***In a different voice: Psychological theory and women’s development***. MA: Harvard: Cambridge.

Chevalier, J., & Ellison, G. 1999. Career concerns of mutual fund managers. ***The Quarterly Journal of Economics***, 114(2): 389-432.

Child, J. 1974. Managerial and organizational factors associated with company performance part I. ***Journal of Management Studies***, 11(3): 175-189.

Chown, S. M. 1961. Age and the rigidities. ***Journal of Gerontology***, 16: 353-362.

Coles, J. L., Daniel, N. D., & Naveen, L. 2006. Managerial incentives and risk-taking. ***Journal of Financial Economics***, 79(2): 431-468.

Coles, J. L., Daniel, N. D., & Naveen, L. 2014. Co-opted boards. ***The Review of Financial Studies***, 27(6): 1751-1796.

Cucculelli, M., & Micucci, G. 2008. Family succession and firm performance: Evidence from Italian family firms. ***Journal of Corporate Finance***, 14(1): 17-31.

Custódio, C., Ferreira, M. A., & Matos, P. 2013. Generalists versus specialists: Lifetime work experience and chief executive officer pay. ***Journal of Financial Economics***, 108(2): 471-492.

Dalton, D. R., & Kesner, I. F. 1983. Inside/outside succession and organizational size: The pragmatics of executive replacement. ***Academy of Management Journal***, 26(4): 736-742.

Denis, D. J., & Denis, D. K. 1995. Performance changes following top management dismissals. ***The Journal of finance***, 50(4): 1029-1057.

Denis, D. J., & Serrano, J. M. 1996. Active investors and management turnover following unsuccessful control contests. ***Journal of Financial Economics***, 40(2): 239-266.

Eisfeldt, A. L., & Kuhnen, C. M. 2013. CEO turnover in a competitive assignment framework. ***Journal of Financial Economics***, 109(2): 351-372.

Faccio, M., Marchica, M.-T., & Mura, R. 2016. CEO gender, corporate risk-taking, and the efficiency of capital allocation. ***Journal of Corporate Finance***, 39: 193-209.

Fahlenbrach, R. 2009. Founder-CEOs, investment decisions, and stock market performance. ***Journal of Financial and Quantitative Analysis***, 44(2): 439-466.

Fahlenbrach, R., & Stulz, R. M. 2009. Managerial ownership dynamics and firm value. ***Journal of Financial Economics***, 92(3): 342-361.

Farjoun, M. 2007. The end of strategy? ***Strategic Organization***, 5(3): 197-210.

Finkelstein, S., & Hambrick, D. C. 1990. Top-management-team tenure and organizational outcomes: The moderating role of managerial discretion. ***Administrative Science Quarterly***, 35(3): 484-503.

Frank, M. Z., & Goyal, V. K. 2009. Capital structure decisions: which factors are reliably important? ***Financial Management***, 38(1): 1-37.

Friedman, S. D., & Saul, K. 1991. A leader's wake: Organization member reactions to CEO succession. ***Journal of Management***, 17(3): 619-642.

Friedman, S. D., & Singh, H. 1989. CEO succession and stockholder reaction: The influence of organizational context and event content. ***Academy of Management Journal***, 32(4): 718-744.

Gamson, W. A., & Scotch, N. A. 1964. Scapegoating in baseball: University of Chicago Press.

Gao, J., & Xie, X. 2018. ***Interim CEO as A Firm Strategy: An Information Asymmetry Framework***. Paper presented at the Academy of Management Proceedings.

Graham, J. R., Harvey, C. R., & Puri, M. 2013. Managerial attitudes and corporate actions. ***Journal of Financial Economics***, 109(1): 103-121.

Greiner, L., Cummings, T., & Bhambri, A. 2003. When New CEOs Succeed and Fail: 4-D Theory of Strategic Transformation. ***Organizational Dynamics***, 32(1): 1-16.

Grusky, O. 1963. Managerial succession and organizational effectiveness. ***American Journal of Sociology***, 69(1): 21-31.

Guest, P. M. 2009. The impact of board size on firm performance: Evidence from the UK. ***The European Journal of Finance***, 15(4): 385-404.

Guo, L., & Masulis, R. W. 2015. Board structure and monitoring: New evidence from CEO turnovers. ***The Review of Financial Studies***, 28(10): 2770-2811.

Hambrick, D. C., & Mason, P. A. 1984. Upper echelons: The organization as a reflection of its top managers. ***Academy of Management Review***, 9(2): 193-206.

Hambrick, D. C., & Schecter, S. M. 1983. Turnaround strategies for mature industrial-product business units. ***Academy of Management Journal***, 26(2): 231-248.

Hannan, M. T., & Freeman, J. 1984. Structural inertia and organizational change. ***American Sociological Review***, 49(2): 149-164.

Haslam, S. A., & Ryan, M. K. 2008. The road to the glass cliff: Differences in the perceived suitability of men and women for leadership positions in succeeding and failing organizations. ***The Leadership Quarterly***, 19(5): 530-546.

Haveman, H. A. 1992. Between a rock and a hard place: Organizational change and performance under conditions of fundamental environmental transformation. ***Administrative Science Quarterly***, 37(1): 48-75.

Hazarika, S., Karpoff, J. M., & Nahata, R. 2012. Internal corporate governance, CEO turnover, and earnings management. ***Journal of Financial Economics***, 104(1): 44-69.

Hermalin, B. E. 2005. Trends in corporate governance. ***The Journal of Finance***, 60(5): 2351-2384.

Himmelberg, C. P., Hubbard, R. G., & Palia, D. 1999. Understanding the determinants of managerial ownership and the link between ownership and performance. ***Journal of Financial Economics***, 53(3): 353-384.

Hirshleifer, D., & Thakor, A. V. 1992. Managerial conservatism, project choice, and debt. ***The Review of Financial Studies***, 5(3): 437-470.

Holmström, B. 1999. Managerial incentive problems: A dynamic perspective. ***The Review of Economic Studies***, 66(1): 169-182.

Hong, H., Kubik, J. D., & Solomon, A. 2000. Security analysts' career concerns and herding of earnings forecasts. ***The Rand Journal of Economics***, 31(1): 121-144.

Huang, J., & Kisgen, D. J. 2013. Gender and corporate finance: Are male executives overconfident relative to female executives? ***Journal of Financial Economics***, 108(3): 822-839.

Huson, M. R., Malatesta, P. H., & Parrino, R. 2004. Managerial succession and firm performance. ***Journal of Financial Economics***, 74(2): 237-275.

Hutzschenreuter, T., Kleindienst, I., & Greger, C. 2012. How new leaders affect strategic change following a succession event: A critical review of the literature. ***The Leadership Quarterly***, 23(5): 729-755.

Inderst, R., & Mueller, H. M. 2010. CEO replacement under private information. ***The Review of Financial Studies***, 23(8): 2935-2969.

Jauch, L. R., Osborn, R. N., & Glueck, W. F. 1980. Short term financial success in large business organizations: The environment‐strategy connection. ***Strategic Management Journal***, 1(1): 49-63.

Jensen, M. C. 1986. Agency costs of free cash flow, corporate finance, and takeovers. ***The American Economic Review***, 76(2): 323-329.

Jenter, D., & Kanaan, F. 2015. CEO turnover and relative performance evaluation. ***The Journal of Finance***, 70(5): 2155-2184.

Judge, T. A., & Bono, J. E. 2001. Relationship of core self-evaluations traits—self-esteem, generalized self-efficacy, locus of control, and emotional stability—with job satisfaction and job performance: A meta-analysis. ***Journal of Applied Psychology***, 86(1): 80-92.

Judge, T. A., Bono, J. E., Ilies, R., & Gerhardt, M. W. 2002. Personality and leadership: A qualitative and quantitative review. ***Journal of Applied Psychology***, 87(4): 765-780.

Judge, T. A., Colbert, A. E., & Ilies, R. 2004. Intelligence and leadership: a quantitative review and test of theoretical propositions. ***Journal of Applied Psychology***, 89(3): 542-552.

Karaevli, A. 2007. Performance consequences of new CEO ‘Outsiderness’: Moderating effects of pre‐and post‐succession contexts. ***Strategic Management Journal***, 28(7): 681-706.

Khurana, R. 2004. ***Searching for a corporate savior: The irrational quest for charismatic CEOs***. NJ: Princeton: Princeton University Press.

Kish-Gephart, J. J., & Tochman Campbell, J. 2015. You Don't Forget Your Roots: The Influence of CEO Social Class Background on Strategic Risk Taking. ***Academy of Management Journal***, 58(6): 1614-1636.

Koh, P.-S., & Reeb, D. M. 2015. Missing R&D. ***Journal of Accounting and Economics***, 60(1): 73-94.

Kor, Y. Y., & Leblebici, H. 2005. How do interdependencies among human‐capital deployment, development, and diversification strategies affect firms' financial performance? ***Strategic Management Journal***, 26(10): 967-985.

Kruse, T. A. 2002. Asset liquidity and the determinants of asset sales by poorly performing firms. ***Financial Management***: 107-129.

Lang, L., Poulsen, A., & Stulz, R. 1995. Asset sales, firm performance, and the agency costs of managerial discretion. ***Journal of Financial Economics***, 37(1): 3-37.

Levitt, B., & March, J. G. 1988. Organizational learning. ***Annual review of sociology***, 14(1): 319-338.

Limbach, P., & Sonnenburg, F. 2014. ***CEO fitness and firm value***. Unpublished Working Paper, Karlsruhe Institute of Technology and University of Cologne.

Linck, J. S., Netter, J. M., & Yang, T. 2008. The determinants of board structure. ***Journal of Financial Economics***, 87(2): 308-328.

Maddux, W. W., & Galinsky, A. D. 2009. Cultural borders and mental barriers: the relationship between living abroad and creativity. ***Journal of Personality and Social Psychology***, 96(5): 1047-1061.

Malmendier, U., & Nagel, S. 2011. Depression babies: do macroeconomic experiences affect risk taking? ***The Quarterly Journal of Economics***, 126(1): 373-416.

Malmendier, U., & Tate, G. 2009. Superstar CEOs. ***The Quarterly Journal of Economics***, 124(4): 1593-1638.

March, J. G., & Shapira, Z. 1987. Managerial perspectives on risk and risk taking. ***Management Science***, 33(11): 1404-1418.

Matsa, D. A., & Miller, A. R. 2013. A female style in corporate leadership? Evidence from quotas. ***American Economic Journal***, 5(3): 136-169.

McConnell, J. J., & Qi, Q. 2018. ***Does CEO Succession Planning Create Shareholder Value?*** Unpublished Working Paper.

Mehran, H. 1995. Executive compensation structure, ownership, and firm performance. ***Journal of Financial Economics***, 38(2): 163-184.

Merz, A., & Weidemann, J. F. 2018. ***What Really Matters in CEO Succession? Evidence from Sudden CEO Deaths***. Paper presented at the Academy of Management Proceedings.

Miller, D. 1991. Stale in the saddle: CEO tenure and the match between organization and environment. ***Management Science***, 37(1): 34-52.

Miller, D. 1993. Some organizational consequences of CEO succession. ***Academy of Management Journal***, 36(3): 644-659.

Mobbs, S., & Raheja, C. G. 2012. Internal managerial promotions: Insider incentives and CEO succession. ***Journal of Corporate Finance***, 18(5): 1337-1353.

Mowday, R. T., & Spencer, D. G. 1981. The influence of task and personality characteristics on employee turnover and absenteeism incidents. ***Academy of Management Journal***, 24(3): 634-642.

Mullins, W., & Schoar, A. 2016. How do CEOs see their roles? Management philosophies and styles in family and non-family firms. ***Journal of Financial Economics***, 119(1): 24-43.

Naveen, L. 2006. Organizational complexity and succession planning. ***Journal of Financial and Quantitative Analysis***, 41(3): 661-683.

Ocasio, W. 1994. Political dynamics and the circulation of power: CEO succession in US industrial corporations, 1960-1990. ***Administrative Science Quarterly***: 285-312.

Parrino, R. 1997. CEO turnover and outside succession A cross-sectional analysis. ***Journal of Financial Economics***, 46(2): 165-197.

Pfeffer, J., & Salancik, G. R. 1978. ***The external control of organizations: A resource dependence approach***. NY: New York.

Reskin, B. F., & McBrier, D. B. 2000. Why not ascription? Organizations' employment of male and female managers. ***American Sociological Review***, 65(2): 210-233.

Reskin, B. F., & Roos, P. A. 2009. ***Job queues, gender queues: Explaining women's inroads into male occupations***. PA: Philadelphia: Temple University Press.

Ryan, M. K., & Haslam, S. A. 2005. The glass cliff: Evidence that women are over‐represented in precarious leadership positions. ***British Journal of Management***, 16(2): 81-90.

Sastry, M. A. 1997. Problems and paradoxes in a model of punctuated organizational change. ***Administrative Science Quarterly***, 42(2): 237-275.

Schepker, D. J., Kim, Y., Patel, P. C., Thatcher, S. M., & Campion, M. C. 2017. CEO succession, strategic change, and post-succession performance: A meta-analysis. ***The Leadership Quarterly***, 28(6): 701-720.

Serfling, M. A. 2014. CEO age and the riskiness of corporate policies. ***Journal of Corporate Finance***, 25: 251-273.

Shen, W., & Cannella, A. A. 2002. Revisiting the performance consequences of CEO succession: The impacts of successor type, postsuccession senior executive turnover, and departing CEO tenure. ***Academy of Management Journal***, 45(4): 717-733.

Singh, J. V., House, R. J., & Tucker, D. J. 1986. Organizational change and organizational mortality. ***Administrative Science Quarterly***, 31(4): 587-611.

Sitthipongpanich, T., & Polsiri, P. 2015. Do CEO and board characteristics matter? A study of Thai family firms. ***Journal of Family Business Strategy***, 6(2): 119-129.

Skaggs, S. 2009. Legal-political pressures and African American access to managerial jobs. ***American Sociological Review***, 74(2): 225-244.

Sunder, J., Sunder, S. V., & Zhang, J. 2017. Pilot CEOs and corporate innovation. ***Journal of Financial Economics***, 123(1): 209-224.

Tadmor, C., Galinsky, A., & Maddux, W. 2009. ***Biculturalism: Dual identification with home and host cultures predicts creative and professional performance***. Unpublished Working Paper, Tel Aviv University, Northwestern University and INSEAD.

Westphal, J. D., & Zajac, E. J. 1995. Who shall govern? CEO/board power, demographic similarity, and new director selection. ***Administrative Science Quarterly***, 40(1): 60-83.

Yang, L. 2008. The real determinants of asset sales. ***The Journal of Finance***, 63(5): 2231-2262.

Zajac, E. J., & Kraatz, M. S. 1993. A diametric forces model of strategic change: Assessing the antecedents and consequences of restructuring in the higher education industry. ***Strategic Management Journal***, 14(S1): 83-102.

Zajac, E. J., & Westphal, J. D. 1996. Who shall succeed? How CEO/board preferences and power affect the choice of new CEOs. ***Academy of Management Journal***, 39(1): 64-90.

Zhang, Y., & Rajagopalan, N. 2004. When the known devil is better than an unknown god: An empirical study of the antecedents and consequences of relay CEO successions. ***Academy of Management Journal***, 47(4): 483-500.

Zhang, Y., & Rajagopalan, N. 2010. Once an outsider, always an outsider? CEO origin, strategic change, and firm performance. ***Strategic Management Journal***, 31(3): 334-346.

Zwiebel, J. 1995. Corporate conservatism and relative compensation. ***Journal of Political Economy***, 103(1): 1-25.

# Appendix A: Description of Variables

|  |  |
| --- | --- |
| Variables | Definition |
| ROA | Return on total assets, defined as earnings before interest, taxes, depreciation and amortization over total assets. |
| PRE\_PERFORMANCE | For succession firms, pre-succession performance is measured as ROA (return on total assets) in the year prior to the succession for short-term measurement. For non-succession matched pairs, PRE-PERFORMANCE denotes ROA measured at time (t-1). We take the three-year average pre-succession ROA measured at time (t-1) as long-term pre-performance measure for robustness check. |
| FIRM\_AGE | Number of years since the firm’s foundation. |
| LEV | Total debts divided by total assets. |
| SIZE | Natural logarithm of the book value of total assets. |
| MTB | Market capitalization divided by book value of total assets. |
| CAPEX | Capital expenditures divided by sales. |
| FCF | Free cash flow ratio, which equals free cash flow divided by the total assets of the company, where Free Cash Flow = EBITDA – CAPEX – change in working capital. |
| TANG | Fixed tangible assets (property, plant and equipment) divided by total assets. |
| BOARD\_SIZE | Total number of directors. |
| BOARD\_IND | The proportion of independent directors on board. |
| OWNERSHIP | The percentage of outstanding shares owned by the CEO. |
| EQUITY\_INTENSITY | The proportion of total annual CEO compensation that comes from option grants and stocks. This is the value of annual option awards plus the value of annual stock grants scaled by the amount of total annual compensation. The specific calculation formula is as follows: [option\_awards\_blk\_value + rstkgrnt]/tdc1 (before 2006) and [option\_awards\_fv + stock\_awards\_fv]/tdc1 (after 2006). |
| DUALITY | A dummy variable indicating board’s structure, which equals one when a firm’s chief executive also serves as chairman of the board of directors and zero otherwise. |
| FOUNDER | A dummy variable equals one if the CEO is the founder of the company, and zero otherwise. |
| FAMILY\_MEMBER | A dummy variable that equals one if the CEO is a family member of the original founders, and zero otherwise. |
| OUTSIDER | A dummy variable indicating successor origin, which equals one if the new CEO is an external candidate and zero otherwise. |
|  |  |
| RND | Research and development expenditure over lagged revenue. |
| STKVOL | Annualized standard deviation of monthly stock return over the given year. |
| IND\_SALES\_GROWTH | The median three-year growth rate for aggregate sales for an industry defined by its two-digit SIC code. |
| LOW\_DEBT\_CAPACITY | A dummy variable equals one if the firm has a long-term debt ratio (as measured by long-term debt divided by total assets) above the median industry long-term debt ratio and has a liquidity ratio (as measured by current assets divided by current liabilities) below the median industry liquidity ratio, and zero otherwise for firms matched by two-digit SIC code. |
| DIV\_COVERAGE | Dividend coverage ratio, net income divided by common dividends. |
| DIV\_CUT | A dummy variable equals one if the firm decreases its annual dividend and zero otherwise. |
| INTEREST\_COVERAGE | Interest coverage ratio, operating earnings (EBITDA) divided by interest expense. |
| NUM\_SEGMENTS | Number of business segments in which the firm operates. |
| HERF | Sale-based Herfindahl Index ranging from zero to one, calculated as the sum of the squares of each segment’s sales as a proportion of total sales. A Sale-based Herfindahl Index close to one indicates that the firm is concentrated with regards to its sales across different segments and hence having more concentrated operations. |

# Appendix B: Pre-Succession Firm Characteristics Mean Comparison Tests between the High-Gap Group and the Low-Gap Group

This table presents the difference in pre-succession firm characteristics between the high gap-succession group and low gap-succession group that are used in this paper for PSM matching spanning the period 1996-2016. Our state variable GAP\_INDEX is constructed as follows: For every difference between the predecessor and the successor with regards to their gender/ age/ cultural background/ highest education level and eliteness of undergraduate school, one point is added to the index. HIGH\_GAP is a dummy equals one if the firm has a GAP\_INDEX greater than the mean value of 1.82 and zero otherwise. PRE\_PERFORMANCE\_ST, is defined as ROA (return on total assets) one year prior to the succession event while PRE\_PERFORMANCE is the three-year average pre-succession ROA. PRE\_FIRM\_AGE is the number of years since the firm has established one year prior to the succession event, PRE\_SIZE is the firm size (natural log of total assets) one year prior to the succession event, PRE\_LEV is the firm’s book leverage (total debt) one year prior to the succession event, PRE\_MTB is the firm’s market-to-book ratio one year prior to the succession event, PRE\_TANG is the firm’s tangibility (calculated as fixed tangible assets divided by total assets) one year prior to the succession event. PRE\_BOARDSIZE is the firm’s number of directors one year prior to the succession event, while PRE\_BOARD\_IND is the proportion of independent directors on board one year prior to the succession event. PRR\_AGE denotes the age of the predecessor. PRE\_OWNERSHIP is the percentage of outstanding shares owned by the predecessor and PRE\_DUALITY is a dummy variable equals one if the predecessor also serves as chairman of the board of directors and zero otherwise.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable |  | Mean | | |  | Mean Difference |  | t-statistic |  | p>|t| |
| High Gap |  | Low Gap |  |  |
| PRE\_PERFORMANCE\_ST |  | 0.164 |  | 0.169 |  | -0.005 |  | -0.757 |  | 0.450 |
| PRE\_PERFORMANCE |  | 0.161 |  | 0.167 |  | -0.006 |  | -0.573 |  | 0.567 |
| PRE\_FIRM\_AGE |  | 3.915 |  | 4.160 |  | -0.246 |  | -3.697 |  | 0.000 |
| PRE\_SIZE |  | 8.891 |  | 9.116 |  | -0.226 |  | -1.964 |  | 0.050 |
| PRE\_LEV |  | 0.576 |  | 0.598 |  | -0.022 |  | -1.293 |  | 0.197 |
| PRE\_MTB |  | 2.315 |  | 2.345 |  | -0.030 |  | -0.249 |  | 0.803 |
| PRE\_TANG |  | 0.417 |  | 0.476 |  | -0.059 |  | -2.689 |  | 0.008 |
| PRE\_BOARDSIZE |  | 10.602 |  | 10.791 |  | -0.189 |  | -0.910 |  | 0.364 |
| PRE\_BOARD\_IND |  | 0.730 |  | 0.746 |  | -0.015 |  | -1.032 |  | 0.303 |
| PRE\_AGE |  | 60.691 |  | 59.900 |  | 0.791 |  | 1.598 |  | 0.111 |
| PRE\_OWNERSHIP |  | 0.064 |  | 0.053 |  | 0.011 |  | 1.140 |  | 0.255 |
| PRE\_DUALITY |  | 0.722 |  | 0.787 |  | -0.066 |  | -1.842 |  | 0.066 |
| Observations |  | 449 |  | 210 |  |  |  |  |  |  |

# Table 1 Summary Statistics

This table presents summary statistics of the variables used in this paper spanning the period 1996-2016. Columns 1 to 3 provide comparisons of descriptive statistics between succession group and non-succession group, Columns 4 to 6 reports comparisons of descriptive statistics between forced succession and non-forced succession group and Columns 7 to 9 reports comparisons of descriptive statistics between poor pre-performance and good pre-performance group. The dependent variable, PERFORMANCE, is defined as ROA (return on total assets) in the year following the succession event. Our state variable GAP\_INDEX is constructed as follows: For every difference between the predecessor and the successor with regards to their gender/ age/ cultural background/ highest education level and eliteness of undergraduate school, one point is added to the index. Forced (Non-forced) Succession group is defined if the predecessor of the firm is forced out (not forced out) during the succession event. The classification of succession events into forced/non-forced follows the method used by Parrino (1997). Poor (Good) Pre-Performance groups are defined if the firm’s pre-succession firm performance is lower (higher) than its industry median in the given fiscal year in our sample, with industry defined at the two-digit SIC code level. Firm Characteristic control variables include: past firm performance (PRE\_PERFORMANCE), the number of years since the firm has established (FIRM\_AGE), leverage (LEV), firm size (SIZE), market-to-book ratio (MTB), capital expenditure ratio (CAPEX), free cash flow ratio (FCF) and fixed tangible assets (TANG). Corporate Governance control variables include: board size (BOARD\_SIZE), and board independence (BOARD\_IND). CEO characteristics control variables include: the percentage of outstanding shares owned by the CEO (OWNERSHIP), the proportion of total annual CEO compensation that comes from option grants and stocks (EQUITY\_INTENSITY), CEO-chairman indicator (DUALITY), founder-CEO indicator (FOUNDER), family-member-CEO indicator (FAMILY\_MEMBER), and successor origin (OUTSIDER). Control variables definitions are provided in Appendix A. ∗,∗∗, and ∗∗∗ denote significance at the 10%, 5%, and 1% level, respectively.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Succession (S) vs Non-Succession (NS) Group | | | | |  | Forced Succession (F) vs Non-forced Succession (NF) Group | | | | |  | Poor Pre-Performance (PP) vs Good Pre-Performance (GP) Group | | | | |
|  |  | S |  | NS |  | Difference |  | F |  | NF |  | Difference |  | PP |  | GP |  | Difference |
| Variable | Mean | Mean |  | Mean | Mean | Mean | Mean |
|  |  | (1) |  | (2) |  | (3) |  | (4) |  | (5) |  | (6) |  | (7) |  | (8) |  | (9) |
| PERFORMANCE |  | 0.164 |  | 0.165 |  | -0.001 |  | 0.147 |  | 0.170 |  | -0.023\*\*\* |  | 0.122 |  | 0.199 |  | -0.076\*\*\* |
| GAP\_INDEX |  | 1.817 |  | 0.000 |  | 1.817\*\*\* |  | 1.940 |  | 1.776 |  | 0.165 |  | 1.810 |  | 1.823 |  | -0.013 |
| PRE\_PERFORMANCE |  | 0.166 |  | 0.166 |  | 0.000 |  | 0.148 |  | 0.173 |  | -0.025\*\*\* |  | 0.113 |  | 0.213 |  | -0.100\*\*\* |
| FIRM\_AGE |  | 4.020 |  | 3.840 |  | 0.180\*\*\* |  | 3.882 |  | 4.071 |  | -0.189\*\* |  | 4.024 |  | 4.016 |  | 0.008 |
| LEV |  | 0.245 |  | 0.235 |  | 0.010 |  | 0.267 |  | 0.236 |  | 0.031\*\* |  | 0.261 |  | 0.231 |  | 0.030\*\* |
| SIZE |  | 9.032 |  | 8.742 |  | 0.290 |  | 9.293 |  | 8.943 |  | 0.350\*\*\* |  | 9.195 |  | 8.887 |  | 0.309\*\*\* |
| MTB |  | 1.953 |  | 2.061 |  | -0.108\* |  | 1.854 |  | 1.991 |  | -0.137 |  | 1.427 |  | 2.411 |  | -0.984\*\*\* |
| CAPEX |  | 0.056 |  | 0.059 |  | -0.003 |  | 0.049 |  | 0.058 |  | -0.009\*\*\* |  | 0.045 |  | 0.065 |  | -0.021\*\*\* |
| FCF |  | 0.039 |  | 0.037 |  | 0.002 |  | 0.036 |  | 0.040 |  | -0.004 |  | 0.034 |  | 0.043 |  | -0.009 |
| TANG |  | 0.437 |  | 0.414 |  | 0.023\*\* |  | 0.441 |  | 0.434 |  | 0.007 |  | 0.413 |  | 0.459 |  | -0.045\*\* |
| BOARDSIZE |  | 10.67 |  | 10.36 |  | 0.311\*\*\* |  | 10.60 |  | 10.69 |  | -0.093 |  | 10.65 |  | 10.69 |  | -0.035 |
| BOARD\_IND |  | 0.734 |  | 0.744 |  | -0.010 |  | 0.770 |  | 0.721 |  | 0.049\*\*\* |  | 0.746 |  | 0.725 |  | 0.021 |
| OWNERSHIP |  | 0.023 |  | 0.080 |  | -0.057\*\*\* |  | 0.023 |  | 0.023 |  | 0.000 |  | 0.021 |  | 0.025 |  | -0.004 |
| EQUITY\_INTENSITY |  | 0.566 |  | 0.494 |  | 0.072\*\*\* |  | 0.588 |  | 0.560 |  | 0.028 |  | 0.566 |  | 0.565 |  | 0.001 |
| DUALITY |  | 0.346 |  | 0.696 |  | -0.350\*\*\* |  | 0.341 |  | 0.350 |  | -0.009 |  | 0.404 |  | 0.295 |  | 0.109\*\*\* |
| FOUNDER |  | 0.029 |  | 0.142 |  | -0.113\*\*\* |  | 0.039 |  | 0.025 |  | 0.014 |  | 0.029 |  | 0.029 |  | 0.001 |
| FAMILY\_MEMBER |  | 0.023 |  | 0.056 |  | -0.033\*\*\* |  | 0.039 |  | 0.017 |  | 0.022 |  | 0.029 |  | 0.017 |  | 0.012 |
| OUTSIDER |  | 0.188 |  | 0.168 |  | 0.020 |  | 0.296 |  | 0.149 |  | 0.147\*\*\* |  | 0.233 |  | 0.149 |  | 0.084\*\*\* |
| Observations |  | 659 |  | 6482 |  |  |  | 179 |  | 475 |  |  |  | 309 |  | 350 |  |  |

# Table 2 PSM Regression of Gap Index on Subsequent Firm Performance

Table 2 presents the results from PSM regression of CEO succession gaps on subsequent firm performance. The dependent variable, PERFORMANCE is the difference in subsequent performance between the treatment firm (succession firm) and the average subsequent performance of the matching group (non-succession matched peers), where subsequent performance is defined as ROA (return on total assets) in the year following the succession event. Our state variable GAP\_INDEX is constructed as follows: For every difference between the predecessor and the successor with regards to their gender/ age/ cultural background/ highest education level and eliteness of undergraduate school, one point is added to the index. FORCED is a dummy variable equals to one if the predecessor is forced out and zero otherwise. The classification of succession events into forced/non-forced follows the method used by Parrino (1997). Firm Characteristic control variables include: past firm performance (PRE\_PERFORMANCE), the number of years since the firm has established (FIRM\_AGE), firm size (SIZE), leverage (LEV), market-to-book ratio (MTB), capital expenditure ratio (CAPEX), free cash flow ratio (FCF) and fixed tangible assets (TANG). Corporate Governance control variables include: board size (BOARD\_SIZE), and board independence (BOARD\_IND). CEO characteristics control variables include: the percentage of outstanding shares owned by the CEO (OWNERSHIP), the proportion of total annual CEO compensation that comes from option grants and stocks (EQUITY\_INTENSITY), CEO-chairman indicator (DUALITY), founder-CEO indicator (FOUNDER), family-member-CEO indicator (FAMILY\_MEMBER), and successor origin (OUTSIDER). Columns 1, 2 and 3 reports the estimates of treatment effect on subsequent performance controlling for industry and year fixed effects, for industry, year and industry-year fixed effects and for firm and year fixed effects, respectively. Control variables definitions are provided in Appendix A. t-statistics are reported in parentheses. ∗,∗∗, and ∗∗∗ denote significance at the 10%, 5%, and 1% level, respectively.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Dependent Variable: Subsequent Firm Performance | | | | | | |
| Variable |  | (1) |  | (2) |  | (3) |
| GAP\_INDEX |  | 0.000 |  | 0.004 |  | -0.002 |
|  |  | (0.01) |  | (1.13) |  | (-0.54) |
| FORCED |  | -0.004 |  | -0.011 |  | 0.006 |
|  |  | (-0.32) |  | (-0.83) |  | (0.43) |
| PRE\_PERFORMANCE |  | -0.401\*\*\* |  | -0.419\*\*\* |  | -0.163\*\*\* |
|  |  | (-10.88) |  | (-11.98) |  | (-2.99) |
| FIRM\_AGE |  | 0.006\* |  | 0.006\* |  | -0.102\*\*\* |
|  |  | (1.67) |  | (1.93) |  | (-2.72) |
| SIZE |  | 0.004\* |  | 0.003 |  | 0.026\*\* |
|  |  | (1.84) |  | (1.58) |  | (2.27) |
| LEV |  | 0.038\*\* |  | 0.038\*\*\* |  | 0.093\*\* |
|  |  | (2.32) |  | (2.65) |  | (2.50) |
| MTB |  | -0.014\*\*\* |  | -0.015\*\*\* |  | -0.010\*\* |
|  |  | (-4.98) |  | (-5.68) |  | (-2.22) |
| CAPEX |  | 0.091 |  | -0.043 |  | 0.493\*\* |
|  |  | (0.66) |  | (-0.32) |  | (2.48) |
| FCF |  | -0.078\* |  | -0.141\*\*\* |  | 0.010 |
|  |  | (-1.74) |  | (-3.14) |  | (0.19) |
| TANG |  | -0.046\*\*\* |  | -0.039\*\*\* |  | 0.060 |
|  |  | (-3.01) |  | (-2.79) |  | (1.31) |
| BOARDSIZE |  | -0.001 |  | -0.001 |  | 0.001 |
|  |  | (-0.90) |  | (-0.80) |  | (0.50) |
| BOARD\_IND |  | 0.025 |  | 0.031 |  | 0.042 |
|  |  | (0.98) |  | (1.30) |  | (0.95) |
| OWNERSHIP |  | -0.025 |  | -0.048 |  | 0.104\* |
|  |  | (-0.70) |  | (-1.56) |  | (1.71) |
| EQUITY\_INTENSITY |  | 0.038\*\*\* |  | 0.029\*\*\* |  | 0.038\*\*\* |
|  |  | (3.46) |  | (2.81) |  | (2.65) |
| DUALITY |  | -0.002 |  | -0.003 |  | -0.013 |
|  |  | (-0.42) |  | (-0.60) |  | (-1.45) |
| FOUNDER |  | -0.030\* |  | -0.017 |  | -0.024 |
|  |  | (-1.71) |  | (-1.11) |  | (-0.64) |
| FAMILY\_MEMBER |  | 0.011 |  | 0.015 |  | 0.023 |
|  |  | (0.75) |  | (1.16) |  | (0.55) |
| OUTSIDER |  | -0.008 |  | -0.009\* |  | -0.002 |
|  |  | (-1.44) |  | (-1.67) |  | (-0.15) |
| Constant |  | 0.071 |  | 0.106 |  | 0.069 |
|  |  | (1.15) |  | (1.05) |  | (0.40) |
| Industry Fixed Effects |  | Yes |  | Yes |  | No |
| Year Fixed Effects |  | Yes |  | Yes |  | Yes |
| Industry\*Year Fixed Effects |  | No |  | Yes |  | No |
| Firm Fixed Effects |  | No |  | No |  | Yes |
| R-Squared |  | 0.377 |  | 0.426 |  | 0.097 |
| Observations |  | 1,210 |  | 1,210 |  | 1,210 |

# Table 3 PSM Regression of Gap Index on Subsequent Firm Performance – Sub-Sample: Forced vs. Non-Forced

Table 3 presents the sub-sample results from PSM regression of CEO succession gaps on subsequent firm performance for forced and non-forced succession firms. The dependent variable, PERFORMANCE is the difference in subsequent performance between the treatment firm (succession firm) and the average subsequent performance of the matching group (non-succession matched peers), where subsequent performance is defined as ROA (return on total assets) in the year following the succession event. Our state variable GAP\_INDEX is constructed as follows: For every difference between the predecessor and the successor with regards to their gender/ age/ cultural background/ highest education level and eliteness of undergraduate school, one point is added to the index. Forced (Non-forced) subsample is defined if the predecessor of the firm is forced out (not forced out) during the succession event The classification of succession events into forced/non-forced follows the method used by Parrino (1997). Firm Characteristic control variables include: past firm performance (PRE\_PERFORMANCE), the number of years since the firm has established (FIRM\_AGE), firm size (SIZE), leverage (LEV), market-to-book ratio (MTB), capital expenditure ratio (CAPEX), free cash flow ratio (FCF) and fixed tangible assets (TANG). Corporate Governance control variables include: board size (BOARD\_SIZE), and board independence (BOARD\_IND). CEO characteristics control variables include: the percentage of outstanding shares owned by the CEO (OWNERSHIP), the proportion of total annual CEO compensation that comes from option grants and stocks (EQUITY\_INTENSITY), CEO-chairman indicator (DUALITY), founder-CEO indicator (FOUNDER), family-member-CEO indicator (FAMILY\_MEMBER), and successor origin (OUTSIDER). Columns 1, 2 and 3 reports the estimates of treatment effect on subsequent performance for forced succession firms controlling for industry and year fixed effects, for industry, year and industry-year fixed effects and for firm and year fixed effects, respectively. Columns 4, 5 and 6 reports the estimates of treatment effect on subsequent performance for non-forced succession firms controlling for industry and year fixed effects, for industry, year and industry-year fixed effects and for firm and year fixed effects, respectively. Control variables definitions are provided in Appendix A. t-statistics are reported in parentheses. ∗,∗∗, and ∗∗∗ denote significance at the 10%, 5%, and 1% level, respectively.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Dependent Variable: Subsequent Firm Performance | | | | | | | | | | | | |
|  |  | Forced | | | | |  | Non-Forced | | | | |
| Variable |  | (1) |  | (2) |  | (3) |  | (4) |  | (5) |  | (6) |
| GAP\_INDEX |  | -0.010\*\* |  | -0.010\*\* |  | -0.011\*\* |  | 0.007\* |  | 0.013\*\*\* |  | 0.006 |
|  |  | (-2.36) |  | (-2.19) |  | (-2.33) |  | (1.85) |  | (3.10) |  | (1.36) |
| PRE\_PERFORMANCE |  | -0.422\*\*\* |  | -0.455\*\*\* |  | -0.150\*\*\* |  | -0.380\*\*\* |  | -0.420\*\*\* |  | -0.070 |
|  |  | (-12.01) |  | (-13.61) |  | (-2.93) |  | (-10.26) |  | (-12.14) |  | (-1.29) |
| FIRM\_AGE |  | 0.005 |  | 0.004 |  | -0.107\*\*\* |  | 0.005 |  | 0.005 |  | -0.080\*\* |
|  |  | (1.45) |  | (1.48) |  | (-3.02) |  | (1.30) |  | (1.54) |  | (-2.11) |
| SIZE |  | 0.003 |  | 0.002 |  | 0.026\*\* |  | 0.005\* |  | 0.004\* |  | 0.032\*\*\* |
|  |  | (1.42) |  | (0.88) |  | (2.38) |  | (1.93) |  | (1.67) |  | (2.85) |
| LEV |  | 0.024 |  | 0.025\* |  | 0.089\*\* |  | 0.040\*\* |  | 0.039\*\*\* |  | 0.079\*\* |
|  |  | (1.50) |  | (1.79) |  | (2.54) |  | (2.36) |  | (2.64) |  | (2.22) |
| MTB |  | -0.019\*\*\* |  | -0.019\*\*\* |  | -0.013\*\*\* |  | -0.015\*\*\* |  | -0.015\*\*\* |  | -0.014\*\*\* |
|  |  | (-7.12) |  | (-7.72) |  | (-3.01) |  | (-5.25) |  | (-5.92) |  | (-3.13) |
| CAPEX |  | 0.043 |  | -0.096 |  | 0.476\*\* |  | 0.002 |  | -0.140 |  | 0.299 |
|  |  | (0.32) |  | (-0.74) |  | (2.54) |  | (0.01) |  | (-1.06) |  | (1.54) |
| FCF |  | -0.109\*\* |  | -0.138\*\*\* |  | -0.008 |  | -0.071 |  | -0.147\*\*\* |  | 0.037 |
|  |  | (-2.53) |  | (-3.22) |  | (-0.16) |  | (-1.58) |  | (-3.31) |  | (0.74) |
| TANG |  | -0.037\*\* |  | -0.027\* |  | 0.054 |  | -0.048\*\*\* |  | -0.040\*\*\* |  | 0.074 |
|  |  | (-2.49) |  | (-1.95) |  | (1.24) |  | (-3.05) |  | (-2.84) |  | (1.63) |
| BOARDSIZE |  | -0.002 |  | -0.001 |  | -0.000 |  | -0.001 |  | -0.001 |  | 0.000 |
|  |  | (-1.33) |  | (-1.02) |  | (-0.16) |  | (-1.03) |  | (-0.77) |  | (0.14) |
| BOARD\_IND |  | 0.033 |  | 0.036 |  | 0.039 |  | 0.021 |  | 0.027 |  | 0.026 |
|  |  | (1.31) |  | (1.57) |  | (0.90) |  | (0.78) |  | (1.16) |  | (0.60) |
| OWNERSHIP |  | -0.036 |  | -0.049\* |  | 0.018 |  | -0.016 |  | -0.042 |  | 0.112\* |
|  |  | (-1.06) |  | (-1.66) |  | (0.30) |  | (-0.43) |  | (-1.38) |  | (1.80) |
| EQUITY\_INTENSITY |  | 0.037\*\*\* |  | 0.028\*\*\* |  | 0.036\*\*\* |  | 0.036\*\*\* |  | 0.027\*\*\* |  | 0.022 |
|  |  | (3.49) |  | (2.79) |  | (2.59) |  | (3.26) |  | (2.61) |  | (1.53) |
| DUALITY |  | -0.004 |  | -0.005 |  | -0.017\* |  | -0.001 |  | -0.001 |  | -0.011 |
|  |  | (-0.81) |  | (-1.10) |  | (-1.82) |  | (-0.13) |  | (-0.23) |  | (-1.18) |
| FOUNDER |  | -0.022 |  | -0.011 |  | 0.012 |  | -0.028 |  | -0.015 |  | -0.016 |
|  |  | (-1.26) |  | (-0.73) |  | (0.32) |  | (-1.58) |  | (-0.95) |  | (-0.46) |
| FAMILY\_MEMBER |  | 0.021 |  | 0.023\* |  | 0.044 |  | 0.013 |  | 0.016 |  | 0.028 |
|  |  | (1.53) |  | (1.91) |  | (0.93) |  | (0.84) |  | (1.29) |  | (0.72) |
| OUTSIDER |  | -0.006 |  | -0.007 |  | 0.004 |  | -0.007 |  | -0.007 |  | -0.004 |
|  |  | (-1.12) |  | (-1.33) |  | (0.40) |  | (-1.19) |  | (-1.38) |  | (-0.37) |
| Constant |  | 0.129\*\* |  | 0.110 |  | 0.133 |  | 0.086 |  | 0.119 |  | -0.034 |
|  |  | (2.21) |  | (1.05) |  | (0.82) |  | (1.39) |  | (1.21) |  | (-0.20) |
| Industry Fixed Effects |  | Yes |  | Yes |  | No |  | Yes |  | Yes |  | No |
| Year Fixed Effects |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |
| Industry\*Year Fixed Effects |  | No |  | Yes |  | No |  | No |  | Yes |  | No |
| Firm Fixed Effects |  | No |  | No |  | Yes |  | No |  | No |  | Yes |
| R-Squared |  | 0.458 |  | 0.495 |  | 0.112 |  | 0.408 |  | 0.460 |  | 0.091 |
| Observations |  | 350 |  | 350 |  | 350 |  | 860 |  | 860 |  | 860 |

# Table 4 PSM Regression of Gap Index on Subsequent Firm Performance – Sub-Sample: Poor Pre-Succession Performance vs. Good Pre-Succession Performance

Table 4 presents the sub-sample results from PSM regression of CEO succession gaps on subsequent firm performance for firms with poor past performance and firms with good pre-succession performance. The dependent variable, PERFORMANCE is the difference in subsequent performance between the treatment firm (succession firm) and the average subsequent performance of the matching group (non-succession matched peers), where subsequent performance is defined as ROA (return on total assets) in the year following the succession event. Our state variable GAP\_INDEX is constructed as follows: For every difference between the predecessor and the successor with regards to their gender/ age/ cultural background/ highest education level and eliteness of undergraduate school, one point is added to the index. FORCED is a dummy variable equals to one if the predecessor is forced out and zero otherwise. The classification of succession events into forced/non-forced follows the method used by Parrino (1997). Poor (Good) Pre-Performance groups are defined if the firm’s pre-succession firm performance is lower (higher) than its industry median in the given fiscal year in our sample, with industry defined at the two-digit SIC code level. Firm Characteristic control variables include: past firm performance (PRE\_PERFORMANCE), the number of years since the firm has established (FIRM\_AGE), firm size (SIZE), leverage (LEV), market-to-book ratio (MTB), capital expenditure ratio (CAPEX), free cash flow ratio (FCF) and fixed tangible assets (TANG). Corporate Governance control variables include: board size (BOARD\_SIZE), and board independence (BOARD\_IND). CEO characteristics control variables include: the percentage of outstanding shares owned by the CEO (OWNERSHIP), the proportion of total annual CEO compensation that comes from option grants and stocks (EQUITY\_INTENSITY), CEO-chairman indicator (DUALITY), founder-CEO indicator (FOUNDER), family-member-CEO indicator (FAMILY\_MEMBER), and successor origin (OUTSIDER). Columns 1, 2 and 3 reports the estimates of treatment effect on subsequent performance for forced succession firms controlling for industry and year fixed effects, for industry, year and industry-year fixed effects and for firm and year fixed effects, respectively. Columns 4, 5 and 6 reports the estimates of treatment effect on subsequent performance for non-forced succession firms controlling for industry and year fixed effects, for industry, year and industry-year fixed effects and for firm and year fixed effects, respectively. Control variables definitions are provided in Appendix A. t-statistics are reported in parentheses. ∗,∗∗, and ∗∗∗ denote significance at the 10%, 5%, and 1% level, respectively.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Dependent Variable: Subsequent Firm Performance | | | | | | | | | | | | |
|  |  | Poor Pre-Performance | | | | |  | Good Pre-Performance | | | | |
| Variable |  | (1) |  | (2) |  | (3) |  | (4) |  | (5) |  | (6) |
| Gap\_Index |  | -0.022\*\*\* |  | -0.021\*\*\* |  | -0.025\*\*\* |  | 0.014\*\*\* |  | 0.020\*\*\* |  | 0.013\*\*\* |
|  |  | (-3.79) |  | (-3.48) |  | (-4.04) |  | (3.20) |  | (4.53) |  | (2.70) |
| FORCED |  | 0.002 |  | -0.002 |  | 0.006 |  | 0.050\*\*\* |  | 0.042\*\* |  | 0.068\*\*\* |
|  |  | (0.10) |  | (-0.09) |  | (0.34) |  | (2.71) |  | (2.30) |  | (3.54) |
| PRE\_PERFORMANCE |  | -0.407\*\*\* |  | -0.449\*\*\* |  | -0.135\*\*\* |  | -0.403\*\*\* |  | -0.445\*\*\* |  | -0.077 |
|  |  | (-11.59) |  | (-13.63) |  | (-2.70) |  | (-11.02) |  | (-13.09) |  | (-1.41) |
| FIRM\_AGE |  | 0.004 |  | 0.003 |  | -0.084\*\* |  | 0.005 |  | 0.005 |  | -0.084\*\* |
|  |  | (1.02) |  | (0.90) |  | (-2.42) |  | (1.32) |  | (1.61) |  | (-2.24) |
| SIZE |  | 0.004 |  | 0.002 |  | 0.025\*\* |  | 0.005\*\* |  | 0.004\* |  | 0.032\*\*\* |
|  |  | (1.45) |  | (0.76) |  | (2.41) |  | (2.02) |  | (1.83) |  | (2.89) |
| LEV |  | 0.015 |  | 0.016 |  | 0.075\*\* |  | 0.039\*\* |  | 0.039\*\*\* |  | 0.078\*\* |
|  |  | (0.94) |  | (1.14) |  | (2.18) |  | (2.39) |  | (2.76) |  | (2.19) |
| MTB |  | -0.019\*\*\* |  | -0.020\*\*\* |  | -0.011\*\*\* |  | -0.015\*\*\* |  | -0.016\*\*\* |  | -0.015\*\*\* |
|  |  | (-7.03) |  | (-7.85) |  | (-2.80) |  | (-5.52) |  | (-6.19) |  | (-3.40) |
| CAPEX |  | -0.040 |  | -0.203 |  | 0.340\* |  | 0.008 |  | -0.129 |  | 0.329\* |
|  |  | (-0.29) |  | (-1.57) |  | (1.85) |  | (0.06) |  | (-1.01) |  | (1.71) |
| FCF |  | -0.115\*\*\* |  | -0.157\*\*\* |  | -0.006 |  | -0.069 |  | -0.140\*\*\* |  | 0.040 |
|  |  | (-2.69) |  | (-3.73) |  | (-0.13) |  | (-1.57) |  | (-3.22) |  | (0.80) |
| TANG |  | -0.038\*\* |  | -0.026\* |  | 0.049 |  | -0.044\*\*\* |  | -0.035\*\*\* |  | 0.072 |
|  |  | (-2.49) |  | (-1.89) |  | (1.15) |  | (-2.87) |  | (-2.58) |  | (1.61) |
| BOARDSIZE |  | -0.001 |  | -0.000 |  | 0.000 |  | -0.002 |  | -0.002 |  | -0.000 |
|  |  | (-0.80) |  | (-0.23) |  | (0.01) |  | (-1.32) |  | (-1.24) |  | (-0.05) |
| BOARD\_IND |  | 0.029 |  | 0.031 |  | 0.047 |  | 0.019 |  | 0.026 |  | 0.016 |
|  |  | (1.14) |  | (1.39) |  | (1.14) |  | (0.72) |  | (1.12) |  | (0.36) |
| OWNERSHIP |  | -0.017 |  | -0.042 |  | 0.091 |  | -0.022 |  | -0.048 |  | 0.095 |
|  |  | (-0.51) |  | (-1.44) |  | (1.53) |  | (-0.64) |  | (-1.60) |  | (1.55) |
| EQUITY\_INTENSITY |  | 0.038\*\*\* |  | 0.027\*\*\* |  | 0.037\*\*\* |  | 0.032\*\*\* |  | 0.024\*\* |  | 0.012 |
|  |  | (3.63) |  | (2.73) |  | (2.73) |  | (2.88) |  | (2.32) |  | (0.79) |
| DUALITY |  | 0.001 |  | -0.000 |  | -0.010 |  | -0.004 |  | -0.005 |  | -0.014 |
|  |  | (0.11) |  | (-0.09) |  | (-1.12) |  | (-0.71) |  | (-0.97) |  | (-1.47) |
| FOUNDER |  | -0.022 |  | -0.009 |  | 0.005 |  | -0.027 |  | -0.014 |  | -0.017 |
|  |  | (-1.28) |  | (-0.61) |  | (0.12) |  | (-1.53) |  | (-0.95) |  | (-0.47) |
| FAMILY\_MEMBER |  | 0.015 |  | 0.019 |  | 0.020 |  | 0.015 |  | 0.020 |  | 0.007 |
|  |  | (1.09) |  | (1.56) |  | (0.51) |  | (1.05) |  | (1.64) |  | (0.15) |
| OUTSIDER |  | -0.004 |  | -0.005 |  | 0.002 |  | -0.008 |  | -0.008 |  | -0.006 |
|  |  | (-0.79) |  | (-0.91) |  | (0.21) |  | (-1.29) |  | (-1.57) |  | (-0.52) |
| Constant |  | 0.131\*\* |  | 0.180\* |  | 0.041 |  | 0.099 |  | 0.067 |  | 0.003 |
|  |  | (2.25) |  | (1.91) |  | (0.26) |  | (1.64) |  | (0.63) |  | (0.02) |
| Industry Fixed Effects |  | Yes |  | Yes |  | No |  | Yes |  | Yes |  | No |
| Year Fixed Effects |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |
| Industry\*Year Fixed Effects |  | No |  | Yes |  | No |  | No |  | Yes |  | No |
| Firm Fixed Effects |  | No |  | No |  | Yes |  | No |  | No |  | Yes |
| R-Squared |  | 0.465 |  | 0.504 |  | 0.127 |  | 0.426 |  | 0.480 |  | 0.129 |
| Observations |  | 596 |  | 596 |  | 596 |  | 614 |  | 614 |  | 614 |

# Table 5 PSM Regression of Gap Index on Subsequent Long-Term Firm Performance

Table 5 presents the results from PSM regression of CEO succession gaps on subsequent long-term firm performance using sub-samples. The dependent variable, PERFORMANCE is the difference in subsequent long-term performance between the treatment firm (succession firm) and the average subsequent performance of the matching group (non-succession matched peers), where subsequent long-term performance is defined as the three-year average subsequent ROA (return on total assets). Our state variable GAP\_INDEX is constructed as follows: For every difference between the predecessor and the successor with regards to their gender/ age/ cultural background/ highest education level and eliteness of undergraduate school, one point is added to the index. FORCED is a dummy variable equals to one if the predecessor is forced out and zero otherwise. The classification of succession events into forced/non-forced follows the method used by Parrino (1997). POOR\_PRE\_PERF takes the value of one if the firm’s three years average pre-succession firm performance is lower than its industry median in the given fiscal year in our sample and zero otherwise, with industry defined at the two-digit SIC code level. Panel A reports estimates of gap index on long-term post-succession firm performance. Panel B reports sub-sample estimates of gap index on long-term post-succession firm performance for forced/non-forced succession firms while Panel C reports sub-sample estimates of gap index on long-term post-succession firm performance for poor pre-succession performance/good pre-succession performance firms. Columns 1, 2 and 3 reports the estimates of treatment effect on subsequent performance controlling for industry and year fixed effects, for industry, year and industry-year fixed effects and for firm and year fixed effects, respectively. The models include all control variables from Table 2 (suppressed). Control variables definitions are provided in Appendix A. t-statistics are reported in parentheses. ∗,∗∗, and ∗∗∗ denote significance at the 10%, 5%, and 1% level, respectively.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Dependent Variable: Subsequent Long-Term Firm Performance | | | | | | | | | | | | |
| Variable |  | (1) | | |  | (2) | | |  | (3) | | |
| Panel A: PSM Regression of Gap Index on Subsequent Long-term Firm Performance |  |  | | |  |  |  |  |  |  |  |  |
| GAP\_INDEX |  | -0.000 | | |  | 0.000 | | |  | -0.003 | | |
|  |  | (-0.11) | | |  | (0.01) | | |  | (-0.74) | | |
| FORCED |  | -0.009 | | |  | -0.008 | | |  | -0.010 | | |
|  |  | (-0.63) | | |  | (-0.55) | | |  | (-0.67) | | |
| PRE\_PERFORMANCE |  | -0.233\*\*\* | | |  | -0.233\*\*\* | | |  | -0.019 | | |
|  |  | (-6.02) | | |  | (-6.11) | | |  | (-0.29) | | |
| Controls |  | Yes | | |  | Yes | | |  | Yes | | |
| Industry Fixed Effects |  | Yes | | |  | Yes | | |  | No | | |
| Year Fixed Effects |  | Yes | | |  | Yes | | |  | Yes | | |
| Industry\*Year Fixed Effects |  | No | | |  | Yes | | |  | No | | |
| Firm Fixed Effects |  | No | | |  | No | | |  | Yes | | |
| R-Squared |  | 0.424 | | |  | 0.475 | | |  | 0.112 | | |
| Observations |  | 878 | | |  | 878 | | |  | 878 | | |
| Panel B: PSM Regression of Gap Index on Subsequent Long-term Firm Performance – Forced vs. Non-Forced |  | Forced | | | | |  | Non-Forced | | | | |
|  | (1) |  | (2) |  | (3) |  | (1) |  | (2) |  | (3) |
| GAP\_INDEX |  | -0.019\*\*\* |  | -0.018\*\*\* |  | -0.024\*\*\* |  | 0.007\* |  | 0.008\*\* |  | 0.005 |
|  |  | (-3.65) |  | (-3.56) |  | (-4.44) |  | (1.88) |  | (2.15) |  | (1.37) |
| PRE\_PERFORMANCE |  | -0.219\*\*\* |  | -0.230\*\*\* |  | 0.039 |  | -0.252\*\*\* |  | -0.257\*\*\* |  | 0.078 |
|  |  | (-5.71) |  | (-6.10) |  | (0.64) |  | (-6.69) |  | (-6.88) |  | (1.22) |
| Controls |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |
| Industry Fixed Effects |  | Yes |  | Yes |  | No |  | Yes |  | Yes |  | No |
| Year Fixed Effects |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |
| Industry\*Year Fixed Effects |  | No |  | Yes |  | No |  | No |  | Yes |  | No |
| Firm Fixed Effects |  | No |  | No |  | Yes |  | No |  | No |  | Yes |
| R-Squared |  | 0.482 |  | 0.533 |  | 0.148 |  | 0.467 |  | 0.518 |  | 0.111 |
| Observations |  | 240 |  | 240 |  | 240 |  | 638 |  | 638 |  | 638 |
| Panel C: PSM Regression of Gap Index on Subsequent Long-term Firm Performance – Poor Pre-Succession Performance vs. Good Pre-Succession Performance |  | Poor Pre-Succession Performance | | | | |  | Good Pre-Succession Performance | | | | |
|  | (1) |  | (2) |  | (3) |  | (1) |  | (2) |  | (3) |
| GAP\_INDEX |  | -0.025\*\*\* |  | -0.026\*\*\* |  | -0.028\*\*\* |  | 0.018\*\*\* |  | 0.021\*\*\* |  | 0.017\*\*\* |
|  |  | (-4.27) |  | (-4.32) |  | (-4.81) |  | (4.42) |  | (4.88) |  | (3.99) |
| FORCED |  | -0.215\*\*\* |  | -0.233\*\*\* |  | 0.082 |  | -0.268\*\*\* |  | -0.277\*\*\* |  | 0.045 |
|  |  | (-5.73) |  | (-6.36) |  | (1.44) |  | (-7.20) |  | (-7.59) |  | (0.71) |
| PRE\_PERFORMANCE |  | -0.037\* |  | -0.034 |  | -0.040\* |  | 0.044\*\*\* |  | 0.039\*\* |  | 0.054\*\*\* |
|  |  | (-1.68) |  | (-1.54) |  | (-1.82) |  | (2.83) |  | (2.51) |  | (3.29) |
| Controls |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |
| Industry Fixed Effects |  | Yes |  | Yes |  | No |  | Yes |  | Yes |  | No |
| Year Fixed Effects |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |
| Industry\*Year Fixed Effects |  | No |  | Yes |  | No |  | No |  | Yes |  | No |
| Firm Fixed Effects |  | No |  | No |  | Yes |  | No |  | No |  | Yes |
| R-Squared |  | 0.504 |  | 0.554 |  | 0.190 |  | 0.491 |  | 0.547 |  | 0.193 |
| Observations |  | 404 |  | 404 |  | 404 |  | 474 |  | 474 |  | 474 |

# Table 6 PSM Regression of Gap Index on Subsequent Alternative Performance Measures

Table 6 presents the results from PSM regression of CEO succession gaps on subsequent firm performance. The dependent variable, PERFORMANCE is the difference in subsequent performance between the treatment firm (succession firm) and the average subsequent performance of the matching group (non-succession matched peers). Alternative performance measures include: (1) ROA redefined as net income scaled by total assets as opposed to EBITDA (earnings before interest, tax, depreciation and amortization) over total assets, and (2) return on equity (ROE), defined as net income divided by common equity. Our state variable GAP\_INDEX is constructed as follows: For every difference between the predecessor and the successor with regards to their gender/ age/ cultural background/ highest education level and eliteness of undergraduate school, one point is added to the index. FORCED is a dummy variable equals to one if the predecessor is forced out and zero otherwise. The classification of succession events into forced/non-forced follows the method used by Parrino (1997). POOR\_PRE\_PERF takes the value of one if the firm’s pre-succession firm performance is lower than its industry median in the given fiscal year in our sample and zero otherwise, with industry defined at the two-digit SIC code level. Panel A reports estimates of gap index on subsequent firm performance. Panel B reports sub-sample estimates of gap index on subsequent firm performance for forced/non-forced succession firms while Panel C reports sub-sample estimates of gap index on subsequent firm performance for poor pre-succession performance/good pre-succession performance firms. Columns 1 and 3 report the estimates of treatment effect on subsequent performance using a one-year post-succession window while Columns 2 and 4 report the estimates of treatment effect on subsequent performance by adopting a three-year post-succession time frame. The models include all control variables from Table 2 (suppressed). All regressions include firm and year fixed effects. Control variables definitions are provided in Appendix A. t-statistics are reported in parentheses. ∗,∗∗, and ∗∗∗ denote significance at the 10%, 5%, and 1% level, respectively.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable |  | ROA (Net Income/ Total Assets) | | | | | | |  | ROE | | | | | | |
| Panel A: PSM Regression of Gap Index on Subsequent Firm Performance |  | (1) | | |  | (2) | | |  | (3) | | |  | (4) | | |
| GAP\_INDEX |  | -0.002 | | |  | -0.002 | | |  | 0.005 | | |  | 0.008 | | |
|  |  | (-0.61) | | |  | (-0.59) | | |  | (0.24) | | |  | (0.46) | | |
| FORCED |  | -0.007 | | |  | 0.000 | | |  | 0.024 | | |  | -0.019 | | |
|  |  | (-0.56) | | |  | (0.04) | | |  | (0.31) | | |  | (-0.28) | | |
| PRE\_PERFORMANCE |  | 0.027 | | |  | 0.244\*\*\* | | |  | 0.060 | | |  | 0.271\*\*\* | | |
|  |  | (0.69) | | |  | (4.33) | | |  | (1.40) | | |  | (4.08) | | |
| Controls |  | Yes | | |  | Yes | | |  | Yes | | |  | Yes | | |
| Year Fixed Effects |  | Yes | | |  | Yes | | |  | Yes | | |  | Yes | | |
| Firm Fixed Effects |  | Yes | | |  | Yes | | |  | Yes | | |  | Yes | | |
| R-Squared |  | 0.069 | | |  | 0.144 | | |  | 0.040 | | |  | 0.094 | | |
| Observations |  | 1210 | | |  | 878 | | |  | 1210 | | |  | 878 | | |
| Panel B: PSM Regression of Gap Index on Subsequent Firm Performance – Forced (F) vs. Non-Forced (NF) |  | F |  | NF |  | F |  | NF |  | F |  | NF |  | F |  | NF |
|  | (1) |  | (1) |  | (2) |  | (2) |  | (3) |  | (3) |  | (4) |  | (4) |
| GAP\_INDEX |  | -0.010\*\* |  | 0.001 |  | -0.008\* |  | -0.000 |  | 0.002 |  | 0.018 |  | -0.047\*\* |  | 0.027 |
|  |  | (-2.16) |  | (0.25) |  | (-1.76) |  | (-0.03) |  | (0.06) |  | (0.74) |  | (-2.01) |  | (1.53) |
| PRE\_PERFORMANCE |  | 0.027 |  | 0.084\* |  | 0.316\*\*\* |  | 0.258\*\*\* |  | 0.069 |  | 0.050 |  | 0.280\*\*\* |  | 0.327\*\*\* |
|  |  | (0.70) |  | (1.90) |  | (6.75) |  | (4.62) |  | (1.61) |  | (1.06) |  | (4.84) |  | (4.97) |
| Controls |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |
| Year Fixed Effects |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |
| Firm Fixed Effects |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |
| R-Squared |  | 0.084 |  | 0.075 |  | 0.232 |  | 0.148 |  | 0.041 |  | 0.040 |  | 0.147 |  | 0.111 |
| Observations |  | 350 |  | 860 |  | 240 |  | 638 |  | 350 |  | 860 |  | 240 |  | 638 |
| Panel C: PSM Regression of Gap Index on Subsequent Firm Performance – Poor Pre-Succession Performance (PP) vs. Good Pre-Succession Performance (GP) |  | PP |  | GP |  | PP |  | GP |  | PP |  | GP |  | PP |  | GP |
|  | (1) |  | (1) |  | (2) |  | (2) |  | (3) |  | (3) |  | (4) |  | (4) |
| GAP\_INDEX |  | -0.028\*\*\* |  | 0.013\*\*\* |  | -0.011\*\* |  | 0.004 |  | -0.047 |  | 0.051\* |  | -0.047\* |  | 0.0369\* |
|  |  | (-4.79) |  | (2.85) |  | (-2.49) |  | (1.03) |  | (-1.49) |  | (1.77) |  | (-1.73) |  | (1.82) |
| PRE\_PERFORMANCE |  | 0.014 |  | 0.078\* |  | 0.329\*\*\* |  | 0.241\*\*\* |  | 0.053 |  | 0.049 |  | 0.291\*\*\* |  | 0.306\*\*\* |
|  |  | (0.37) |  | (1.81) |  | (6.81) |  | (4.45) |  | (1.18) |  | (1.08) |  | (5.05) |  | (4.64) |
| FORCED |  | 0.035\* |  | -0.008 |  | -0.015 |  | 0.005 |  | 0.037 |  | -0.003 |  | -0.066 |  | 0.032 |
|  |  | (1.92) |  | (-0.46) |  | (-0.81) |  | (0.39) |  | (0.30) |  | (-0.03) |  | (-0.58) |  | (0.44) |
| Controls |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |
| Year Fixed Effects |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |
| Firm Fixed Effects |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |
| R-Squared |  | 0.088 |  | 0.106 |  | 0.219 |  | 0.174 |  | 0.040 |  | 0.047 |  | 0.156 |  | 0.110 |
| Observations |  | 596 |  | 614 |  | 404 |  | 474 |  | 596 |  | 614 |  | 404 |  | 474 |

# Table 7 Two-Stage Least Square Regression

Table 7 presents the results from two-stage least square regression of CEO succession gaps on subsequent firm performance using sub-samples. The dependent variable, PERFORMANCE is the difference in subsequent performance between the treatment firm (succession firm) and the average subsequent performance of the matching group (non-succession matched peers), where subsequent performance is defined as ROA (return on total assets) in the year following the succession event. Panel A performs the one-year subsequent firm performance and panel B illustrates three-year average subsequent firm performance. Our state variable GAP\_INDEX is constructed as follows: For every difference between the predecessor and the successor with regards to their gender/ age/ cultural background/ highest education level and eliteness of undergraduate school, one point is added to the index. Instrumented GAP\_INDEX is the fitted value of GAP\_INDEX from the first-stage regression. Potential candidates’ average gap index (CANDIDATE\_GAP) serves as our instrumental variable. FORCED is a dummy variable equals to one if the predecessor is forced out and zero otherwise. The classification of succession events into forced/non-forced follows the method used by Parrino (1997). POOR\_PRE\_PERF takes the value of one if the firm’s pre-succession firm performance is lower than its industry median in the given fiscal year in our sample and zero otherwise, with industry defined at the two-digit SIC code level. The models include all control variables from Table 2 (suppressed). Control variables definitions are provided in Appendix A. Regressions include year and firm fixed effects. T-statistics are reported in parentheses. ∗,∗∗, and ∗∗∗ denote significance at the 10%, 5%, and 1% level, respectively.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Whole Sample | | |  | Forced | | |  | Non-Forced | | |  | Poor Pre-Performance | | |  | Good Pre-Performance | | |
| Variable |  | First Stage |  | Second Stage |  | First Stage |  | Second Stage |  | First Stage |  | Second Stage |  | First Stage |  | Second Stage |  | First Stage |  | Second Stage |
| Panel A: : PSM Regression of Gap Index on One-Year Subsequent Firm Performance |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| GAP\_INDEX |  |  |  | -0.000 |  |  |  | -0.012\*\* |  |  |  | 0.007 |  |  |  | -0.032\*\*\* |  |  |  | 0.017\*\*\* |
|  |  |  |  | (-0.08) |  |  |  | (-2.24) |  |  |  | (1.48) |  |  |  | (-4.00) |  |  |  | (3.44) |
| CANDIDATE\_GAP |  | 0.854\*\*\* |  |  |  | 0.966\*\*\* |  |  |  | 0.869\*\*\* |  |  |  | 0.745\*\*\* |  |  |  | 0.907\*\*\* |  |  |
|  |  | (52.83) |  |  |  | (62.40) |  |  |  | (64.09) |  |  |  | (35.75) |  |  |  | (44.48) |  |  |
| Controls |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |
| Firm Fixed Effects |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |
| Year Fixed Effects |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |
| R-Squared |  | 0.839 |  | 0.098 |  | 0.835 |  | 0.112 |  | 0.759 |  | 0.092 |  | 0.806 |  | 0.127 |  | 0.880 |  | 0.128 |
| Observations |  | 1210 |  | 1210 |  | 350 |  | 350 |  | 860 |  | 860 |  | 596 |  | 596 |  | 614 |  | 614 |
| Panel B: Treatment Effect on Three-Year Average Subsequent Firm Performance |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| GAP\_INDEX |  |  |  | -0.003 |  |  |  | -0.014\*\* |  |  |  | 0.001 |  |  |  | -0.044\*\*\* |  |  |  | 0.020\*\*\* |
|  |  |  |  | (-0.73) |  |  |  | (-2.44) |  |  |  | (0.24) |  |  |  | (-6.00) |  |  |  | (4.39) |
| CANDIDATE\_GAP |  | 0.852\*\*\* |  |  |  | 0.927\*\*\* |  |  |  | 0.866\*\*\* |  |  |  | 0.660\*\*\* |  |  |  | 0.969\*\*\* |  |  |
|  |  | (44.46) |  |  |  | (56.66) |  |  |  | (49.36) |  |  |  | (32.11) |  |  |  | (61.96) |  |  |
| Controls |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |
| Firm Fixed Effects |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |
| Year Fixed Effects |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |  | Yes |
| R-Squared |  | 0.835 |  | 0.120 |  | 0.869 |  | 0.153 |  | 0.818 |  | 0.119 |  | 0.834 |  | 0.185 |  | 0.886 |  | 0.203 |
| Observations |  | 878 |  | 878 |  | 240 |  | 240 |  | 638 |  | 638 |  | 404 |  | 404 |  | 474 |  | 474 |

# Table 8 PSM Regression of Gap Index on Post-Succession Board Co-option

Table 8 presents the results from panel data regression of CEO succession gaps on post-succession board co-option. The dependent variable, CO\_OPTED is the difference in proportion of board changes one-year after the CEO assumed office between each treatment firm (succession firm) and its matching group (non-succession matched peers). Our state variable GAP\_INDEX is constructed as follows: For every difference between the predecessor and the successor with regards to their gender/ age/ cultural background/ highest education level and eliteness of undergraduate school, one point is added to the index. HIGH\_GAP is a dummy equals one if the firm has a GAP\_INDEX greater than the mean value of 1.82 and zero otherwise. FORCED is a dummy variable equals to one if the predecessor is forced out and zero otherwise. The classification of succession events into forced/non-forced follows the method used by Parrino (1997). POOR\_PRE\_PERF takes the value of one if the firm’s pre-succession firm performance is lower than its industry median in the given fiscal year in our sample and zero otherwise, with industry defined at the two-digit SIC code level. OUTSIDER takes the value of one if the successor was employed by the firm for less than one year before he/she assumed office and zero otherwise. Control variables include: firm size (SIZE), leverage (LEV), number of business segments (NUM\_SEGMENTS), firm age (FIRM\_AGE), market-to-book ratio (MTB), research and development expense (RND), annualized standard deviation of monthly stock return over the year (STKVOL), firm profitability (ROA), free cash flow ratio (FCF), board size (BOARDSIZE), CEO share ownership (OWNERSHIP), CEO age (AGE), and CEO duality (DUALITY). Regressions include year and firm fixed effects. Control variables definitions are provided in Appendix A. t-statistics are reported in parentheses. ∗,∗∗, and ∗∗∗ denote significance at the 10%, 5%, and 1% level, respectively.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: Subsequent Board Co-option | | | | |
|  |  | (1) |  | (2) |
| HIGH\_GAP |  | 0.079\*\*\* |  |  |
|  |  | (2.70) |  |  |
| GAP\_INDEX |  |  |  | 0.025\* |
|  |  |  |  | (1.81) |
| FORCED |  | 0.054 |  | 0.062 |
|  |  | (1.38) |  | (1.39) |
| OUTSIDER |  | 0.021 |  | 0.031 |
|  |  | (0.60) |  | (0.70) |
| POOR\_PRE\_PERF |  | -0.021 |  | -0.020 |
|  |  | (-0.88) |  | (-0.76) |
| SIZE |  | -0.045 |  | -0.076 |
|  |  | (-0.86) |  | (-1.31) |
| LEV |  | 0.153 |  | 0.180 |
|  |  | (1.13) |  | (1.17) |
| NUM\_SEGMENTS |  | 0.000 |  | 0.000 |
|  |  | (0.02) |  | (0.10) |
| FIRM\_AGE |  | -0.283 |  | -0.326 |
|  |  | (-1.61) |  | (-1.60) |
| MTB |  | 0.006 |  | -0.002 |
|  |  | (0.38) |  | (-0.09) |
| RND |  | -0.039 |  | -0.023 |
|  |  | (-0.25) |  | (-0.14) |
| STKVOL |  | -0.037 |  | 0.030 |
|  |  | (-0.14) |  | (0.11) |
| ROA |  | 0.163 |  | 0.240 |
|  |  | (0.81) |  | (1.07) |
| FCF |  | -0.218 |  | -0.310\* |
|  |  | (-1.24) |  | (-1.65) |
| BOARD\_SIZE |  | 0.016\*\* |  | 0.022\*\*\* |
|  |  | (2.42) |  | (3.07) |
| OWNERSHIP |  | 0.297 |  | 0.240 |
|  |  | (1.20) |  | (0.84) |
| AGE |  | 0.012\*\*\* |  | 0.016\*\*\* |
|  |  | (4.56) |  | (4.72) |
| DUALITY |  | 0.043 |  | 0.042 |
|  |  | (1.47) |  | (1.27) |
| Constant |  | 0.592 |  | 0.799 |
|  |  | (0.82) |  | (0.95) |
| Firm Fixed Effects |  | Yes |  | Yes |
| Year Fixed Effects |  | Yes |  | Yes |
| R-Squared |  | 0.116 |  | 0.134 |
| Observations |  | 620 |  | 547 |

# Table 9 Logit Regression of High Gap on Subsequent Structural Changes

Table 9 presents the results from logit regression of CEO succession gaps on post-succession structural changes. Panel A reports the results of subsequent structural change and panel B represents the results of subsequent employee reduction. The dependent variables to illustrate the structural change in panel A, STRUCTURE\_CHANGE is a dummy variable takes the value of one if asset sale is announced and a firm’s book value of total assets is reduced by more than 10% during the 2-year post-succession period. For the dependent variable that demonstrate the employee reduction in panel B, EMPLOYEE\_REDUCTION is a dummy equals one if a firm’s number of employees is reduced by more than 10% during the 2-year post-succession period. Our state variable GAP\_INDEX is constructed as follows: For every difference between the predecessor and the successor with regards to their gender/ age/ cultural background/ highest education level and eliteness of undergraduate school, one point is added to the index. HIGH\_GAP, is a dummy equals one if the firm has a GAP\_INDEX greater than the mean value of 1.82 and zero otherwise. FORCED is a dummy variable equals to one if the predecessor is forced out and zero otherwise. The classification of succession events into forced/non-forced follows the method used by Parrino (1997). POOR\_PRE\_PERF takes the value of one if the firm’s pre-succession firm performance is lower than its industry median in the given fiscal year in our sample and zero otherwise, with industry defined at the two-digit SIC code level. Control variables include: CEO origin (OUTSIDER), industry-adjusted debt capacity (LOW\_DEBT\_CAPACITY), interest coverage (INTEREST\_COVERAGE), dividend coverage (DIV\_COVERAGE), dividend cut indicator (DIV\_CUT), return on assets (ROA), size (SIZE), leverage (LEV), market-to-book ratio (MTB), number of business segments (NUM\_SEGMENTS), sale-based Herfindahl Index (HERF) and median industry sales growth rate within which the firm operates (IND\_SALES\_GROWTH). Regressions include year and firm fixed effects. Control variables definitions are provided in Appendix A. t-statistics are reported in parentheses. ∗,∗∗, and ∗∗∗ denote significance at the 10%, 5%, and 1% level, respectively.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Panel A: Dependent Variable – Subsequent Structural Change |  |  |  |  |  |  |  |  |
| Variable |  | (1) |  | (2) |  | (3) |  | (4) |
| HIGH\_GAP |  | 0.155 |  | 0.059 |  | 0.160 |  | -0.307 |
|  |  | (0.74) |  | (0.27) |  | (0.77) |  | (-1.03) |
| FORCED |  | 0.095 |  | -1.207 |  | 0.073 |  | 0.042 |
|  |  | (0.25) |  | (-1.37) |  | (0.19) |  | (0.11) |
| FORCED\*HIGH\_GAP |  |  |  | 1.733\* |  |  |  |  |
|  |  |  |  | (1.76) |  |  |  |  |
| POOR\_PRE\_PERF |  |  |  |  |  | 0.183 |  | 0.062 |
|  |  |  |  |  |  | (0.99) |  | (0.32) |
| POOR\_PRE\_PERF\*HIGH\_GAP |  |  |  |  |  |  |  | 0.894\*\* |
|  |  |  |  |  |  |  |  | (2.34) |
| Controls |  | Yes |  | Yes |  | Yes |  | Yes |
| Firm Fixed Effects |  | Yes |  | Yes |  | Yes |  | Yes |
| Year Fixed Effects |  | Yes |  | Yes |  | Yes |  | Yes |
| R-Squared |  | 0.189 |  | 0.191 |  | 0.190 |  | 0.193 |
| Observations |  | 2,316 |  | 2,316 |  | 2,316 |  | 2,316 |
|  |  |  |  |  |  |  |  |  |
| Panel B: Dependent Variable – Subsequent Employee Reduction |  |  |  |  |  |  |  |  |
| HIGH\_GAP |  | 0.125 |  | -0.025 |  | 0.146 |  | -0.149 |
|  |  | (0.61) |  | (-0.12) |  | (0.70) |  | (-0.53) |
| FORCED |  | 0.711\*\* |  | -0.520 |  | 0.688\* |  | 0.672\* |
|  |  | (1.96) |  | (-0.81) |  | (1.89) |  | (1.84) |
| FORCED\*HIGH\_GAP |  |  |  | 1.939\*\* |  |  |  |  |
|  |  |  |  | (2.47) |  |  |  |  |
| POOR\_PRE\_PERF |  |  |  |  |  | 0.522\*\*\* |  | 0.440\*\* |
|  |  |  |  |  |  | (2.90) |  | (2.35) |
| POOR\_PRE\_PERF\*HIGH\_GAP |  |  |  |  |  |  |  | 0.584 |
|  |  |  |  |  |  |  |  | (1.58) |
| Controls |  | Yes |  | Yes |  | Yes |  | Yes |
| Firm Fixed Effects |  | Yes |  | Yes |  | Yes |  | Yes |
| Year Fixed Effects |  | Yes |  | Yes |  | Yes |  | Yes |
| R-Squared |  | 0.125 |  | 0.129 |  | 0.130 |  | 0.131 |
| Observations |  | 2,063 |  | 2,063 |  | 2,063 |  | 2,063 |

# Table 10 PSM Regression of High Gap on Subsequent Strategic Instability

Table 10 presents the PSM regression of CEO succession gaps on subsequent firm strategic instability. The dependent variable, SI is the difference in subsequent firm strategic instability between the treatment firm (succession firm) and the matching group (non-succession matched peers), where subsequent strategic instability is defined the variance in firm strategy a year following the succession event. Our state variable GAP\_INDEX is constructed as follows: For every difference between the predecessor and the successor with regards to their gender/ age/ cultural background/ highest education level and eliteness of undergraduate school, one point is added to the index. HIGH\_GAP, is a dummy equals one if the firm has a GAP\_INDEX greater than the mean value of 1.82 and zero otherwise. FORCED is a dummy variable equals to one if the predecessor is forced out and zero otherwise. The classification of succession events into forced/non-forced follows the method used by Parrino (1997). POOR\_PRE\_PERF takes the value of one if the firm’s pre-succession firm performance is lower than its industry median in the given fiscal year in our sample and zero otherwise, with industry defined at the two-digit SIC code level. Control variables include: pre-succession firm strategic instability (PRE\_SI), size (SIZE), firm age (FIRM\_AGE), market-to-book ratio (MTB), free cash flow (FCF), return on assets (ROA), board size (BOARD\_SIZE), board independence (BOARD\_IND), CEO age (AGE), CEO share ownership (OWNERSHIP), CEO duality (DUALITY) and CEO origin (OUTSIDER). Regressions include year and firm fixed effects. Columns 1, 2 and 3 report the effect of High Gap, the interaction effect of High Gap and forced turnover, and the interaction effect of High Gap and Poor pre-succession firm performance on subsequent firm strategic instability, respectively. Control variables definitions are provided in Appendix A. t-statistics are reported in parentheses. ∗,∗∗, and ∗∗∗ denote significance at the 10%, 5%, and 1% level, respectively.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Dependent Variable: Subsequent Strategic Instability | | | | | | |
|  |  | (1) |  | (2) |  | (3) |
| HIGH\_GAP |  | -0.039 |  | -0.276 |  | -0.312 |
|  |  | (-0.12) |  | (-0.79) |  | (-0.89) |
| FORCED |  | 0.065 |  | -0.875 |  | -0.054 |
|  |  | (0.15) |  | (-1.36) |  | (-0.12) |
| FORCED\*HIGH\_GAP |  |  |  | 1.690\*\* |  |  |
|  |  |  |  | (1.97) |  |  |
| POOR\_PRE\_PERF |  | 0.011 |  | 0.014 |  | -0.159 |
|  |  | (0.06) |  | (0.07) |  | (-0.75) |
| POOR\_PRE\_PERF\*HIGH\_GAP |  |  |  |  |  | 1.158\*\* |
|  |  |  |  |  |  | (2.25) |
| PRE\_SI |  | 0.044 |  | 0.045 |  | 0.051 |
|  |  | (0.86) |  | (0.88) |  | (1.00) |
| SIZE |  | -1.656\*\*\* |  | -1.644\*\*\* |  | -1.654\*\*\* |
|  |  | (-4.11) |  | (-4.08) |  | (-4.11) |
| FIRM\_AGE |  | 3.990\*\* |  | 3.843\*\* |  | 4.031\*\* |
|  |  | (2.14) |  | (2.07) |  | (2.17) |
| MTB |  | -0.259 |  | -0.275 |  | -0.256 |
|  |  | (-1.52) |  | (-1.62) |  | (-1.51) |
| FCF |  | 0.193 |  | -0.011 |  | -0.218 |
|  |  | (0.09) |  | (-0.00) |  | (-0.10) |
| ROA |  | 0.669 |  | 0.446 |  | 0.524 |
|  |  | (0.30) |  | (0.20) |  | (0.24) |
| BOARD\_SIZE |  | 0.022 |  | 0.021 |  | 0.028 |
|  |  | (0.28) |  | (0.26) |  | (0.35) |
| BOARD\_IND |  | -0.848 |  | -0.738 |  | -0.934 |
|  |  | (-0.49) |  | (-0.43) |  | (-0.55) |
| AGE |  | -0.029 |  | -0.029 |  | -0.025 |
|  |  | (-1.11) |  | (-1.13) |  | (-0.97) |
| OWNERSHIP |  | -0.295 |  | 0.206 |  | -0.377 |
|  |  | (-0.11) |  | (0.08) |  | (-0.14) |
| DUALITY |  | 0.230 |  | 0.181 |  | 0.212 |
|  |  | (0.71) |  | (0.56) |  | (0.66) |
| OUTSIDER |  | 0.665 |  | 0.671 |  | 0.728 |
|  |  | (1.49) |  | (1.51) |  | (1.64) |
| Constant |  | 2.188 |  | 2.547 |  | 1.568 |
|  |  | (0.29) |  | (0.34) |  | (0.21) |
| Firm Fixed Effects |  | Yes |  | Yes |  | Yes |
| Year Fixed Effects |  | Yes |  | Yes |  | Yes |
| R-Squared |  | 0.048 |  | 0.053 |  | 0.055 |
| Observations |  | 850 |  | 850 |  | 850 |

1. See, e.g., Friedman and Saul (1991); Denis and Denis (1995); Parrino (1997); Huson et al. (2004); Hermalin (2005); Agrawal et al. (2006); Naveen (2006); Karaevli (2007); Cucculelli and Micucci (2008); Ballinger and Marcel (2010); Inderst and Mueller (2010); Campbell et al. (2011); Mobbs and Raheja (2012); Eisfeldt and Kuhnen (2013); Schepker et al. (2017); Gao and Xie (2018); McConnell and Qi (2018); Merz and Weidemann (2018). [↑](#footnote-ref-1)
2. Considerable literature investigates how a CEO’s past experience and characteristics translate into corporate policy choices; examples include: CEO military experience and firm risk-taking (Malmendier & Nagel, 2011; Benmelech & Frydman, 2015), CEO early-life experience and professional behaviors (Malmendier & Nagel, 2011; Custódio et al., 2013; Bernile et al., 2017), CEO fitness and firm profitability (Limbach & Sonnenburg, 2014), CEO golfing and firm performance (Biggerstaff et al., 2016), and pilot CEO and innovation (Cain & McKeon, 2016; Sunder et al., 2017). [↑](#footnote-ref-2)
3. There are very few papers that focus on examining how the difference between the predecessor and the successor could affect firm’s risk-taking rather than firm value following a succession. For example, Huang and Kisgen (2013) document that a transition from male to female is associated with a lower rate of asset growth, fewer acquisitions, lower leverage, and reduced debt issuance frequency. Recently, Serfling (2014) and Faccio et al. (2016) find that young-to-old and male-to-female transitions lead to substantially reduced firm risk, respectively. [↑](#footnote-ref-3)
4. See online news article: <https://www.biography.com/news/first-female-ceos-in-history>. [↑](#footnote-ref-4)
5. See Bloomberg Businessweek news article: <https://www.bloomberg.com/news/articles/2009-03-04/alan-mulally-the-outsider-at-ford>. [↑](#footnote-ref-5)
6. See Bloomberg Businessweek news article: <https://www.bloomberg.com/news/articles/2007-02-25/paul-presslers-fall-from-the-gap>. [↑](#footnote-ref-6)
7. Hereafter we use the terms ‘pre-succession’ and ‘post-succession’ to deal with the period before and after the predecessor is replaced by a new CEO, respectively. Those terms are used in several papers, including Friedman and Singh (1989); Friedman and Saul (1991) and Zhang and Rajagopalan (2004). [↑](#footnote-ref-7)
8. For instance, the corporate social responsibility of a firm may be called into question following a scandal. As a response, female executives may be installed strategically as a signal that the firm is attempting to become more ‘socially responsible’. Similarly, Skaggs (2009) finds that after a racial discrimination lawsuit, firms respond to external pressure by becoming disproportionately more likely to promote African Americans into management positions. [↑](#footnote-ref-8)
9. Related news articles, whether published in mainstream media or industry-specific journals and magazines, were retrieved through Factiva. The classification takes the following steps: (1) if the press clearly states that the outgoing CEO is forced out, being fired by the board of directors, or the departure is caused by policy differences or pressure imposed by stakeholders, then the succession event is classified as forced. (2) All other departures for CEOs above and including age 64, succession events caused by death or health-related disability and CEO-initiated successions are classified as non-forced. (3) Departures for CEOs under 64 are re-examined further and classified as forced if there are no signs of decease or health-related disability announced by the press, the press does not report an acceptance of another position (either external positions or chairmanship of the company’s board) by the outgoing CEO, or the press does not announce the retiring of the predecessor at least six months before the event. (4) If a CEO serves as interim CEO and is replaced later, we classify it as non-forced. (5) Cases classified as forced are reclassified if the reports convincingly state that the succession event has nothing to do with the company’s activities. [↑](#footnote-ref-9)
10. In our case, there is an age gap if the predecessor is at least 13.84 years older or younger than the successor. Our definition of age gap is consistent with Serfling (2014), who defines ‘successors are 13 to 40 years younger than incumbents’ as ‘much younger’ and ‘successors are 6 to 12 years younger than incumbents’ as ‘younger’. [↑](#footnote-ref-10)
11. We use the latest U.S. News & World Report university rankings, as top-20 national/global university rankings largely remain stable over time. (e.g., U.S. News National University Rankings spanning the period 2008–2015 could be found at the following URL: <http://publicuniversityhonors.com/2015/06/13/u-s-news-national-university-rankings-2008-present/>). [↑](#footnote-ref-11)
12. The forced turnover ratio is close to that reported by Zhang and Rajagopalan (2004) for all COMPUSTAT listed manufacturing firms for the 1993-1998 period and Guo and Masulis (2015) for all listed firms in RiskMetrics database spanning the period 1996-2010. [↑](#footnote-ref-12)
13. For brevity, we do not report the correlation table in this paper. [↑](#footnote-ref-13)
14. We gather board co-option data from Lalitha Naveen’s personal website: <https://sites.temple.edu/lnaveen/data/>.  The original co-option variable ranges from 0 to 1. It remains at a constant level/increase within a CEO's tenure, and starts from 0 again when the next person assumes office. We changed the original co-option variable from accumulated proportion of board changes to the annual proportion of board changes to make the value comparable across both succession firms and non-succession firms. [↑](#footnote-ref-14)
15. Coles et al. (2014) document that board co-option is associated with higher CEO pay, lower pay-to-performance compensation schemes, and suboptimal investment decisions. [↑](#footnote-ref-15)
16. Koh and Reeb (2015) show that the percentage of missing R&D firms which file and receive patents is 14 times greater than firms with zero R&D, and missing R&D firms are more likely to report R&D after an exogenous auditor change. As such, it would be inappropriate to treat missing value as zero to conduct our empirical analysis. [↑](#footnote-ref-16)