Do Firms Use Interim CEO Position as a Testing Ground for CEO Candidates?*

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Abstract

Interim CEOs are conventionally treated as a seat-warmer during CEOs transition period, whose main mandate is to maintain firm operation until a qualified CEO successor is identified. However, a larger fraction of the interim CEOs is promoted to official CEOs after the interim period in reality. Theories suggest that firms could also use interim positions to try out potential contenders. This paper empirically examines a hand-collected dataset of interim CEOs turnovers and investigates the try-out motivation. We find supportive evidence that firms do use the interim period as a testing ground for potential CEOs. Specifically, we find that candidates with uncertain managerial qualification are more likely to be named as interim CEO rather than formal CEO directly. And interim CEOs are more likely to be promoted to formal CEOs if the firm has better performances during the interim period. The relationship between the interim performance and interim CEOs' promotion is robust against alternative stories such as distinct managerial effort among interim CEOs, difficulties in attracting optimal CEO successors, or different attractiveness of firms CEO position.

JEL Classification: G34, M51

Keywords: CEO Turnover, Interim CEO, Try-out Succession

1 Introduction

A key function of the board of directors is to identify suitable successors for the current managers. When a company fails to smoothly replace a departing CEO, they have to use an interim CEO as seat-warmer. The main managerial mandate of interim CEO is to maintain firm operation until a qualified CEO successor is on board. In this case, leadership crisis (Charan, 2005) and organizational disruption and turmoil may happen(Farquhar, 1995; Stein, 2007; Ballinger and Marcel, 2010) due to interim CEOs' limited authorities and uncertainty of future leadership. Such a leadership vacuum will deteriorate firm performance in the long-run after then interim period. Based on the above studies, competent board should avoid using seat-warmers. However, more recently, large firms, such as Walgreens, Yahoo!, Infosys, use interim CEOs during succession. And a large fraction of the interims are promoted as official CEOs. In addition, pointed out by Business Wire[1], firms with interim CEOs actually outperform their peers during the interim period. To explain the increasing usage of interim CEOs and the better interim period performance, Liang, et al.(2012) and Mooney, et al.(2012) develop theories suggesting that firms may also use interim period as a testing ground to see whether the CEO candidate is the right leader for the firm. Under the try-out theory, interim CEOs shoulder more CEO duties and the uncertainty of future leadership reduce when interim CEO pass the test and promoted. The try-out theory predicts that (1) candidate with higher uncertainty of their leadership credential are more likely to be named as interim CEO first and (2) interim period managerial performance will positively affect the likelihood of being promoted.

[1]"Interim CEOs On the Rise and Underestimated; Seventy Percent of Interim CEO-Led Companies Deliver Stock Market Returns Well Above Peer Companies", June 26, 2006.

Few empirical studies directly look at the try-out theory[2]. To fill this gap, this paper uses hand-collected data to empirically investigates whether firms use interim CEOs to test the candidates. The sample consists of 1,892 CEO turnovers of U.S. listed firms with 413 (22%) interim CEOs from 1992 to 2014. Among 413 interim CEOs, 32.93% (136) are promoted into formal CEOs. We find supportive empirical evidence for the try-out theory. First, we find that candidates with uncertain managerial qualification are more likely to be named as interim CEO rather than formal CEO. Compared to candidates who are directly appointed to formal CEO position, interim CEOs are less likely to be firms' heir apparent, a position that is conventionally treated as a qualified internal CEO successor. Second, we find that interim CEOs are more likely to be promoted to formal CEOs if the firm performs better during interim period. One may argue that the relationship between the interim period performance and interim CEOs' promotion are subject to endogenous problems. For example, well-performing firms may have a larger internal candidate pool for the formal CEO position. Thus the promotion is due to lucky rather than interim CEOs' effort. To address the endogenous problem, we use a two-stage-IV approach. The instrumental variable is the 12-month moving average of market-adjusted industry return at the end of the interim period. As industry performance would affect firm performance and it has less correlation with omitted firm characteristics. Empirical results of the two-stage model show a similar relationship between the propensity of promotion and interim period firm performance.

Our empirical findings is also robust against alternative explanation of

[2]Exceptions are Ballinger and Marcel (2010) and Intintoli, et al. (2014). Their works document the fraction of interim CEOs that are promoted to official CEO position. But they do not provide direct empirical evidence regarding the determinants of promoting interim CEOs

promoting well-performed interim CEOs. One concern for the try-out story is whether firms' deliberately design the try-out test. As firm could initially use interim CEOs as seat-warmer whose main managerial mandate for the seat-warmers is to maintain firm operation until firms find qualified successors. Firms board may change their mind when the seat-warmers contribute to high short-term firm performance. Our empirical evidence do not support the seat-warmer argument. Our analysis in interim period operation change shows that all interim CEOs take nonpassive activities during the interim period. Both promoted and not-promoted interim CEOs make strategic changes in corporate operations during the interim period but the results of the actions are distinct among the two groups. Firms in both the *Promoted* group and the *Not Promoted* group have significant changes in terms of firm activities such as external financing, investment, inventory management, and leverage ratio. But firms with *Promoted* group experience an enhancement of their performance, measured by *EPS*, while firms in the *Not Promoted* group suffer a significant decrease of their *ROA* and *EPS*. This supports the try-out story as contender interim CEOs are granted more CEO authorities initially to conduct strategic decisions to prove their leadership qualification while seat-warmer CEO generally are granted limited CEO authorities (Mooney et al., 2012) which only enable them to maintain firm operation.

In addition, firms may promote interim CEOs just because their failure of attractive optimal successors in the labor market. We also find evidence against this explanation. Promoted interim CEOs do not suffer abnormally higher forced turnover rate during their official CEO tenure than their peers. This is also consistent with try-out argument since passing the test and being promoted suggests that the firms' board have confidence in candidates'

leadership credential and signals a high quality of CEO-firm matching.

Furthermore, there may be different attractiveness in CEO position. Interim CEOs in poor-performed firms with less attractive CEO position may choose to maintain firm operation until a successor is identified. But interim CEOs in well-performed firms would pursue the CEO position. We investigate the managerial departure among those not-promoted interim CEOs. We find that not-promoted interim CEOs who are keen on the position are more likely to leave their firms and to seek new opportunities in the labor market. Within the group of failed interim CEO, interim CEOs who previously served as firms' top managers and who have less managerial power are more likely to leave the company within 12 months after the interim period. And the relationship concentrates on interim CEOs whose ages are not close to retirement age. This also support the try-out theory as the Mooney et al. (2012) suggests that failing the try-out theory will decrease the likelihood of future promotion while under the less-attractiveness hypothesis there will be no effect on managerial departure after handling the position to the successors as planed ex ante.

This paper directly expands studies in the motivation of interim CEOs adoption. Interim CEOs traditionally are considered as seat-warmer. The appointment of interim CEO serves as a reaction to sudden CEO departure or as an internal discipline tool so that firms could dismiss a poorly performing CEO immediately even without a qualified successor. Liang et al. (2012) and Mooney, et al. (2012) propose the try-out theory as an additional function of using interim CEO: firms use interims as test ground to try out the CEO candidates for qualification, performance and matching. To our best knowledge, this paper is the first empirical study that provides supportive evidence for the try-out theory.

The paper is also related to the studies that examine the relationship between firm performance and the exist of interim CEO period. Farquhar (1995) argues that the disruption caused by sudden and rough leadership transition may stimulate turmoil in corporate operation. Ballinger and Marcel (2010) is the first to empirically examine the interim CEOs. They use a sample of 479 successions (89 successions involves the use of interim CEO) over the period of 1996 to 1998 and found that firm performance decreases significantly during the interim period. Intintoli, et al. (2014) argue that the under-performance occurs only for interims after voluntary CEO turnovers and interim CEOs in general should not be viewed as value decreasing. Unlike their studies focus on the after-interim period long-run performance. The paper directly studies the interim period performance. We find that the outcome of interim period performance directly affect the promotion of interim CEOs, suggesting that firm performance are used to evaluate managerial credential (Fee and Hadlock, 2003). In addition, this paper also suggests that the negative effect of leadership may vary on the motivation of using interim CEO. Under the try-out theory, interim CEOs are granted more CEO authorities than other interim CEOs. But the quality of the strategic decision varies on the outcome of the test. This provides a new research topic in studying the effect of interim period on long-term firm performance in the future.

This paper also contributes to CEO turnover literature. Cannella and Shen (2001) suggest that *"Most studies of CEO succession have examined the event itself, the passing of the CEO title from one person to another, often with a focus on the characteristics of the incoming CEO"*[3]. Previous

[3]Cannella A A, Shen W. So close and yet so far: Promotion versus exit for CEO heirs apparent[J]. Academy of Management Journal, 2001, 44(2): 252.

studies in CEO turnover mainly focus on the outgoing CEOs and the incoming CEOs. One stream of research studies determinants explaining CEO turnover (Weisbach, 1988, Farrell and Whidbee, 2003; Hazarika, Karpoff, Nahata, 2012; Jenter and Kanaan, 2015) and conditions that affect turnover-performance sensitivity (Parrino, 1997; Mikkelson and Partch, 1997; Denis, et al., 1997; Defond and Park, 1999; Huson, et al., 2001; Kaplan and Minton, 2012). Another stream focuses on the incoming CEOs (Fee and Hadlock, 2003; Kini and William, 2012; Xu and Yang, 2015). As firms usually do not disclose information regarding the candidate search process, it is hard to conduct a feasible analysis for candidate search process. This paper introduces a new type of CEO with a temporary position to study candidate search process and events during the interim period, which enables scholars to conduct further studies in these two dimensions.

The rest of the paper is organized as follows. Section 2 develops empirical predictions based on the try-out argument. Section 3 and section 4 describes sample and variable statistics. Section 5 shows the baseline empirical result and provides robustness tests. Section 6 summarizes empirical findings and concludes.

2 Relative Literature and Hypothesis Development

2.1 Motivation of Using Interim CEO

A key function of the board is to identify suitable top manager successors who fit shareholders' interests and to replace managers who do not maximize firm value (Jensen and Meckling, 1976). The board may not be able to

quickly identify qualified candidates because of unexpected CEO departure, limited search time, boundary rationality of talent pool, etc. The use of interim CEO provides a tentative solution to overcome labor market friction by extending the search time while maintaining firms' daily operation (Mooney et al., 2012). Another benefit of interim appointment is that the board could immediately dismiss a CEO with poor performance even though a qualified successor may not have been identified yet (Ballinger and Marcel, 2010).

Liang et al. (2012) and Mooney, et al. (2012) add that interim CEO appointment could be used to test potential CEO candidates. When the board does not have full confidence in a certain candidate's managerial capacity, firms could appoint these candidates as interim CEOs and use interim period managerial performance to try out these candidates. This candidate search process is more cost-effective than directly naming them as formal CEO. Since a failure by a new formal CEO signals poor CEO-firm matching and deteriorates firm value, but a failure by an interim CEO only signals an end of interim appointment (Mooney, et al., 2012). Meanwhile, the cost of failure for interim CEOs is high, as the probability of being named to the CEO position in the future will diminish dramatically (Liang et al. 2012). To embrace the opportunity of promotion, interim CEOs need to convince the board of their managerial ability (Ballinger and Marcel, 2010; Liang et al., 2012; Mooney, et al., 2012).

2.2 Hypothesis Development

We test the try-out theories from the perspective of (1) the determinants of using interim CEO, (2) the relationship between interim period performance and promotion.

First, try-out theory predicts that candidate with uncertain managerial

qualification are more likely to be named as interim CEO. We study the probability of a candidate being named as interim CEO rather than official CEO. Our first hypothesis is as follows.

Hypothesis 1 *Candidate with higher uncertainty of leadership qualification are more likely to be named as interim CEO.*

We use a dummy variable named *Heir Apparent* to proxy the level of managerial qualification uncertainty. It is equal to one if the candidate used to be an heir apparent of the firm and zero otherwise. Heir apparent is a qualified internal CEO successor as they are responsible for firms' core business operation. The uncertainty of candidates' leadership credential will be lower if CEO successors used to be an heir apparent. A negative relationship between *Heir Apparent* and the probability of begin interim CEO rather than official CEO will not reject the Hypothesis 1.

Second, try-out theory predicts that the likelihood of being promoted increases as the increase of interim period firm performance. Therefore our second hypothesis is

Hypothesis 2 *Interim CEOs probability of being promoted will be positively related to interim period firm performance.*

We compare the likelihood of being promoted within the interim CEOs group. We measure interim period firm performance by stock performance. A positive correlation between interim period performance and the promotion likelihood will not reject Hypothesis 2.

We expect that there is a positive relationship between promotion probability and interim period performance. Seat-warmer theory do not predict the relationship between interim period performance and interim CEO promotion.

3 Sample

Interim CEO succession events are collected from BoardEx based on the following procedure. First, we identify interim CEO positions in all non-financial[4] US firms listed in NYSE, AMEX, and NASDAQ. Interim CEO position is defined as positions with keyword sets "Interim CEO" , "Acting CEO", or other variants in their position descriptions[5]. Observations with an interim position in subsidiaries, divisions, or regional affiliations are excluded. Second, interim CEO tenure in all observations must be completed, and formal CEO successors must be identified. For observations with multiple interim CEOs in a row, we only keep the record of the last interim CEO whose successor is named as formal CEO to avoid potential selection bias. The length of the interim period is adjusted if the identified interim CEO was given a new managerial title during the interim period[6].

Here is an example of an interim succession event. On 16 August 2004, Enesco Group Inc. announced that previous interim CEO Tom Bradley resigned and was replaced by George Ditomassi [7], who was succeeded by formal CEO Cynthia Passmore-McLaughlin on 11 January 2005 [8]. We will only include the succession event between George Ditomassi and Cynthia Passmore-McLaughlin in the sample.

Information on firm characteristics is collected from Compustat and linked to BoardEx based on CIK code. Stock performance is collected from CR-

[4]firms with one-digit SIC code equals 6.

[5]BoardEx term *Rolename*.

[6]Otherwise this will result in a new record of a managerial role in BoardEx.

[7]"Enesco Group, Inc. Appoints New Interim Chief Executive Officer", Reuters Significant Developments, 16 August 2004.

[8]"Enesco names Passmore-McLaughlin CEO", Associated Press Newswires, 11 January 2005.

SP using the CRSP-Compustat Merged (CCM) data. The interim period of each observation is required to be within the CCM effective linking period. Individual characteristics of interim CEO and formal CEO are collected from BoardEx. The final treatment sample involves 413 interim-formal CEO succession events from 1992 to 2014. Among those events, 136 events (32.93%) promote the interim CEO to the formal CEO position (defined as group *Promoted* thereafter), and the remaining 277 (67.07%) replace their interim CEOs with new successors (defined as group *Not Promoted* thereafter).

To test the governance function of using interim CEO, we also introduce a control sample. The control sample involves 1479 CEO successions without an interim period. The sample is collected from the Execucomp database from the fiscal year 1993 to 2014[9]. Succession events with the interim period are manually excluded from the control group.

4 Variable

4.1 Motivation of Using Interim CEO

As most interim CEOs are appointed internally[10], we use *Heir Apparent* to proxy the certainty of managerial credential follows Cannella and Shen (2001) in the empirical analysis on hypothesis 1. We use two variables to proxy the general circumstances of using interim CEO. Studies such as Mooney et al., (2012) suggests firm using interim CEO when suffering sudden CEO departure. Ballinger and Marcel (2010) add that firms will also use

[9]We use Execucomp firms because we need the information of CEOs' turnover types. The information of CEO turnover types comes from the data provided by Drik Jenter, Florian Peters, and Alexander Wagner, and their updated data are available for Execucomp firms from fiscal years 1993 to 2014.

[10]96% of interim CEO are insiders.

interim CEO when they need to force out poor-performed CEO immediately even without identifying suitable successor. We use dummy variable *Emergency* proxies sudden CEO departure with indicating previous CEO leave the company due to death or medical issue. Meanwhile, firm may also use interim CEO to maintain operation when they force out their previous poor-performed CEO. Table 3 report the full-sample descriptive statistics. We find empirical results that are consistent with the conventional managerial function of using interim CEOs. Firms with interim CEOs are more likely to suffer sudden CEO departure or to have forced out their previous CEO. The difference for *Emergency* is 0.05 (p-value$\leq$0.01) and the difference for *Forced Turnover* is 0.28 (p-value$\leq$0.01). In addition, we find supportive evidence for the try-out theory. Comparing with the control group, interim CEOs are less likely to serve as an heir apparent. The difference is -0.35 (p-value$\leq$0.01), suggesting that candidate with uncertain leadership qualification are more likely to be appointed as interim CEO rather than official CEO.

4.2 Interim Period Performance

To study the hypothesis 2, we use stock performance to measure firms' interim period performances. The baseline variable is periodical buy and hold abnormal return (*BHAR*) compounded monthly based on the Fama-French three-factor model. The event window is 60 months before the interim period. Univariate test in table 4 suggests that, on average, *BHAR* of *Promoted* group is higher than that of *Not Promoted* group by 10% (p-value$\leq$0.05), fitting the prediction of the try-out theory. Firms' market adjusted cumulative returns (*Mkt-adj CAR*) and average return scaled by a previous 12-month returns' standard deviation (*Mean Return*) are used as alternative measurements.

4.3 Corporate Activity and Performance

We test the changes of corporate activities and performance during interim period which require the involvement of interim CEO in the decision making process in section 5.4.1. For firm activities, *Equity Issuance* is the logarithm of the sales of common and preferred shares. *Debt issuance* is the logarithm of long-term debt issuance. *Investment* is capital expenditure divided by lagged total assets. *Inventory Turnover* is sales divided by inventory. *R&D* is R&D expense divided by lagged total assets. *Operating Margin* is operating income divided by lagged total sales. *Debt Ratio* is total debt divided by lagged total assets. For firm performance, *Asset growth* is the logarithm of total assets divided by lagged total assets. *Sale growth* is the logarithm of total sales divided by lagged total sales. *ROA* is income before extraordinary items divided by lagged total assets. *EPS* is earning per share excluding extraordinary items.

4.4 Managerial Departure

We study the career path of both the promoted interim CEOs and not-promoted interim CEOs after the interim period in section 5.4.3 and section 5.4.2. For promoted interim CEO, we investigate their likelihood of suffering forced turnover. We define CEO turnover into three types namely (1) no turnover, (2) forced turnover, (3) voluntary turnover following Parrino (1997). Information of CEO turnover are collected from Factiva. Figure 1a and Figure 1b report the the annual trend of forced turnover and voluntary turnover for promoted interim CEOs, CEOs who are directly named, and new formal CEOs who replace previous interim CEOs. Comparing with the two benchmark group, promoted interim CEOs experience a lower turnover

rate in each type, suggesting that the appointment of interim CEO does not signal a secondary choice due to firms' failure of attracting ideal CEO candidate in the labor market.

For not-promoted interim CEOs, we test their likelihood of leaving the company. A dummy variable of *Leave* is create if those interim CEO leave the company withing 12-month after the interim period. Figure 2 reports managerial departure based on interim CEOs' previous position. Consistent with the empirical prediction of try-out theory, candidates who are more keen on CEO position are more likely to leave the company. 37.70% of not-promoted interim CEOs who used be firms top managers choose to leave their firms while 18.84% of those who used be firms' chairman choose to leave their firms.

4.5 Control Variable

4.5.1 Firm and Governance Characteristics

We control for a bulk of firm-level characteristics in the following multivariate analyses. *Log(AT)* is the logarithmic total assets. *Debt Ratio* is the sum of long-term debt and debt in current liabilities scaled by lagged total assets. *ROA* is operating income before depreciation scaled by lagged total assets. *Return* is previous fiscal year return compounded monthly, and *Volatility* is the standard deviation of the previous fiscal years monthly stock return. *Sales growth* is the logarithm of the quotient between current and lagged sales. We also control for the level of corporate governance using *Institutional Ownership*, *Board Size*, proportion of independent directors (*Indep.Director*), and proportion of busy directors (*Busy Director*).

There are significant differences in those firm characteristics between the

treatment sample and the control sample as Table 3 shows. Within the treatment sample, firms in the *Promoted* group do not significantly differ from firms in the *Not Promoted* group in terms of firm fundamentals except sales growth, the difference is -0.12 (p-value$\leq$0.05) in Table 4.

4.5.2 CEO Characteristics

We control for interim CEOs' age, gender, and previous CEO experience. Comparing with interim CEOs in group *Not Promoted*, interim CEOs in the *Not Promoted* group are relatively young with a difference of 2.51 (p-value$\leq$0.01), but there are no differences regarding gender and CEO experience of those candidates in the two groups.

In addition, interim CEOs in the *Promoted* group hold less position simultaneously than their peers, with a difference of -0.15 (p-value$\leq$0.1). They also have shorter interim CEO tenure than their peers, with a difference of -0.77 month (p-value$\leq$0.1).

We also control for the origin of the interim CEO. *Chairman* is a dummy variable equal to one if the interim CEO also previously served as chairman. The difference of *Chairman* is -0.14 (p-value$\leq$0.01), suggesting that those promoted interim CEOs actually have lower managerial power. *Top Manager* and *Outsider* are dummy variables with one suggesting the interim CEO previously served as firms top manager or an outsider. There is no significant difference in *Top Manager*, but the difference of *Outsider* is 0.08 and significant at the 1% level.

5 Empirical Result

5.1 Determinants of Using Interim CEO

Table 5 reports the propensity of using interim CEOs following equation (**??**). Model 1 to Model 3 examine the determinant of using interim CEO separately and model 4 combines the three motivations together. All models control for firm and CEO characteristics as well as year fixed effect and industry fixed effect. All continuous variables are winsorized at the 1% and 99% significance levels.

We find empirical evidences support H_1 under the try-out theory. Candidates with higher uncertainty of their leadership credential are more likely to be named as interim CEO. The coefficient of *Heir Apparent* is -1.17 (p-value$\leq$0.01). We also find supportive evidence for the seat-warmer functions. For instance, firms using an interim period are more likely to suffer sudden CEO departure or to dismiss their previous CEO. The coefficients of *Emergency* and *Forced Turnover* are 1.29 (p-value$\leq$0.01) and 0.59 (p-value$\leq$0.01) in model 2 and model 3, respectively. Controlling for alternative governance functions in model 4, the negative effect of *Heir Apparent* remains significant.

Consistent with the results of the univariate test, firms in the treatment group and firms in the control group exhibit distinct firm characteristics. For example, firms using interim CEO have a lower asset level, previous fiscal year stock return, institutional ownership, and proportions of independent directors. In terms of other successors' characteristics, interim CEOs are younger and are more likely to be a firm insider. The coefficient of *Age* is 0.02 (p-value$\leq$0.01) and the coefficient of *Outsider* is -1.46 (p-value$\leq$0.01) in model 4.

5.2 Propensity of being Promoted

Another key feature of the try-out theory is that the outcomes of the test are dependent on interim CEOs' managerial performance. We investigate whether decisions of appointing the interim CEO to the formal CEO position will be affected by interim period stock performance. Table 6 reports estimation results of the probit regression (equation (**??**)) within the treatment sample. We use buy and hold abnormal return (*BHAR*), market-adjusted cumulative abnormal return (*Mkt-adj CAR*), and average periodical return (*Mean Return*) scaled by the standard deviation of the previous 12-month return to proxy firms' stock performance during the interim period. All continuous variables are winsorized at the 1% and 99% significance levels. All models control for year and industry fixed effect.

Similar to results in the univariate test, empirical evidence supports the try-out prediction in Model 1. In detail, the coefficient of *BHAR* is 0.48 and significant at the 1% level. All other variables are held at mean level, and a jump of 0.47 of BHAR increases the relative probability of being named formal CEO by 7.50%. Model 2 and Model 3 use alternative stock performance proxies. The relationship and economic magnitude of implied probability still hold. An increase of 0.40 (0.68) of *Mkt-adj CAR* (*Mean Return*) increases the probability by 5.59% (5.81%). The positive relationship between interim period performance and the promotion likelihood supports the try-out argument by not rejecting hypothesis 2.

In terms of CEO characteristics, promoted interim CEOs are relatively young, as the coefficient of *Age* is -0.02 (p-value$\leq$0.05) in Model 1. The coefficient of *Outsider* is positive (0.68) and significant, suggesting that firms rely on both internal managerial pool and outside labor market to identify qualified candidates, and the higher interim period performance is not sim-

ply driven by firm-specific exposure of insiders. We do not find evidence supporting the managerial power argument, e.g., interim CEOs with higher managerial power are more likely to be promoted, as an interim CEO who holds a chairman position (as measured by *Chairman*) at the same time are less likely to be promoted to the formal CEO position.

Alternatively, favorable short-term performance could stem from a longer interim period, higher previous firm performance, or market rewards for firms firing CEOs with poor performance. Nevertheless, empirical results do not support these alternative explanations. For example, this is not due to a long holding period for the *Promoted* group, as the probability of promotion is negatively correlated with *Period*. In addition, the marked performance could not be explained by favorable previous firm performance. There are no significant differences in firm performance measured by *ROA* and *Return* between the two groups. And firms in group *Promoted* tend to have a lower *Sale Growth*. The coefficient is -0.39 (p-value$\leq$0.1) in model 1. Further, this is also not due to the market reward of firing poor-performed CEOs as firms appointing their interim CEOs are less likely to force out their previous CEOs.

5.3 Robustness

5.3.1 Endogeneity

Empirical results in section 5.2 may be subject to endogenous problems. For example, it is possible that well-performing firms have a wide pool of internal talent to supply a future successor. Therefore, such sound interim period performances may result from omitted firm characteristics. To address the endogenous issue, we use a two-stage model. Specifically, an instrumental

variable is used in the first stage OLS regression, and the real value of short-term performance proxies is replaced by the fitted value in the second stage probit model. A valid instrumental variable in the first stage must affect short-term firm performance significantly and does not correlate with omitted firm characteristics. Inspired by works of Jenter and Kannan (2015) and Peters and Wagner (2014), industrial environment affects the performance of firms within the industry, while such overall industrial performance is less likely to be affected by a single affiliation. We use the trend of industrial performance as an instrument variable. The variable is measured as the 12-month moving average of equal-weighted Fama-French 49 industry portfolios monthly return adjusted by equal-weighted market return at the end of the interim period.

Results of two-stage regression are displayed in Table 7. Column *OLS* reports the first stage OLS regression with interim period performance as the dependent variable. Column *Probit* reports estimations of the second stage probit regression. The instrumental variable exhibits higher explanatory power for all of the three short-term stock performance measurements in the first stage. After controlling for endogeneity, the positive relationship between the probability of being promoted and short-term stock performance maintains. The coefficients of the fitted value of *BHAR*, *Mkt-adj CAR*, *Market Return* are 2.87 (p-value$\leq$0.05), 2.32 (p-value$\leq$0.05), and 2.00 (p-value$\leq$0.05), respectively.

5.4 Alternative Explanation

5.4.1 Distinct Managerial Effort

One concern of the try-out theory is that whether the firm deliberately design the testing process. As firms could initially treat those interim CEOs as seat-warmer. Firms' board promote those interim CEOs as formal CEO when the board of directors observe the marked managerial performance of their interim CEOs. A key difference between the seat-warmer and the contender interim CEO is that contender interim CEO who are involved in the try-out theory are generally granted more CEO authorities which enable them to make strategic decision so that the board could evaluate their leadership credential through the quality of the decision that they made.

Table 8 report the t-test results of the quarterly change of corporate policies and performance during the interim period. The null hypothesis is that the average quarterly change of corporate policies and performance is equal to zero for the *Promoted* groups and then *Not Promoted* group. There are significant change of corporate activities and performance for each groups, supporting the try-out theory. Panel A reports changes of corporate activities, firms in both groups experience an increase of their external financing level through debt and equity issuance. Firms in group *Not Promoted* experience a significant decrease in investment and an increase of their debt ratios. Firms in group *Promoted* experience an improvement of inventory turnover. Panel B shows the changes of firm performance during the interim period. Firms in group *Promoted* experience an improvement of *EPS*. Nevertheless, firms in group *Not Promoted* suffering a deterioration of *Asset Growth*, *ROA*, and *EPS*. Thus, our findings suggests that interim CEOs in both promoted and not-promoted group make managerial effort during the interim period,

which is not consistent with the seat-warmer argument.

5.4.2 Difficulty in Attracting Optimal Successor

Another concern is that the promotion of interim CEO could also be a suboptimal choice if firms lose the competition of target CEO successor in the labor under the seat-warmer theory. This suggests a poor quality of CEO-firm matching. In terms of try-out theory, Mooney, et al. (2012) posit that promoting interim CEOs signals a high quality of CEO-firm matching as they pass the due diligence test and firms board have confidence on their leadership credential.

We measure the quality of CEO-firm matching by CEO turnover types. Forced CEO turnover generally represent a poor CEO-firm matching. We create a CEO-year panel data from fiscal-year 1993 to 2014 to investigate formal CEO departure. Promoted interim CEOs are included in the treatment group. Two control groups are used as benchmarks namely formal CEOs in successions without an interim period and formal CEOs in the *Not Promote* group.

Table 9 reports multinomial logistic regression estimations. Panel A uses formal CEOs in successions without an interim period as the control group. Panel B uses formal CEOs in the *Not Promoted* group as the control group. The reference outcome is no turnover. All models control for internal and external monitoring measured by the proportion of independent direction and institutional holding, CEO characteristics, and year and industry fixed effect to capture macroeconomic and industrial shocks (Jenter and Katharina, 2010). As CEO turnover is sensitive to firm performance, we control for a bulk of transformations of firm performance proxies. Model 1 and model 5 control for lagged one-fiscal-year ROA and stock return. Model 2 and

model 6 control for lagged two-fiscal-year firm performance. Model 3 and model 7 control for lagged one-fiscal-year relative. Model 4 and model 8 control for lagged two-fiscal-year relative performance measurements, namely, industry-adjusted ROA and market-adjusted stock return. In addition, we also control for corporate governance level, namely, institutional ownership and percentage of independent directors in each model.

Ruling out effects of firm performance and governance, there is no significant difference of forced turnover rate between promoted interim CEO and their peers. Coefficients of *Promoted* are not different than zero among all the eight models, supporting the try-out theory.

5.4.3 Distinct Attractiveness of CEO Position

Furthermore, there may be different attractiveness of CEO position in different groups. For example, interim CEOs in poor-performed firms are reluctant to compete the formal CEO position and choose to fulfill their general managerial duty until a successor is identified. To test this low-attractiveness argument, we study the managerial departure among not-promoted interim CEOs within 12-month after the interim period. Under the try-out theory, fail the test will decrease future promotion likelihood dramatically (Mooney et al., 2012). Therefore interim CEOs who are keen on the CEO position are more likely to leave the company. However, under the low-attractiveness argument, handling the CEO position to formal CEO successors is ex ante, which will not affect the managerial departure after the interim period.

Table 10 reports the probit regression result within the *Not Promoted* group. The dependent variable is a dummy variable named *Leave* with one if the failed interim CEO leave the company within 12 months after the interim period and zero otherwise. Model 1 evaluates the effect of top managers and

model 2 evaluates the effect of formal chairman experience. We find evidence consistent with prediction of try-out theory. Not-promoted interim CEO who are keen on CEO position are more likely to leave the company. The coefficient of *Top Manager* is 0.89 (p-value$\leq$0.01) in model 1 and the coefficient of *Chairman* are -0.79 (p-value$\leq$0.05) in model 2. Model 3 evaluates the joint effects of these two factors and their explanation powers remain significant. Model 4 and Model 5 divide the sample into two subsamples based on whether candidates age is less than retire age[11] or not. It shows that younger candidates generally pay more attention to their future promotion opportunities. The coefficient of *Top Manager* increase to 0.91 (p-value$\leq$0.01) and the coefficient of *Chairman* decrease to -1.16 (p-value$\leq$0.05) in model 4. The findings above suggests that not-promoted interim CEOs do care about the failure and they are also interested in the formal CEO position.

6 Conclusion

Using hand-collected data, this paper shows that more than one-third of interim CEOs are named formal CEO after the interim period for listed U.S. firms from 1992 to 2014. We find that, consistent with the general managerial function of interim CEO, firms using interim CEO when they suffering unexpected CEO departure or when they want to dismiss poor-performed CEO immediately. In addition, we also find supportive empirical evidence for try-out theory. In detail, we find that (1) firms are more likely to appoint candidate with uncertain leadership ability as interim CEO and (2) interim CEOs' likelihood of being promoted to the formal CEO position is positively

[11]We use the 64 age the cutoff, which is lower bond of retirement age in Xu and Yang (2016).

correlated with interim period firm performance. This suggests that firms also use interim CEO position as a test ground to test the managerial credential of potential CEO candidates.

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Appendix

Table 1: Variable definition

CEO Turnover Characteristics		
Emergency	Dummy variable with one indicates the turnover is due to the sudden death or medical problem of previous CEO	Factiva
Forced Turnover	Dummy variable with one indicates the previous CEO turnover is a forced turnover and zero otherwise. The classification procedure of forced turnover follows the methodology of Parrino (1997)	Factiva
Heir Apparent	Dummy variable with one indicates the existence of Heir Apparent and zero otherwise. Heir apparent is defined as a distinct executive who held the title of President or COO and who is at least 5-year younger than the current CEO	BoardEx
Interim Period Performance Measurements		
BHAR	Difference between the real holding-period return compounded monthly and predicted holding-period return. Predicted value is based on Fama-French three-factor model. The estimation window is 60-month with one month before the event date.	CRSP&Fama-French data library
Mean Return	Average monthly return scaled by the standard deviation of previous 12-month return	CRSP
Mkt-adj CAR	Difference of real stock return and predicted stock return compounded monthly. Predicted stock return is based on Fama-French three-factor model	CRSP&Fama-French data library
Interim Position Characteristics		
No.Position	Number of position the interim CEO hold during interim period	BoardEx
Chairman	Dummy variable equals one if candidate previously served as chairman and zero otherwise	BoardEx
Period	Length of month of interim period	BoardEx
CEO Characteristics		
Age	CEO age	BoardEx

CEO Experience	Dummy variable equals one indicating the CEO have previous CEO experience before being named as interim CEO and zero otherwise	BoardEx
Outsider	Dummy variable equals one indicating the CEO is an outsider and zero otherwise	BoardEx
Top Manager	Dummy variable equals one indicating the CEO serves as the top manager of the company before named interim CEO and zero otherwise. Top manager is defined as president or other chief managerial position	BoardEx
Female	Dummy variable equals one indicating the CEO is female and zero otherwise	BoardEx
Firm Characteristics		
Asset Growth	Change of total assets	Compustat
Debt Issuance	Logarithm of long-term debt issuance	Compustat
Debt Ratio	Sum of long-term debt scaled by lagged total assets	Compustat
Equity Issuance	Logarithm of the sales of common and preferred shares	Compustat
Log(AT)	Logarithmic total assets	Compustat
Return	Previous fiscal year return compounded monthly	CRSP
ROA	EBIT scaled by lagged total assets	Compustat
Sale Growth	Logarithm of quotient between current sales and lagged sales	Compustat
Volatility	Standard Deviation of monthly return during the fiscal year	CRSP
Governance Characteristics		
Board Size	The total number of directors on the board. Director is defined as "Supervisory Director"	BoardEx
Busy Director	Dummy variable equals one indicating that the director holds director position for more than three firms	BoardEx
Indep.Director	Percentage of independent directors in the board	BoardEx
Institutional Ownership	Percentage of institutional holding	Thomson Reuters

Table 2: Hypothesis development

Hypothesis	Dep. Var	Ind. Var	Empirical Prediction
H_1: Candidate with higher uncertainty of leadership qualification are more likely to be named as interim CEO.	Prob(Named as Interim CEO)=1	Heir Apparent	-
H_2: Interim CEOs probability of being promoted will be positively related to interim period firm performance.	Prob(Promoted as Formal CEO)=1	Performance	+

Table 3: Descriptive statistics: full sample

With Interim represents CEO successions using interim CEO. *Without Interim* represents CEO successions without the use of interim CEO. *Difference* reports t-test of two-sample difference in variable mean. T-statistics are illustrated in bracket. *,**, and *** indicates 1%, 5%, 10% significance level respectively. Variable definitions are illustrated in Table 1. All continuous variables are winsorized at 1% and 99% level.

	(1) With Interim CEO				(2) Without interim CEO				(1)-(2)	
	Mean	Std.Dev	P25	P75	Mean	Std.Dev	P25	P75	Difference	T-Statistics
Heir Apparent	0.20	0.40	0.00	0.00	0.55	0.50	0.00	1.00	-0.35***	[-14.83]
Emergency	0.06	0.24	0.00	0.00	0.01	0.10	0.00	0.00	0.05***	[4.25]
Forced Turnover	0.47	0.50	0.00	1.00	0.19	0.39	0.00	0.00	0.28***	[10.59]
Homogeneity	0.74	1.09	0.07	1.35	0.63	0.86	0.11	1.11	0.10*	[1.81]
CEO Experience	0.40	0.49	0.00	1.00	0.33	0.47	0.00	1.00	0.07**	[2.47]
Outsider	0.04	0.20	0.00	0.00	0.17	0.38	0.00	0.00	-0.13***	[-9.29]
Age	55.34	9.09	48.00	62.00	52.46	6.59	48.00	57.00	2.88***	[6.01]
Female	0.04	0.20	0.00	0.00	0.04	0.19	0.00	0.00	0.01	[0.49]
Log(AT)	5.53	1.93	4.06	6.93	7.56	1.58	6.46	8.62	-2.03***	[-19.68]
Debt Ratio	0.18	0.25	0.00	0.27	0.21	0.19	0.03	0.31	-0.03**	[-2.24]
ROA	-0.07	0.31	-0.11	0.09	0.10	0.13	0.05	0.16	-0.17***	[-10.76]
Return	-0.21	0.63	-0.54	0.17	-0.02	0.49	-0.25	0.25	-0.19***	[-5.68]
Sale Growth	0.11	0.40	-0.06	0.18	0.09	0.21	0.00	0.16	0.02	[0.82]
Volatility	0.16	0.08	0.10	0.20	0.12	0.07	0.07	0.15	0.04***	[9.69]
Institutional Ownership	0.38	0.36	0.00	0.70	0.56	0.34	0.36	0.82	-0.18***	[-8.87]
Board Size	4.31	2.30	2.00	6.00	4.18	2.23	2.00	6.00	0.13	[0.99]
Indep.Director	0.78	0.29	0.67	1.00	0.77	0.28	0.63	1.00	0.01	[0.67]
Busy Director	0.09	0.18	0.00	0.14	0.13	0.21	0.00	0.22	-0.04***	[-3.73]
Nobs	413				1479					

Table 4: Descriptive statistics: interim CEO succession

Promoted represents events that promote interim CEOs into formal CEO position. *Not Promoted* represents events that dose not name interim CEOs as formal CEO lately. *Difference* reports t-test of two-sample difference in variable mean. T-statistics are displayed in bracket. *,**, and *** indicates 1%, 5%, 10% significance level respectively. Variable definitions are illustrated Table 1. All continuous variables are winsorized at 1% and 99% level.

	(1) Promoted				(2) Not Promoted				(1)-(2)	
	Mean	Std.Dev	P25	P75	Mean	Std.Dev	P25	P75	Difference	T-Statistics
BHAR	-0.07	0.47	-0.30	0.17	-0.17	0.46	-0.40	0.08	0.10**	[2.07]
Mkt-adj CAR	-0.12	0.42	-0.29	0.09	-0.18	0.40	-0.36	0.04	0.06	[1.48]
Mean Return	-0.07	0.76	-0.40	0.36	-0.15	0.70	-0.44	0.24	0.08	[1.02]
Period	5.16	4.32	2.50	6.00	5.93	4.29	3.00	7.00	-0.77*	[-1.70]
No.Position	1.82	0.87	1.00	2.00	1.98	0.76	2.00	2.00	-0.15*	[-1.77]
Forced Turnover	0.42	0.50	0.00	1.00	0.49	0.50	0.00	1.00	-0.07	[-1.38]
Chairman	0.18	0.38	0.00	0.00	0.31	0.46	0.00	1.00	-0.14***	[-3.19]
Top Manager	0.40	0.49	0.00	1.00	0.32	0.47	0.00	1.00	0.07	[1.42]
Outsider	0.10	0.30	0.00	0.00	0.02	0.13	0.00	0.00	0.08***	[2.92]
CEO Experience	0.53	0.50	0.00	1.00	0.51	0.50	0.00	1.00	0.02	[0.39]
Age	53.21	8.69	46.00	60.00	55.73	9.26	48.00	62.00	-2.51***	[-2.70]
Female	0.04	0.19	0.00	0.00	0.04	0.20	0.00	0.00	-0.01	[-0.32]
Log(AT)	5.35	2.02	3.75	6.78	5.57	1.94	4.27	7.02	-0.22	[-1.06]
Debt Ratio	0.17	0.26	0.00	0.25	0.21	0.37	0.00	0.28	-0.05	[-1.44]
ROA	-0.09	0.47	-0.14	0.10	-0.11	0.50	-0.10	0.08	0.02	[0.30]
Return	-0.28	0.71	-0.58	0.18	-0.19	0.65	-0.52	0.16	-0.08	[-1.17]
Sale Growth	0.04	0.41	-0.08	0.14	0.15	0.55	-0.05	0.21	-0.12**	[-2.45]
Volatility	0.17	0.10	0.10	0.23	0.16	0.09	0.10	0.18	0.02	[1.62]
Institutional Ownership	0.40	0.36	0.00	0.72	0.39	0.37	0.00	0.70	0.02	[0.41]
Board Size	4.39	2.50	2.00	6.00	4.26	2.21	2.00	6.00	0.13	[0.50]
Indep.Director	0.77	0.30	0.67	1.00	0.79	0.29	0.67	1.00	-0.02	[-0.80]
Busy Director	0.08	0.17	0.00	0.00	0.10	0.19	0.00	0.17	-0.02	[-1.32]
Nobs	136				277					

Table 5: Propensity of using interim CEO

This table report probit regression estimations. The dependent variable is *D(Interim)* with one suggesting that firms use interim CEO during CEO succession and zero otherwise. The control sample is CEO succession without interim period and the treatment sample is CEO succession with interim period. *Heir Apparent* is a dummy variable with one suggesting that there is a non-CEO executive holding the title of president or COO and who is at least 5-year younger than the outgoing CEO and zero otherwise. *Emergency* is a dummy variable with one suggesting the CEO departure is due to sudden CEO death or medical issue and zero otherwise. *Forced Turnover* is a dummy variable with one suggesting the firm forced out its previous CEO and zero otherwise. All models control year and industry fixed effects, where year is defined as the calendar year when interim period started and industry is defined as Fama-French 49 industries. Variables are defined in Table 1. All continuous variables are winsorized at 1% and 99% level. Chi-statistics are reported in brackets. *, **, and *** indicate 1%, 5%, and 10% significance level.

Table 5 Propensity of using interim CEO

Variable	Model 1	Model 2	Model 3	Model 4
Heir Apparent	-1.17***			-1.08***
	[79.72]			[61.44]
Emergency		1.29***		1.44***
		[25.41]		[28.39]
Forced Turnover			0.59***	0.50***
			[40.70]	[26.29]
CEO Experience	-0.03	0.12	0.02	0.01
	[0.11]	[1.59]	[0.06]	[0.01]
Outsider	-1.52***	-1.33***	-1.28***	-1.46***
	[79.84]	[58.42]	[53.39]	[67.46]
Age	0.02***	0.04***	0.04***	0.02***
	[17.09]	[45.46]	[36.78]	[11.89]
Female	0.04	0.19	0.16	0.12
	[0.04]	[0.81]	[0.59]	[0.27]
Log(AT)	-0.34***	-0.35***	-0.37***	-0.35***
	[100.88]	[113.82]	[121.27]	[100.96]
Debt Ratio	0.43*	0.43**	0.49**	0.46**
	[3.64]	[3.86]	[5.07]	[3.95]
ROA	-0.75***	-0.83***	-0.69***	-0.69**
	[7.52]	[9.56]	[6.93]	[6.09]
Return	-0.17*	-0.24**	-0.18*	-0.15
	[3.11]	[6.46]	[3.56]	[2.19]
Sale Growth	0.06	0.02	0.12	0.14
	[0.15]	[0.02]	[0.59]	[0.74]
Volatility	1.63**	1.77**	1.44*	1.29
	[4.19]	[5.20]	[3.45]	[2.53]
Institutional Ownership	-0.42***	-0.46***	-0.47***	-0.40***
	[10.39]	[13.54]	[13.61]	[8.80]
Board Size	0.03	0.02	0.02	0.02
	[1.60]	[1.30]	[1.05]	[1.04]
Indep.Director	-0.19	-0.24	-0.17	-0.27
	[1.19]	[1.96]	[0.99]	[2.32]
Busy Director	-0.04	-0.02	-0.01	-0.10
	[0.03]	[0.00]	[0.00]	[0.16]
Constant	-0.09	-1.13	-0.93	0.04
	[0.00]	[0.00]	[0.00]	[0.00]
Year F.E.	Y	Y	Y	Y
Industry F.E.	Y	Y	Y	Y
Pseudo R^2	0.37	0.34	0.35	0.38
Nobs	1892	1892	1892	1892

Table 6: Propensity of being promoted

This table reports probit regression estimations. The dependent variable is *D(Promoted)* which is equal to one if the interim CEO is promoted to formal CEO position and zero other. All three models control year and industry fixed effects, where year is defined as the calendar year when interim period started and industry is defined as Fama-French 49 industries. Variables are defined in Table 1. All continuous variables are winsorized at 1% and 99% level. Wald chi-square statistics are reported in brackets. *, **, and *** indicate 1%, 5%, and 10% significance level.

Table 6: Propensity of being promoted

Variable	Model 1	Model 2	Model 3
BHAR	0.48**		
	[6.11]		
Mkt-adj CAR		0.41*	
		[3.52]	
Mean Return			0.24**
			[3.88]
Emergency	0.18	0.21	0.20
	[0.24]	[0.32]	[0.28]
Forced Turnover	-0.31*	-0.30*	-0.32*
	[3.50]	[3.21]	[3.67]
Chairman	-0.06	-0.03	-0.03
	[0.07]	[0.02]	[0.02]
Period	-0.03	-0.03	-0.03
	[2.42]	[2.09]	[2.59]
No.Position	-0.28**	-0.29***	-0.30***
	[6.39]	[6.72]	[7.19]
Top Manager	0.28	0.31	0.32
	[1.69]	[2.04]	[2.28]
Outsider	1.35***	1.32***	1.31***
	[11.60]	[11.33]	[11.10]
CEO Experience	0.17	0.18	0.15
	[0.83]	[0.91]	[0.69]
Age	-0.02**	-0.02**	-0.03**
	[5.32]	[6.00]	[6.55]
Female	0.07	0.04	0.08
	[0.04]	[0.01]	[0.05]
Log(AT)	-0.07	-0.07	-0.08
	[1.06]	[1.11]	[1.52]
Debt Ratio	-0.31	-0.32	-0.34
	[0.59]	[0.64]	[0.71]
ROA	0.28	0.18	0.21
	[0.61]	[0.27]	[0.34]
Return	-0.13	-0.17	-0.18
	[0.61]	[1.02]	[1.19]
Sale Growth	-0.39*	-0.36	-0.36*
	[3.11]	[2.68]	[2.72]
Volatility	1.38	1.19	0.94
	[1.14]	[0.86]	[0.55]
Institutional Ownership	0.19	0.14	0.17
	[0.56]	[0.33]	[0.47]
Board Size	0.02	0.02	0.03
	[0.28]	[0.29]	[0.51]
Indep.Director	-0.67**	-0.65**	-0.62*
	[4.41]	[4.12]	[3.80]
Busy Director	-0.68	-0.69	-0.68
	[1.86]	[1.95]	[1.86]
Constant	1.02	1.11	1.28
	[0.00]	[0.00]	[0.00]
Year F.E.	Y	Y	Y
Industry F.E.	Y	Y	Y
Pseudo R^2	0.28	0.27	0.27
Nobs	413	413	413

Table 7: Propensity of being promoted: two-stage model

This table reports empirical results of the two-stage model. Performance measurements are regressed by all control variables and instrumental variable in first stage OLS regression and fitted value are used in the second probit regression. The instrumental variable (*Instrument*) used in the first stage is 12-month moving average of equal-weighted Fama-French 49 industry portfolios monthly return adjusted by equal-weighted CRSP market return. Variables are defined in Table 1. All three models control year and industry fixed effects at the second stage, where year is defined as the calendar year when interim period started and industry is defined as Fama-French 49 industries. All continuous variables are winsorized at 1% and 99% level. T-statistics for OLS regression and Wald chi-square statistics for probit regress are reported in brackets. *, **, and *** indicate 1%, 5%, and 10% significance level.

Table 7: Propensity of being promoted: two-stage model

Variable	Model 1		Model 2		Model 3	
	OLS	Probit	OLS	Probit	OLS	Probit
Instrument	5.87***		7.25***		8.41***	
	[3.18]		[4.60]		[2.99]	
$\widehat{\text{BHAR}}$		2.87**				
		[4.12]				
Mkt-$\widehat{\text{adj}}$ CAR				2.32**		
				[4.12]		
Mean $\widehat{\text{Return}}$						2.00**
						[4.12]
Chairman	0.06	-0.18	-0.02	0.03	-0.05	0.08
	[0.96]	[0.61]	[-0.35]	[0.02]	[-0.51]	[0.12]
Period	0.00	-0.03	-0.00	-0.03	0.02***	-0.08**
	[0.08]	[2.55]	[-0.11]	[2.23]	[2.99]	[5.69]
Emergency	-0.02	0.21	-0.11	0.40	-0.11	0.37
	[-0.18]	[0.31]	[-1.23]	[1.06]	[-0.71]	[0.95]
Forced Turnover	0.03	-0.37**	0.02	-0.33*	0.11	-0.51**
	[0.59]	[4.55]	[0.39]	[3.76]	[1.53]	[6.23]
No.Position	-0.00	-0.26**	0.03	-0.33***	0.11**	-0.49***
	[-0.13]	[5.31]	[0.94]	[8.07]	[2.38]	[9.81]
Top Manager	0.13**	-0.06	0.05	0.20	-0.00	0.33
	[2.24]	[0.04]	[1.08]	[0.82]	[-0.04]	[2.41]
Outsider	0.09	1.01**	0.05	1.14***	0.11	1.04**
	[0.77]	[5.53]	[0.54]	[7.80]	[0.62]	[6.13]
CEO Experience	-0.00	0.16	-0.04	0.25	-0.02	0.20
	[-0.03]	[0.76]	[-0.94]	[1.79]	[-0.25]	[1.12]
Age	0.00	-0.02**	0.00*	-0.03***	0.01**	-0.04***
	[0.20]	[5.66]	[1.69]	[8.54]	[2.12]	[9.51]
Female	-0.09	0.23	-0.05	0.09	-0.21	0.40
	[-0.75]	[0.36]	[-0.47]	[0.06]	[-1.19]	[0.93]
Log(AT)	0.01	-0.10	0.01	-0.08	0.06**	-0.18**
	[0.89]	[2.18]	[0.80]	[1.61]	[2.46]	[4.39]
Debt Ratio	-0.26**	0.28	-0.21**	0.02	-0.26*	0.05
	[-2.56]	[0.28]	[-2.43]	[0.00]	[-1.68]	[0.01]
ROA	-0.08	0.46	0.09	0.03	-0.05	0.34
	[-0.86]	[1.49]	[1.15]	[0.01]	[-0.38]	[0.89]
Return	-0.09**	0.10	-0.02	-0.10	-0.02	-0.11
	[-2.26]	[0.21]	[-0.62]	[0.37]	[-0.36]	[0.41]
Sale Growth	-0.02	-0.36	-0.09*	-0.21	-0.11	-0.19
	[-0.29]	[2.64]	[-1.69]	[0.78]	[-1.20]	[0.62]
Volatility	-0.93***	3.95**	-0.39	2.18	0.38	0.53
	[-2.87]	[4.07]	[-1.40]	[2.38]	[0.76]	[0.17]
Institutional Ownership	-0.10	0.45	0.02	0.11	-0.07	0.31
	[-1.42]	[2.38]	[0.40]	[0.17]	[-0.68]	[1.36]
Board Size	-0.00	0.03	-0.00	0.04	-0.03**	0.09*
	[-0.15]	[0.66]	[-0.39]	[0.78]	[-2.07]	[3.16]
Indep.Director	0.03	-0.69**	0.06	-0.74**	0.04	-0.69**
	[0.34]	[4.57]	[0.84]	[5.14]	[0.33]	[4.60]
Busy Director	-0.13	-0.27	0.07	-0.81	0.02	-0.68
	[-1.01]	[0.27]	[0.65]	[2.61]	[0.08]	[1.88]
Constant	-0.10	1.13	-0.43**	1.83	-1.22***	3.27
	[-0.50]	[0.00]	[-2.43]	[0.00]	[-3.84]	[0.00]
Year F.E.	Y	Y	Y	Y	Y	Y
Industry F.E.	Y	Y	Y	Y	Y	Y
R^2/Pseudo R^2	0.10	0.27	0.13	0.27	0.12	0.27
Nobs	413	413	413	413	413	413

Table 8: Change in firm characteristic during interim period

Change in corporate characteristics is measured as $\Delta C_{it} = \frac{1}{n}\sum_{j=1}^{n}(C_{i(t+j)} - C_{i(t-j)})$, where ΔC_{jt} represents the change of quarterly corporate characteristics of the *ith* events around succession time t. Panel A reports the corporate activities during the interim period. *Equity Issuance* is the logarithm of the sales of common and preferred shares. *Debt issuance* is the logarithm of long-term debt issuance. *Investment* is capital expenditure divided by lagged total assets. *Inventory Turnover* is sales divided by inventory. *R&D* is R&D expense divided by lagged total assets. *Operating Margin* is operating income divided by total sales. *Debt Ratio* is total debt divided by lagged total assets. Panel B reports differences in performance measurements. *Asset growth* is the logarithm of total assets divided by lagged total assets. *Sale growth* is the logarithm of total sales divided by lagged total sales. *ROA* is income before extraordinary items divided by lagged total assets. *EPS* is earning per share excluding extraordinary items. The quarter of interim CEO succession is set as time t. $t+j$ is the *jth* quarters during interim period and $t-j$ is the quarters before the interim period. To be involved in the test, the period of quarter $t+j$ should be within the interim period. The null hypothesis is that the sample mean of ΔC_{it} are equal to zero for each group. A rejection of the null hypothesis suggests a significant change of corporate operation during the interim period for each group. T-statistics are illustrated in bracket. *,**, and *** indicates 1%, 5%, 10% significance level respectively. All continuous variables are winsorized at 1% and 99% level.

Variable	Promoted		Not Promoted	
	Mean	T-Statistics	Mean	T-Statistics
Panel A: Activity				
Equity Issuance	0.48***	[4.06]	0.35***	[3.93]
Debt Issuance	0.96***	[3.35]	0.68***	[4.50]
Capital Expenditure	-0.00	[-0.11]	-0.01***	[-3.15]
Inventory Turnover Rate	1.75*	[1.78]	0.21	[0.42]
R&D	-0.00	[-0.32]	-0.00	[-0.43]
Operating Margin	3.13	[1.25]	5.91	[1.42]
Debt Ratio	-0.00	[-0.18]	0.02*	[1.81]
Panel B: Change of Firm Performance				
Asset Growth	0.00	[0.09]	-0.02**	[-2.22]
Sale Growth	0.04	[0.72]	0.00	[0.05]
ROA	0.02	[1.56]	-0.01*	[-1.86]
EPS	0.15*	[1.71]	-0.13**	[-2.32]
Nobs	66		159	

Table 9: Probability of forced CEO turnover

This table reports estimation results of multinomial logistic regression. The reference outcome is no turnover. Classification of forced and voluntary turnover follows Parrino (1997). The full sample period is from fiscal-year 1993 to 2014. A CEO-firm-year penal data set is created during the sample period. *Promoted* is a dummy variable indicating group of promoted interim CEOs. ROA_{t-1} and ROA_{t-2} are one and two fiscal-year lagged return on asset. $Adj.ROA_{t-1}$ and $Adj.ROA_{t-2}$ are one and two fiscal-year lagged industry-adjusted return on asset. $Return_{t-1}$ and $Retrun_{t-2}$ are one and two fiscal-year lagged stock return compounded monthly. $Adj.Return_{t-1}$ and $Adj.Return_{t-2}$ are one and two fiscal-year lagged market-adjusted stock return compounded monthly. Panel A uses directly named formal CEOs as benchmark. Panel B uses new formal CEOs in the *Not Promoted* group as benchmark Variables are defined in Table 1. All models control year and industry fixed effects, where year is defined as the calendar year and industry is defined as Fama-French 49 industries. All continuous variables are winsorized at 1% and 99% level. Wald chi-square statistics are reported in brackets. *, **, and *** indicate 1%, 5%, and 10% significance level.

Table 9: Probability of forced CEO turnover

Panel A: Treatment=Promoted Interim CEO / Control=Directly Named CEO								
Variable	Model 1		Model 2		Model 3		Model 4	
	Force	Voluntary	Force	Voluntary	Force	Voluntary	Force	Voluntary
Promoted	0.13	0.43***	0.10	0.44***	0.15	0.44***	0.11	0.44***
	[0.26]	[6.73]	[0.15]	[6.83]	[0.31]	[7.03]	[0.18]	[6.88]
Female	0.24	-0.78***	0.24	-0.78***	0.23	-0.78***	0.23	-0.78***
	[0.95]	[10.85]	[0.99]	[10.62]	[0.87]	[10.87]	[0.89]	[10.63]
Retire Age	-1.21***	1.24***	-1.32***	1.23***	-1.21***	1.24***	-1.32***	1.23***
	[12.73]	[296.01]	[13.62]	[287.54]	[12.73]	[296.77]	[13.60]	[288.56]
External	0.17*	0.01	0.20**	0.02	0.19**	0.02	0.21**	0.02
	[3.21]	[0.05]	[4.18]	[0.12]	[3.88]	[0.08]	[4.99]	[0.15]
Log(AT)	0.03	0.08***	0.03	0.08***	0.01	0.08***	0.02	0.08***
	[1.32]	[19.84]	[1.26]	[18.70]	[0.17]	[20.86]	[0.61]	[18.47]
Debt Ratio	0.15	-0.27*	0.17	-0.23	0.14	-0.26*	0.18	-0.23
	[0.42]	[3.62]	[0.51]	[2.37]	[0.35]	[3.25]	[0.58]	[2.39]
$\text{ROA}_{(t-1)}$	-2.18***	-0.04	-2.37***	-0.10				
	[30.12]	[0.02]	[13.20]	[0.06]				
$\text{Return}_{(t-1)}$	-0.68***	-0.29***	-0.69***	-0.29***				
	[43.41]	[19.32]	[38.94]	[16.06]				
$\text{ROA}_{(t-2)}$			0.58	0.30				
			[1.05]	[0.63]				
$\text{Return}_{(t-2)}$			-0.29***	-0.17**				
			[7.67]	[5.99]				
$\text{Adj.ROA}_{(t-1)}$					-1.30***	0.16	-1.17**	0.40
					[16.84]	[0.68]	[5.49]	[1.85]
$\text{Adj.Return}_{(t-1)}$					-0.79***	-0.33***	-0.82***	-0.34***
					[53.43]	[23.62]	[52.05]	[23.46]
$\text{Adj.ROA}_{(t-2)}$							0.21	-0.12
							[0.22]	[0.19]
$\text{Adj.Return}_{(t-2)}$							-0.38***	-0.18***
							[11.91]	[7.09]
Institutional Ownership	-0.27*	-0.17*	-0.26*	-0.16*	-0.33**	-0.18**	-0.30**	-0.16*
	[3.34]	[3.64]	[2.98]	[3.27]	[4.99]	[3.92]	[3.92]	[3.23]
Indep.Dir	-1.12***	-0.17	-1.10***	-0.20*	-1.15***	-0.17*	-1.13***	-0.20*
	[36.10]	[2.54]	[33.01]	[3.21]	[38.41]	[2.61]	[34.92]	[3.19]
Constant	-3.74	-2.80***	-3.81	-2.81***	-3.77	-2.83***	-3.82	-2.87***
	[0.11]	[270.10]	[0.12]	[262.69]	[0.12]	[267.73]	[0.12]	[268.63]
Year F.E.	Y	Y	Y	Y	Y	Y	Y	Y
Industry F.E.	Y	Y	Y	Y	Y	Y	Y	Y
Pseudo R^2	0.03	0.03	0.04	0.04	0.03	0.03	0.04	0.04
Nobs	22107	22107	21549	21549	22107	22107	21549	21549

Table 9: Probability of forced CEO turnover

Panel B: Treatment=Promoted Interim CEO / Control=New Formal CEO in Not-Promoted Group								
Variable	Model 1		Model 2		Model 3		Model 4	
	Force	Voluntary	Force	Voluntary	Force	Voluntary	Force	Voluntary
Promoted	-0.39	0.28	-0.35	0.25	-0.36	0.28	-0.37	0.24
	[1.00]	[0.82]	[0.72]	[0.65]	[0.84]	[0.81]	[0.82]	[0.60]
Female	0.19	0.16	0.26	-0.08	0.17	0.14	0.23	-0.10
	[0.14]	[0.11]	[0.23]	[0.02]	[0.10]	[0.08]	[0.18]	[0.04]
Retire Age	-0.19	1.21***	-0.19	1.22***	-0.26	1.22***	-0.17	1.24***
	[0.09]	[12.35]	[0.09]	[12.56]	[0.16]	[12.52]	[0.07]	[12.90]
External	0.54	0.23	0.66*	0.17	0.59*	0.24	0.65*	0.18
	[2.43]	[0.56]	[3.42]	[0.32]	[2.95]	[0.61]	[3.30]	[0.34]
Log(AT)	-0.15	-0.17**	-0.14	-0.17**	-0.13	-0.16*	-0.14	-0.15*
	[2.29]	[4.13]	[1.81]	[3.89]	[1.60]	[3.62]	[1.83]	[3.43]
Debt Ratio	0.31	1.19**	0.31	1.22**	0.36	1.17**	0.30	1.22**
	[0.27]	[6.30]	[0.25]	[6.40]	[0.36]	[5.98]	[0.24]	[6.36]
$\text{ROA}_{(t-1)}$	-1.20	-1.45*	-0.29	-0.98				
	[1.73]	[3.33]	[0.05]	[0.75]				
$\text{Return}_{(t-1)}$	-0.17	-0.24	-0.25	-0.31				
	[0.59]	[1.44]	[1.09]	[2.12]				
$\text{ROA}_{(t-2)}$			-0.52	-0.16				
			[0.19]	[0.02]				
$\text{Return}_{(t-2)}$			-0.48**	-0.14				
			[4.06]	[0.43]				
$\text{Adj.ROA}_{(t-1)}$					-1.15	-1.41**	-0.34	-1.44
					[2.30]	[4.41]	[0.10]	[2.33]
$\text{Adj.Return}_{(t-1)}$					-0.22	-0.31	-0.26	-0.36*
					[0.87]	[2.21]	[1.09]	[2.76]
$\text{Adj.ROA}_{(t-2)}$							-0.43	0.31
							[0.17]	[0.13]
$\text{Adj.Return}_{(t-2)}$							-0.45*	-0.18
							[3.36]	[0.75]
Institutional Ownership	-0.24	1.03***	-0.20	0.99***	-0.16	1.05***	-0.21	1.00***
	[0.31]	[7.60]	[0.21]	[6.77]	[0.14]	[7.74]	[0.24]	[6.87]
Indep.Dir	-0.52	-0.22	-0.50	-0.12	-0.63	-0.25	-0.51	-0.14
	[0.71]	[0.18]	[0.61]	[0.05]	[1.04]	[0.23]	[0.66]	[0.07]
Constant	-6.06	-4.14	-7.00	-4.51	-5.85	-4.08	-7.06	-4.54
	[0.14]	[0.85]	[0.05]	[0.29]	[0.10]	[0.87]	[0.01]	[0.30]
Year F.E.	Y	Y	Y	Y	Y	Y	Y	Y
Industry F.E.	Y	Y	Y	Y	Y	Y	Y	Y
Pseudo R^2	0.13	0.13	0.14	0.14	0.14	0.14	0.14	0.14
Nobs	1356	1356	1329	1329	1356	1356	1329	1329

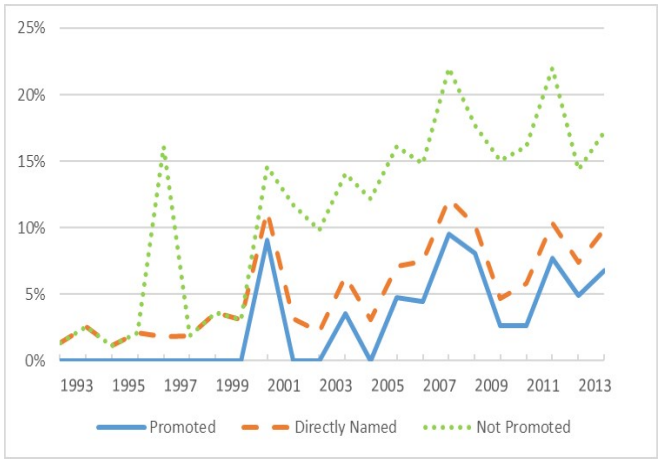
Table 10: Managerial departure after interim period

This table reports probit regression estimations. The dependent variable is a dummy variable (*Leave*) with one if the interim CEO leave the company within 12 months after the interim period. Model 4 and Model 5 report subsample results based on whether the interim CEO's age is less than 64 or not. Variables are defined in Table 1. All models control firm and CEO characteristics in the year when the interim period ends. All continuous variables are winsorized at 1% and 99% level. T-statistics for OLS regression and Wald chi-square statistics are reported in brackets. *, **, and *** indicate 1%, 5%, and 10% significance level.

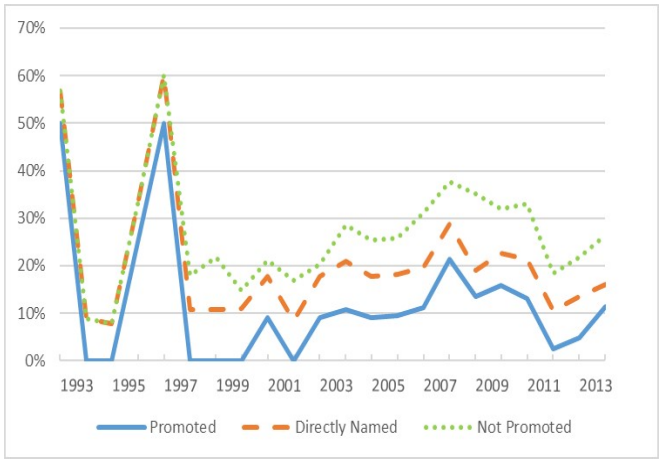
Table 10: Managerial departure after interim period

				Age<64	Age≥64
Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Top Manager	0.89***		0.77***	0.91***	-13.52
	[11.00]		[7.58]	[7.70]	[0.01]
Chairman		-0.79**	-0.58*	-1.16**	-8.13
		[6.31]	[2.90]	[4.68]	[0.00]
Age	0.02	0.00	0.02	0.00	-1.10
	[1.38]	[0.10]	[1.60]	[0.00]	[0.00]
Female[a]	0.68	0.43	0.55	0.41	
	[1.93]	[0.74]	[1.22]	[0.55]	
Outsider[b]	-6.04	-5.70	-6.17	-5.72	
	[0.00]	[0.00]	[0.00]	[0.00]	
Log(AT)	-0.25***	-0.21**	-0.27***	-0.22**	-0.18
	[7.39]	[5.48]	[7.82]	[3.90]	[0.00]
Debt Ratio	1.57***	1.47**	1.60***	1.86***	-22.83
	[7.31]	[6.10]	[7.08]	[6.70]	[0.00]
ROA	1.16	1.31	1.26	0.96	26.20
	[2.20]	[2.56]	[2.41]	[1.07]	[0.00]
Return	-0.17	-0.12	-0.20	-0.44*	-1.99
	[0.91]	[0.45]	[1.16]	[3.06]	[0.00]
Sale Growth	-1.24***	-1.20***	-1.25***	-1.71***	1.58
	[9.40]	[8.15]	[8.96]	[7.73]	[0.00]
Volatility	-1.65	-1.54	-1.87	-3.57*	-0.82
	[1.17]	[1.01]	[1.42]	[3.40]	[0.00]
Institutional Ownership	0.29	0.07	0.31	0.39	2.51
	[0.61]	[0.04]	[0.72]	[0.77]	[0.00]
Board Size	0.09	0.08	0.10	0.10	0.89
	[1.84]	[1.54]	[2.18]	[1.49]	[0.00]
Indep.Director	-0.92*	-0.79	-0.86	-0.73	-7.00
	[3.02]	[2.32]	[2.60]	[1.14]	[0.00]
Busy Director	-0.11	-0.06	0.02	-1.48	24.29
	[0.03]	[0.01]	[0.00]	[2.11]	[0.01]
Constant	-2.94	-1.98	-2.81	-0.72	80.55
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Year F.E.	Y	Y	Y	Y	Y
Industry F.E.	Y	Y	Y	Y	Y
Pseudo R^2	0.34	0.33	0.35	0.40	0.63
Nobs	257	257	257	197	60

[a] There are no female observation whose age≥64 in Model 5
[b] There are no outsider observation whose age≥64 in Model 5



(a) Force Turnover



(b) Voluntary Turnover

Figure 1: CEO Turnover Types

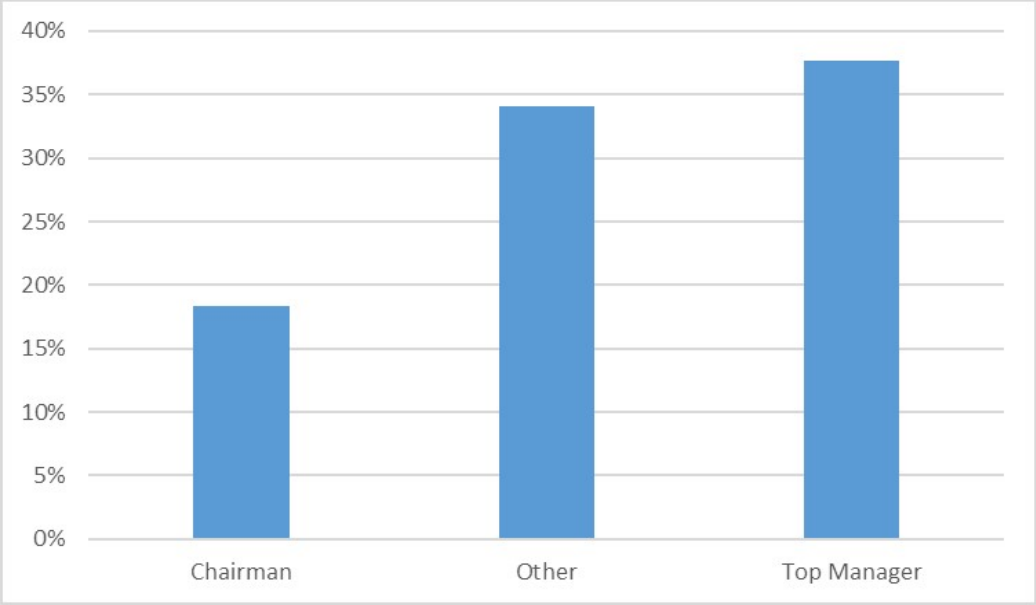


Figure 2: Managerial Leave After Interim Period