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Why does CEO turnover lead to CFO turnover?

Bakhtear Talukdar

University of Wisconsin – Whitewater, Whitewater, WI 53190-1790, USA.

Email: talukdam@uww.edu

Sabur Mollah¹

Sheffield University Management School

University of Sheffield, Conduit Rd, Sheffield S10 1FL, UK.

Email: s.mollah@sheffield.ac.uk

Suchismita Mishra

Florida International University, Miami, Florida 33199-0001, USA

Email: mishras@fiu.edu

Abstract

After the enactment of SOX 2002, the role of CFO has become increasingly important. An extant body of literature suggests that CFOs leave office within 6-12 months of the CEO's departure, but the literature is scarce on why CEO turnover leads to CFO turnover. The aim of the study is to investigate whether CFO turnover is a matter of a course of CEO turnover or is a consequence of CEO succession. We show that CFO forced turnover is not merely an effect of CEO turnover, but rather a consequence of forced CEO turnover. We also find that professionally qualified CFOs are mostly likely to be forced out of office within a year of forced CEO turnover. We also reveal that dependent CFOs are most likely to experience forced turnover following CEO forced turnover. We also show that externally succeeding CEOs are unlikely to remove the CFOs immediately after they take office because they need time for their learning curve. Our study makes important contributions to both power circulation theory of control and upper echelons theory of CEO succession. Our study indicates that appropriate governance reforms can help establish effective executive disciplinary mechanisms in US firms.

Keywords: CEO turnover, CFO turnover, CEO succession

Introduction

¹ **Correspondence:** Sabur Mollah, Sheffield University Management School, the University of Sheffield, Conduit Rd, Sheffield S10 1FL, UK. Email: s.mollah@sheffield.ac.uk. We are grateful to the discussant and seminar participants at Hull University Business School, University of Hull, for valuable comments on the earlier draft of this paper.

The Chief Executive Officer (hereafter CEO) is the centre of the governance structure of a corporation¹. Due to the growing importance of the Chief Finance Officer (hereafter CFO) as the second in command in terms of financial reporting after the adoption of the Sarbanes Oxley Act (SOX) of 2002, some studies have looked into the dynamic relationship between the CEO and the CFO². There is an extant body of literature that suggests that non-CEO executives leave office within 6-12 months of the CEO's departure (see Fee and Hadlock, 2004; Coyne and Coyne, 2007). The findings of these studies also support the idea that CFO turnover is a matter of course preceded by a forced CEO turnover due to weak financial performance (Denis and Denis, 1995; Warner et al., 1988; Murphy and Zimmerman, 1993; Mian, 2001; Sudarsanam and Mahate, 2006), earnings management (Bergstresser and Philippon, 2006; and Cheng and Warfield, 2005), decline in institutional shareholding (Parrino et al., 2003), volatility of stock prices (Bushman et al., 2010; Gibbons and Murphy, 1990; Holmstrom, 1982; Jenter and Kannan, 2015), or tail risk exposure (Srivastav et al., 2017). However, the existing studies are unable to answer the question as to whether CFO turnover is a matter of a course of CEO turnover or CFO turnover is a consequence of CEO succession.

Therefore, the aim of the study is to investigate whether CFO turnover is a matter of a course of CEO turnover or CFO turnover is consequence of CEO succession. By matching the CEO/CFO turnover dataset of AuditAnalytics (AA) for US listed companies with COMPUSTAT, CRSP (Center for Research in Security Prices), ISS (Institutional Shareholder Services), and BoardEx for the period of 2005–2014, we show that CFO forced turnover is not merely an effect of CEO turnover, but rather a consequence of forced CEO turnover. We show that the professional qualifications and dependence on the ex-CEO drive forced CFO turnover. We also reveal interesting results for CEO succession. In particular, externally succeeding CEOs are unlikely to

immediately remove the CFOs once they take office because they need time to learn about the organization they are going to lead before they implement strategic replacement by clearing the deadwood.

We contribute to the existing literature in two ways. First, this study identifies the reasons behind forced CFO turnover following forced CEO turnover. Although Fee and Hadlock (2004) and Coyne and Coyne (2007) demonstrate that non-CEO turnover spikes significantly within six months to a year after CEO turnover, these studies did not attempt to identify the reasons behind non-CEO turnover. We identify the professional qualifications of the CFO as the first driver of the forced CFO turnover. We argue that professionally qualified CFOs may challenge some financial strategies the new management takes due to their knowledge and expertise about the financial market, which may pose greater threats to the new management and, hence, professionally qualified CFOs could be removed following a forced CEO turnover. This result emphasizes the implication of managerial qualification, so we complement Harrmann and Datta (2005). We also identify dependent CFO as the second driver of forced CFO turnover. We argue that CFOs who were recruited by the outgoing CEOs (i.e. dependent CFOs) are more loyal to the ex-CEOs and, hence, the chances of the forced CFO turnover of dependent CFOs are higher following CEO turnover. This result supports existing studies that the contender removes the CFOs whose loyalties are directed to the predecessors' strategies (Brady and Helmich, 1984; Boeker and Goodstein, 1993).

Second, our study makes a new contribution to the CEO succession literature by revealing new results on externally succeeding CEOs' learning curves. As described earlier, we show that externally succeeding CEOs do not immediately remove the CFOs once they take office because they need to take time to learn. An extant body of the management science literature supports

either upper echelons theory, in which the newly succeeding CEOs make an effort to clear executive deadwood to facilitate strategic reorientation (Hambrick and Mason, 1984; Harrmann and Datta, 2005; Shen and Cannella, 2002), or power circulation theory of control, in which a contender or outside successor (CEO) tries to obtain the full support of the board and top management by initiating strategic changes (Ocasio, 1994; Ocasio and Kim, 1999; and Shen and Cannella, 2002). However, we show that externally succeeding CEOs are less likely to force CFOs out of office immediately because they need learning periods before they attempt to facilitate strategic reorientation; hence, our study makes new contributions to both theories by adding the managerial learning curve concept.

The rest of the paper is organized as follows: section II discusses the related theory and literature; section III presents the data and methodology of the study; and section IV reports our empirical results. Our concluding remarks are included in section V.

Related Literature and Hypotheses Development

CEO Turnover and CFO Turnover

The academic literature generally concludes that CEO turnover is preceded by weak financial performance (e.g. Denis and Denis, 1995; Warner et al., 1988; Murphy and Zimmerman, 1993; Sudarsanam and Mahate, 2006). Mian (2001) argues that CFO effectiveness is a significant determinant for the financial success or failure of a firm and that vigilant CEOs replace ineffective CFOs due to weak financial performance; otherwise, the CEOs could be ousted by the board as a disciplinary mechanism. There is a body of literature that also suggests that CEO equity incentive via stock-based compensation is closely tied to earnings management (Bergstresser and Philippon, 2006; and Cheng and Warfield, 2005). The earnings management, however, speeds forced CEO

turnover since the CEO is the central personality having most accountability for any wrongdoing. In this regard, Hazarika et al. (2012) illustrate that boards tend to act proactively to discipline CEOs who have been involved in aggressive earnings management before it leads to costly external consequences.

Furthermore, there is a popular debate on the appropriate role of institutional investors in the governance system of a corporation. While many market observers believe that institutional investors sell their share if they are dissatisfied with the management, Parrino et al. (2003) demonstrate that the aggregate institutional ownership and the number of institutional investors decline in the year prior to forced CEO turnover.

However, an extant body of literature also stress that boards evaluate CEO performance based on market performance (Bushman et al., 2010; Gibbons and Murphy, 1990; Holmstrom, 1982; Jenter and Kannan, 2015). When these signals indicate bad outcomes for the corporation that are imputable to a lack of CEO ability or effort in decision making, the dismissal of the CEO is a likely consequence. Along these lines, Srivastav et al. (2017) demonstrate in a banking study that tail risk conveys different and additional signals, as compared to stock performance and volatility, of possible bad outcomes for the bank that can be related to CEO performance, because increases in tail risks lead to additional costs for shareholders related to the monitoring role of bank creditors and regulators.

The discussions above support that CEO turnover is a consequence of weak financial performance, earnings management, decline in institutional investment, or excessive tail risk exposure. Now, an obvious question with regards to management restructuring is that ‘What happens to the rest of the management team when the CEO leaves?’ Since the CEO plays a central role in evaluating the performance of non-CEO executives, it is expected that the CEO brings

changes to the team when he/she takes office. In this regard, Fee and Hadlock (2004) demonstrate that non-CEO departures spike significantly within six months after the arrival of a new CEO. They argue that the CEO turnover triggers a significant reshuffling of the old management team with reasonable speed. Similarly, Coyne and Coyne (2007) found that one out of four proxy-level executives had to leave the firm within a year of the CEO taking charge following SOX. In the cases where CEOs are ousted, it can be expected that ‘the CFO³’, as second-in-command of the management team, should be removed fairly quickly. Thus, our conjecture is that CEO forced turnover leads to subsequent CFO forced turnover within a year.

CEO Succession and CFO Turnover

CEO succession and top management turnover is an interesting area of research (see Hayes et al., 2002, Parrino, 1997; Jalal and Prezas, 2012; and Shen and Cannella, 2002). Generally, CEO succession and top management turnover is explained by either power circulation theory of control or upper echelons theory. Power circulation theory of control has two different dimensions: First, bad financial performance causes CEO forced turnover and the contender (inside) or outside CEO tries to gain the full support of the board and top management in turning firm performance by initiating strategic changes (Shen and Cannella, 2002). Second, the voluntary turnover of a CEO creates an opportunity for a career move for an internal agent through follower (internal) succession, which motivates the successor to maintain strategic continuity (Brady and Helmich, 1984; Shen and Cannella, 2002).

According to upper echelons theory, a retired CEO has significant influence in the appointment of a follower successor (Lorsch and MacIver, 1989) and these CEOs are committed to carrying on the retired CEO’s strategies and are thus unlikely to initiate significant

organizational change (Shen and Cannella, 2002). On the other hand, new CEOs who follow the ‘strategic replacement’ argument make an effort to clear executive deadwood to facilitate strategic reorientation (Hambrick and Mason, 1984; Shen and Cannella, 2002), particularly with regards to getting rid of top executives whose knowledge and skills have become obsolete in order to facilitate the desired strategic changes (Keck and Tushman, 1993; Wiersema and Bantel, 1993). On a similar note, a number of studies also argue that the forced removal of top management is anticipated when their capabilities and loyalties are suited to the predecessors’ strategies if the contender or outside successor anticipates a loss of control for entire top management (see Brady and Helmich, 1984; Boeker and Goodstein, 1993). In this regard, Fee and Hadlock (2004) draw a significant correlation between forced turnover of non-CEOs and forced turnover of CEOs. Thus, our conjecture is that a contender or an externally succeeding CEO implements strategic reorientation by clearing the deadwood to gain the full support of the board and top management within a short time after their successions.

Data and Methodology

Data and Sample Selection

We take CEO/CFO turnover and restatement data from AuditAnalytics⁴ (AA). Other variables are calculated by using variables from COMPUSTAT. Stock market returns data are collected from CRSP. Institutional holdings are taken from Thompson Reuters of Wharton Database (13f, s34 dataset). The database has three types of holding, namely direct institutional holding, indirect institutional holding and total institutional holding as a percentage of total stock outstanding. We use total holding by institutions such as mutual funds and other professional investment or money managers. Governance and other CEO characteristics data are obtained from

Institutional Shareholder Services (ISS), formerly known as RiskMetrics. Board related data are collected both from ISS and BoardEx⁵.

Although AA shows that it has data since 1999, there are only a few observations in 1999–2002, with 10 CEO turnovers and 4 CFO turnovers. In 2004, the U.S. Securities and Exchange Commission was finalizing the rulings regarding 8-K filings and the effective date of the Final Rule⁶ was August 23, 2004. Moreover, while we started the project in 2016, data are still being collected on firms whose fiscal year ended in the later part of 2015. Therefore, we excluded 2004 and 2015. Our sample period covers 2005–2014, a decade of full-year data. Following the accounting and finance literature, we exclude firms from regulated and financial industries (SIC 4900-4999 and 6000-6900) due to the unique nature of their operations and financial reporting. We take the following categories from AuditAnalytics, which define them as follows:

Succession – indicates an engagement, appointment, election to board, etc.

Dismissed – indicates a clear forced termination of employment or board service

Resigned – indicates a voluntary departure

Employment Ceased – used when the filing is unclear as to whether the departure was voluntary or forced

We combine “Dismissed,” “Employment Ceased,” and “Resigned” and label them as turnover. Also, we combine “Dismissed” and “Employment Ceased,” and label them as a forced turnover. The reason we include resigned in turnover is that sometimes firms do not want to fire a CEO or CFO but rather give them options to leave on their own. Firing is bad news for the fired executives as well as for the firms. Fired executives have a hard time finding a similar or better job. Gilson (1989) studied managers’ turnover from financially distressed firms. He found that it takes three years for the resigned managers to be employed by a similar firm. Also, the board does

not want to associate itself with firing because of the board members' personal reputational risk (Taylor 2010).

The number of observations across the models are different due to a) using a sub-set of a full sample, b) using more variables in some model compared to others, and c) not all variables having data for the same years. We mention the number of observations used in the models in the result tables.

Research Methodology

Our objective in this paper is to predict the possibility of CFO turnover within a year of CEO turnover. A firm qualifies to be included in the sample when it experiences CFO turnover in any particular year and/or CEO replacement (succession). We take the post-year of CEO replacement (succession) because Hayes et al. (2002) found that the association between CEO and non-CEO changes persists, i.e., non-CEO managers are more likely to leave the company's top management team even the year after CEO turnover. In line with Fee and Hadlock (2004), we use the following model to define CFO turnover as a function of the prior year's CEO turnover with other specified controls:

$$\begin{aligned}
 CFO\ Turnover_{i,t} = & \alpha_0 + \beta_1 * CEO\ Turnover_{i,t-1} + \beta_2 * ROA_{i,t-1} + \beta_3 * \\
 & Restatement_{i,t-1} + \beta_4 * Inst.\ Holding_{i,t-1} + \beta_5 * Tail\ Risk_{i,t-1} + \beta_6 * Accruals_{i,t-1} + \beta_7 * \\
 & Firm\ Size_{i,t} + \beta_8 * Log\ Board\ Size_{i,t} + \beta_9 * Board\ Independence_{i,t} + \beta_{10} * \\
 & CEO\ Tenure_{i,t} + \beta_{11} * CEO\ Duality_{i,t} + \beta_{12} * CEO\ Holdings_{i,t} + \varepsilon_t \quad (1)
 \end{aligned}$$

*CFO Turnover*_{*i,t*} is CFO turnover for firm *i* in year *t* and *CEO Turnover*_{*i,t-1*} is CEO turnover for firm *i* in the prior year, respectively. *ROA*_{*i,t-1*} is the firm's return on assets, which is a proxy for a firm's operating performance and is calculated as EBIT over firm's average total assets. *Rstatement*_{*i,t-1*} is an indicator variable which takes 1 for a firm's restatement in the previous year, otherwise 0. Like operating performance, accounting restatement should affect the CFO turnover. *Institutional holdings*_{*i,t-1*} are a firm's share holdings by institutional investors. *Tail risk* is a firm's extreme operational risk. *Accruals* are a firm's forward looking or long-term accounting accruals. Firm size is the natural log of sales. *Log board size* is the natural log of the total number of members in the board. *Board independence* is the fraction of independent directors in the board. *CEO tenure*, *CEO duality* and *CEO holdings* are the number of years the CEO is with the current company as a CEO, whether CEO is also serving as a chair of the board, and CEO's share holdings, respectively. We use variants of relation #1 to test the influence of the various factors on CFO turnover. Also, we use the following model to test the relation of CFO forced turnover and CEO forced turnover with other control variables:

$$\begin{aligned}
& \text{CFO Forced}_{i,t} \\
& = \alpha_0 + \beta_1 * \text{CEO Forced}_{i,t-1} + \beta_2 * \text{ROA}_{i,t-1} + \beta_3 * \text{Restatement}_{i,t-1} + \beta_4 \\
& * \text{Inst. Holding}_{i,t-1} + \beta_5 * \text{Tail Risk}_{i,t-1} + \beta_6 * \text{Accruals}_{i,t-1} + \beta_7 \\
& * \text{Firm Size}_{i,t} + \beta_8 * \text{Log Board Size}_{i,t} + \beta_9 * \text{Board Independence}_{i,t} + \beta_{10} \\
& * \text{CEO Tenure}_{i,t} + \beta_{11} * \text{CEO Duality}_{i,t} + \beta_{12} * \text{CEO Holdings}_{i,t} + \varepsilon_t
\end{aligned}
\tag{2}$$

In determining the likelihood of CEO voluntary and forced turnovers, we use a competing-risks hazard regression model⁷. The extant literature, such as Shumway, 2001, Hazarika et al. (2012), Davidson et al. (2015), and Srivastav et al. (2017), use competing-risk hazard models.

A logit model is from a group of static models which has the following likelihood function,

$$\mathcal{L} = \prod_{i=1}^n F(t_i, x_i; \theta)^{y_i} [1 - F(t_i, x_i; \theta)]^{1-y_i}$$

Where, F is a cumulative density function (CDF) which corresponds to $f(t, x; \theta)$. The hazard model requires a few more definitions than the above function. The survivor function (gives the probability of surviving up to time t) and the hazard function (gives the probability of failure at time t conditional on surviving up to time t) take the following forms, respectively:

$$S(t, x; \theta) = \sum_{j < t} f(j, x; \theta) \tag{3}$$

$$\varphi(t, x; \theta) = \frac{f(t, x; \theta)}{S(t, x; \theta)} \tag{4}$$

The hazard model has the following likelihood function,

$$\mathcal{L} = \prod_{i=1}^n \varphi(t_i, x_i; \theta)^{y_i} S(t_i, x_i; \theta)^{1-y_i} \tag{5}$$

“The hazard model can incorporate time-varying covariates by making x depend on time” (Shumway, 2001, p. 105). In Stata, we use Cox proportional hazard model estimations, where the dependent variable is the hazard rate. A positive coefficient means a positive marginal impact on the hazard and thus a lower expected time for the CEO to remain in office. Likewise, a negative coefficient means a negative marginal impact and a longer expected time as the CEO in office.

Description of the Data

Table 1 reports the descriptive statistics and distribution of the sample. Panel A reports the number of observations, mean, standard deviation, minimum, quarter 1, median, quarter 3, and maximum value of the variables used in this paper. Approximately 9.90% of firms restated their earnings. Firm size differs from 0.36 million ($exp(-1.013)$) to 71,253.56 million. The lowest return on assets (ROA) is -256.42% and the highest return is 127.06%; quarter 1 and quarter 3 returns are 4.63% and 14.52%, respectively. The average accruals across companies or across years should be close to zero. The mean (median) accruals is 0.02 (0.02). The mean (median) institutional holdings is 71.40% (76.50%). The average tail risk of the sample firms is 0.025. The mean (median) of CEO tenure is 4.58 (5.00) years. On average, 20% of firm CEOs are also the chair of the board. Moreover, the mean (median) CEO share holdings are 2.00% (0.40%). On average, the board consists of 9 members with a minimum of 4 members and a maximum of 23 members. 77% of the board members are independent. Dynamic relationships between the CEO and CFO turnover, CEO and CFO forced turnover, and CEO succession and CFO turnover are depicted in figures 1-3.

Insert Table 1 & Figures 1-3 about here

Table 2 reports correlations between the variables, both dependent and independent. We are specifically interested in the correlation between last year's CEO turnover and this year's CFO turnover. The correlation between these two variables is 0.232 and significant at the <0.0001 level. Moreover, earlier research shows that poor performance is responsible for forced executive turnover. We use last year's ROA as a proxy for firm performance. Both CEO and CFO replacements are (significantly) affected by firm performance, i.e., the correlation between the turnover and previous year's ROA is negative, which means positive ROA producing firms will

have less likelihood of replacing the CEO or CFO. On the contrary, negative returns will have positive impact on CEO/CFO turnovers. The previous year's accounting restatement significantly affects CFO turnover; however, it insignificantly affects CEO turnover. This is not surprising because the role of CFO bestows with it the responsibility of ensuring the accuracy of financial/accounting information and would thus be the first victim should any such information be misstated. Tail risk, which indicates firms that are on the verge of bankruptcy, have a significant positive relation with overall and forced CEO/CFO turnovers.

Insert Table 2 about here

Empirical Results

Baseline Estimations

We employ Hazarika et al.'s (2012) competing hazard model for the estimations of Eq. (1) in this paper. This model was originally used in cancer treatment and it uses every piece of available information dynamically and updates the outcome variable. Our baseline model estimates the probability of CFO turnover (both voluntary 'resigned' and forced 'dismissed and employment ceased') in period 't' due to CEO turnover (both voluntary and forced) in the preceding year 't-1'. The results are reported in Table 3. A positive coefficient means that the covariate increases the hazard rate (probability) of the CFO to be replaced following a CEO replacement while controlled for other turnover factors. We find that CEO turnover_{t-1} (in the preceding year) significantly increases the chances of CFO turnover at period t, indicating that CEO turnover escalates turnover of the second in command (i.e. the CFO) within a year. This result supports Fee and Hadlock (2004) that non-CEO departures spike significantly within six months after the CEO turnover. Our finding is also in line with Coyne and Coyne (2007) that

proxy-level executives have to leave the firm within a year of the CEO taking charge. Our result is also consistent with Hayes et al. (2002) that the association between CEO and non-CEO changes persists. They demonstrate that non-CEO managers are more likely to leave the company's top management team the year after a CEO turnover.

Moreover, we show that both negative performance (negative profit or loss) and high tail risk exposure heightens CFO turnover. These results are quite logical since negative performance and/or high tail risk exposure fuel the fire (i.e. the chances of a CEO turnover increase). These results are in line with the extant literature on weak financial performance and top executive turnover (e.g. Denis and Denis, 1995; Warner et al., 1988; Murphy and Zimmerman, 1993; Sudarsanam and Mahate, 2006) and stock return volatility and top executive turnover (Mian, 2001; and Bushman et al., 2010; Gibbons and Murphy, 1990; Holmstrom, 1982; Jenter and Kannan, 2015; Srivastav et al. 2017).

Furthermore, we reveal that firm size negatively (significant) and accruals negatively (significant) relate to CFO turnover. These results demonstrate that big firms having more growth potential proxied by accruals are less likely to enhance CFO turnover, indicating that existing CFOs continue serving large and growth firms even after CEO changes and, hence, the chances of having a replacement of these CFOs are minimal for these firms. In a different setting than ours, Vahamaa (2014) reported a similar result, namely that CFO turnover is associated with income decreasing earnings management (proxied by discretionary accruals). Finally, our results also reveal that CEO tenure negatively (significant) affects CFO turnover, indicating that a short-tenured CEO has little or no influence on top management, consequently their turnover does not cause top executive turnover within a short time (e.g. within a year of CEO turnover).

Insert Table 3 about here

CEO Forced vs. Voluntary Turnover and CFO Forced vs. Voluntary Turnover

We partition our sample into forced and voluntary turnover. We employ Hazarika et al.'s (2012) competing hazard model for the estimations of Eq. (1) again to examine the effect of CEO forced turnover on CFO turnover and CEO voluntary turnover on CFO voluntary turnover, respectively. The results are reported in Table 4 (Panel A and B). Panel A reports the results for the influence of CEO forced turnover to CFO forced turnover. We find that CEO forced turnover accelerates CFO forced turnover within a year. It might be the case that CEOs were forced to leave as a result of bad financial performance/excessive exposure to tail risk or for engaging in earnings management and, hence, their second in command 'the CFOs' were also forced to leave office within a year. These results support Fee and Hadlock (2004), Coyne and Coyne (2007), and Hayes et al. (2002) that non-CEO departures spike significantly within a short time after CEO turnover. This may also be the case when CEO forced turnover occurs as a part of a disciplinary mechanism by the board. In this case, the board makes an effort to clean out executive deadwood to facilitate strategic reorientation through forced CFO turnover (see Hambrick and Mason, 1984; and Shen and Cannella, 2002). Moreover, our financial performance, tail risk exposure, and earnings management variables generally support the argument in terms of their predicted signs, even though these variables are mostly statistically insignificant.

Panel B (Table 4) reports the results for voluntary CEO turnover on voluntary CFO turnover in a year. However we fail to reveal that CEO voluntary turnover accelerates CFO voluntary turnover within a year. This may be reasonable since voluntary CEO turnover occurs due to the retirement of the CEO or the movement of the CEO to a more preferred career, so the usual forced CEO turnover drivers such as bad financial performance, excessive exposure to tail

risk or engaging in earnings management are irrelevant in case of voluntary turnover. Hence, it is less likely that the voluntary turnover of the CEO's second in command 'the CFO' occurs within a year. Yet, it is not completely out of question that the incoming CEO may wish to change to a new team at the end of the learning curve. In this regard, the power circulation theory of control suggests that voluntary CEO turnover can create a career opportunity for a CFO because the board might be interested in an internal succession through promoting the CFO to maintain strategic continuity (see Brady and Helmich, 1984; Shen and Cannella, 2002). Likewise, our financial performance, tail risk exposure, and earnings management variables also support a similar argument that none of these drivers cause the voluntary turnover of CFOs within a year and, hence, these results do not support Hayes et al. (2002).

Insert Table 4 about here

CFO Attributes and CFO Forced Turnover

Since CFO attributes play an important role in safeguarding CFOs from forced turnover, we examine whether CFOs professional qualifications, female gender, and age safeguard CFOs from forced turnover. The results are reported in Table 5. We find that CFO professional qualifications enhance the possibilities of the CFOs being forced out of office. These results indicate that professionally qualified CFOs may pose threats to strategic changes by the new management and, hence, forced turnover of professionally qualified CFOs is more likely following a forced CEO turnover. This result highlights the impact of managerial qualifications (see Harrmann and Datta, 2005). However, neither CFO's female gender nor age contribute to CFO forced turnover. Again, CEO forced turnover triggers the CFO forced turnover, as shown earlier (see Table 4, Panel A),

supporting the extant literature that the CEO's second in command is forced to leave office within a year of the CEO's departure (see Fee and Hadlock, 2004; Coyne and Coyne, 2007; and Hayes et al. 2002) and/or the board clears executive deadwood following a forced CEO turnover due to a disciplinary mechanism within a short period of time to facilitate strategic reorientation (see Hambrick and Mason, 1984; and Shen and Cannella, 2002). Finally, the results for our financial performance, tail risk exposure, and earnings management variables also support our earlier argument as presented in Table 4 (Panel A).

Insert Table 5 about here

Independent CFOs and Forced Turnover

CFO independence may play some role at a critical time for a corporation, especially when the CEO is fired. We attempt to investigate whether CFO independence matters at all in the event of CEO forced turnover. We split the sample into independent CFO and dependent CFO. If the CFO was appointed by the outgoing CEO, we define this CFO as a dependent CFO. We also define a CFO as an independent CFO if they were appointed before the outgoing CEO took over the role. We reveal interesting results in this setting. Our results show that dependent CFOs are most likely to experience forced turnover after the CEOs' forced turnover. However, forced CFO turnover is not most likely if they are independent of the outgoing CEO. These results imply that loyalty to the outgoing CEO plays a role in forced CFO turnover and, hence, our results are in line with existing studies that forced turnover of non-CEO executives is prevalent due to their loyalties to the outgoing CEOs (Brady and Helmich, 1984; Boeker and Goodstein, 1993). Nonetheless, the results for financial performance, tail risk exposure, and earnings management support our earlier argument, as reported in Table 4 (Panel A).

Insert Table 6 about here

CEO Succession and CFO Forced Turnover:

We attempt to examine the impact of CEO succession on CFO forced turnover. We examine both internal and external succession and its impact on CFO forced turnover. The results are reported in Table 5. Models 1-2 are for CEO internal succession and Models 3-4 are for CEO external succession. We find that the coefficients for CEO internal succession are positively (insignificant) related to CFO forced turnover. In general, these results are in line with the power circulation theory of control that internally succeeding CEOs (contenders) look for full support from the board and top management in turning firm performance by initiating strategic changes (Shen and Cannella, 2002) and as a consequence, CFO forced turnover occurs within a year because the contender removes the CFOs whose capabilities and loyalties are more suited to the predecessors' strategies (Brady and Helmich, 1984; Boeker and Goodstein, 1993). However, with no statistically significant results, our results fail to concur with the power circulation theory of control for internally succeeding CEOs. Likewise, our financial performance, tail risk exposure, and earnings management variables also in principle support the idea that forced CFO turnover is driven by bad financial performance, excessive exposure to tail risk, and earnings management, but the empirical evidence is inconclusive due to a lack of statistical significance.

Our empirical evidence on external CEO succession results (Models 3-4) reveal that external CEO succession does accelerate CFO forced turnover within a year. It may be the case that the new succeeding external CEOs do not get rid of the CFOs immediately due to their learning curve. However, we argue that incoming external CEOs may still wish to change their new team,

but do not do so immediately due to their learning curve. Kakabadse et al. (2001) report that “for over 55 per cent of the executive population, the learning curve averages at about thirty months.” Again, the interpretation of financial performance, tail risk exposure, and earnings management variables remain the same as explained before.

Insert Table 7 about here

CEO Turnover and CFO Turnover during Global Crisis

We examine whether the financial crisis (2008–2009) has any different impact on CFO turnover. We split our sample into crisis (2008–2009), pre-crisis (2005–2007), and post-crisis (2010–2014) periods and the results are reported in Table 6. We find that CEO turnover_{t-1} (in the preceding year) significantly increases the chances of CFO turnover (either resignation or dismissal) at period t during the crisis period (2008–2009), indicating that the top management disciplinary mechanism was more effective during the global financial crisis. This is due to the fact that CEOs were exposed to excessive tail risk during the financial crisis, which is supported by our tail risk coefficients. Thus, our results support Srivastav et al. (2017) that tail risk exposure creates excessive cost burdens for shareholders and, hence, top management discipline is fairly obvious during an excessive tail risk regime. Our results also indicate that both negative profitability (financial loss) and drastic decline in institutional investment escalated CFO turnover during the global crisis, even though these results are not statistically significant. However, we observe that a similar trend persists for the main variable of interest (CEO turnover_{t-1}) and for the tail risk exposure during the post-crisis period. Thus, the interpretations of our results are also similar those for for post-crisis. We find a noticeable difference in results between the global crisis and pre-crisis periods for the main variable of interest (CEO turnover_{t-1}) and other key drivers of

CEO turnover such as weak financial performance, earnings management, drastic decline in institutional investment, and excessive tail risk exposure. Nonetheless, the differences between the different periods indicate that different disciplinary mechanisms are working for different periods.

Insert Table 8 about here

CFO Post-Turnover Consequences

As we discuss earlier, CFO turnover is a consequence of CEO turnover. However, CEO turnover is primarily driven by weak financial performance (e.g. Denis and Denis, 1995; Warner et al., 1988; Murphy and Zimmerman, 1993; Mian, 2001), earnings management (Bergstresser and Philippon, 2006; Cheng and Warfield, 2005; Hazarika et al., 2012), or decline in institutional shareholding (Parrino et al., 2003). Now, we attempt to investigate whether there is any change in the main drivers during the post-CFO turnover period. For this, we pursue post-estimation for earnings restatement, profitability, and institutional shareholding for periods $t+1$ and $t+2$. The results are reported in Table 8. Our results show that CFO turnover improves institutional shareholding and helps mitigate earnings restatement, but significant financial loss continues until two years after the CFO turnover. These results indicate that board disciplinary mechanism and CEO succession plans work effectively on some fronts. However, a careful approach in succession planning might be more effective in turning firm performance through strategic change.

Insert Table 9 about here

Robustness Checks

For the robustness analysis, we run the baseline estimation by using a multinomial logit model instead of a competing hazard model. As the baseline model, our dependent variable is CFO turnovers (both forced and voluntary) and the independent variable is a lagged CEO turnover. The

results are reported in Table 10. Likewise, a positive coefficient of lagged CEO turnover means the covariate increases the likelihood of a CFO being replaced within a year. The main result remains robust and consistent with the baseline estimations. Again, this result supports Fee and Hadlock (2004) that non-CEO departures spike significantly within six months after the arrival of the new CEO because the new CEO cleans out the deadwood fairly quickly after taking office. Similarly, these findings are also in line with Coyne and Coyne (2007) that proxy-level executives have to leave the firm within a year of the CEO turnover. The results are also consistent with Hayes et al. (2002) that the association between CEO and non-CEO changes persists.

Likewise, we also find that both negative performance (negative profit or loss) and high tail risk exposure heightens CFO turnover. These results are in line with the extant literature on weak financial performance and top executive turnover (e.g. Denis and Denis, 1995; Warner et al., 1988; Murphy and Zimmerman, 1993; Sudarsanam and Mahate, 2006) and stock return volatility and top executive turnover (Mian, 2001; and Bushman et al., 2010; Gibbons and Murphy, 1990; Holmstrom, 1982; Jenter and Kannan, 2015; Srivastav et al. 2017). Finally, we also reveal that firm size is negatively (significant) and accruals are negatively (significant) related to CFO turnover, indicating that existing CFOs continue in their roles in large growth firms as usual and, hence, the chances of these CFOs being replaced are minimal. Overall, we conclude that our earlier results are robust.

Insert Table 10 about here

Conclusion

The relationship between the CEO turnover and CFO turnover has drawn academic attention in the post Sarbanes Oxley Act 2002 (SOX) era (see for example, Mian, 2001; Hayes et al., 2002; and Fee and Hadlock, 2004). This study aims to investigate whether CFO turnover is a

matter of a course of CEO turnover or CFO turnover is consequence of CEO succession. We find that CFO forced turnover is not merely an effect of CEO turnover, but is rather a consequence of forced CEO turnover, especially weak financial performance, earnings management, decline in institutional shareholding, and tail risk exposure, which fuel the fire for forced CFO turnover. We identify professional qualifications and independence as the key drivers of forced CFO turnover. Moreover, our empirical evidence shows that CEO turnover_{t-1} (in the preceding year) significantly increases the chances of CFO turnover at period t during the crisis period (2008–2009), indicating that the top management disciplinary mechanism was more effective during the global financial crisis because CEOs were engaged in excessive risk-taking during the financial crisis. Furthermore, we also reveal interesting results for CEO external succession; in particular, we find that externally succeeding CEOs do not immediately remove the CFOs once they take office because of their learning curve. Nonetheless, our prediction model estimates that CFO turnover improves institutional shareholding and helps mitigate earnings restatement at periods t+1 and t+2, but significant financial loss continues until two years after the CFO turnover. These results indicate that board disciplinary mechanisms and CEO succession plans may not work effectively. However, a careful approach to succession planning might be more effective in turning firm performance through strategic change. Our results indicate the need for appropriate governance reforms for establishing effective executive disciplinary mechanisms in US firms.

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Figure 1. CEO and CFO Turnover

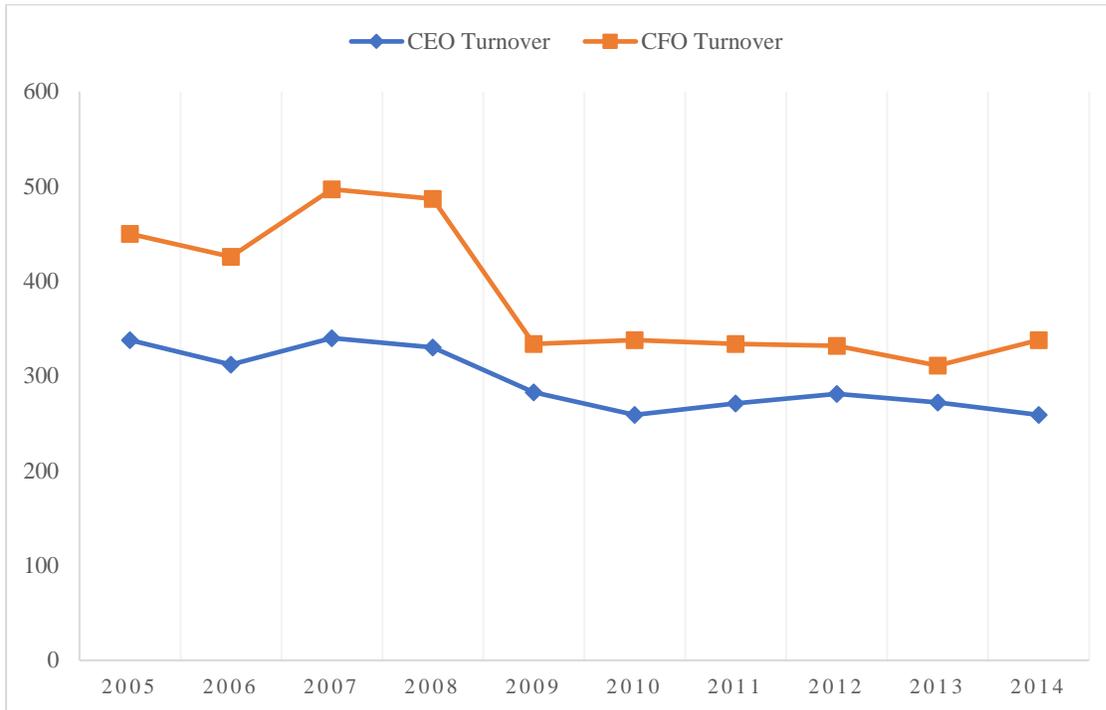


Figure 2. CEO and CFO forced turnover

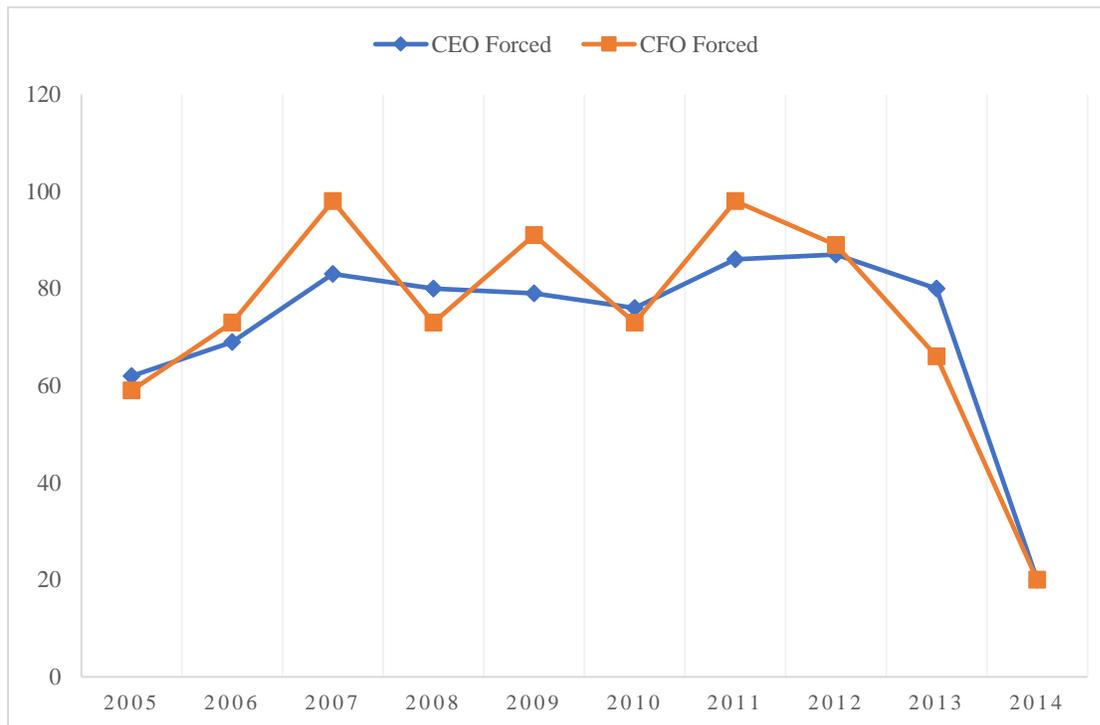


Figure 3. CEO succession and CFO turnover

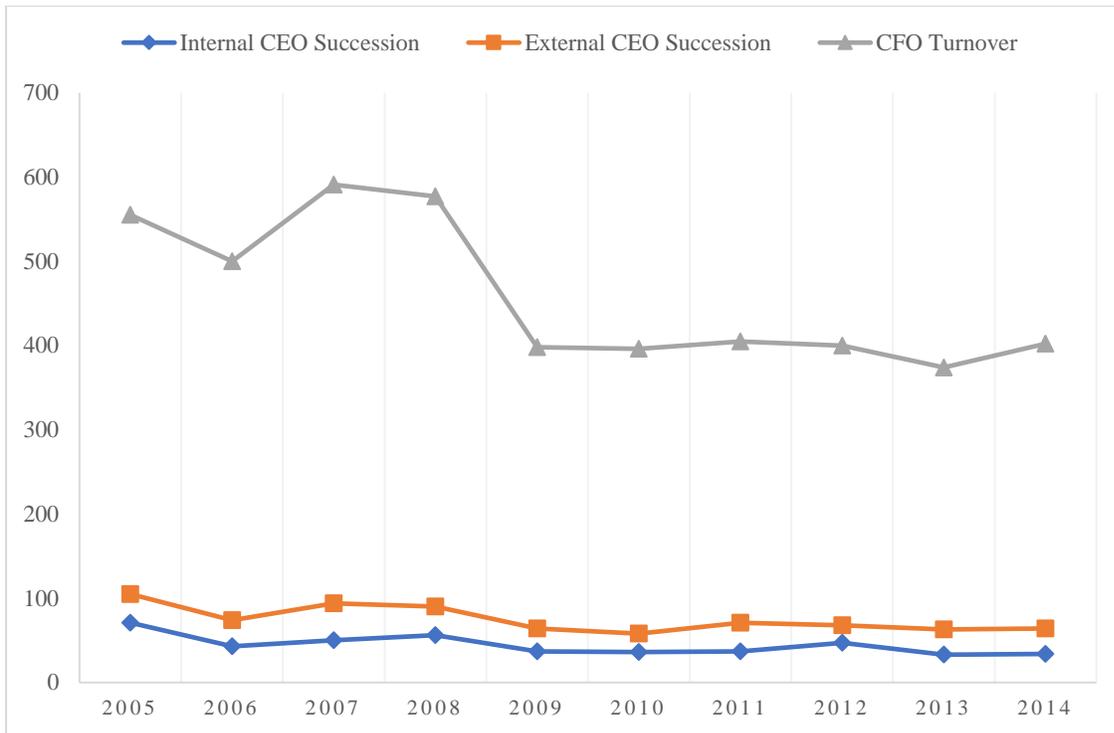


Table 1. Descriptive statistics and turnover distribution

<i>Panel A: Descriptive Statistics</i>								
Variable	# of Obs	Mean	Std. Dev.	Min	25%	Median	75%	Max
Restatement	14,280	0.099	0.299	0.000	0.000	0.000	0.000	1.000
Firm size	14,280	7.217	1.630	-1.013	6.149	7.158	8.267	11.174
ROA (%)	14,280	9.163	12.700	-256.424	4.633	9.312	14.515	127.060
Accruals	14,280	0.019	0.156	-2.012	-0.037	0.022	0.077	1.645
Institutional holdings	11,571	0.714	0.211	0.000	0.577	0.765	0.881	1.000
Tail risk	11,340	0.025	0.020	0.000	0.012	0.020	0.032	0.216
Ln of CEO tenure	9,434	1.522	0.836	0.000	1.099	1.609	2.197	3.135
CEO duality	9,434	0.199	0.399	0.000	0.000	0.000	0.000	1.000
CEO share holdings	9,434	2.003	4.527	0.000	0.000	0.403	1.689	28.510
Board size	7,926	8.976	2.128	4.000	7.000	9.000	10.000	23.000
Log of board size	7,926	2.166	0.239	1.386	1.946	2.197	2.303	3.135
Board Independence (Independent Directors/Board Size)	7,926	0.769	0.120	0.222	0.700	0.778	0.875	1.000
<i>Panel B: Year-wise distribution of turnover</i>								
Fiscal Year	CEO Turnover	CFO Turnover	CEO Forced	CFO Forced	Internal CEO Succession	External CEO Succession		
2005	338	450	62	59	71	34		
2006	312	426	69	73	43	31		
2007	340	497	83	98	50	44		
2008	330	487	80	73	56	34		
2009	283	334	79	91	37	27		
2010	259	338	76	73	36	22		
2011	271	334	86	98	37	34		
2012	281	332	87	89	47	21		
2013	272	311	80	66	33	30		
2014	259	338	20	20	34	30		
Total	2945	3847	722	740	444	307		

Notes: This table presents the descriptive statistics and distribution of CEO/CFO over the years and across the industries. Panel A provides the descriptive statistics of the variables. The definitions of the variables are provided in Appendix. Panel B provides year-wise distribution of CEO/CFO turnover which includes both voluntary and forced turnover, forced turnover, and CEO succession from insider and outside the firms.

Table 2. Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(13)	(14)
CFO Turnover	1														
CFO Forced	0.4263*	1													
CEO Turnover _{t-1}	0.2321*	0.0983*	1												
CEO Forced _{t-1}	0.0864*	0.2361*	0.4813*	1											
Restatement _{t-1}	0.0175*	0.0152*	0.0077	0.0019	1										
Firm Size _t	-0.0595*	-0.0117*	-0.0305*	-0.0002	-0.0296*	1									
ROA _{t-1}	-0.0391*	-0.0117	-0.0438*	-0.0145	-0.006	0.2466*	1								
Accruals _{t-1}	-0.0299*	-0.0125*	-0.0479*	-0.0217*	0.0009	0.0240*	0.2863*	1							
Inst. Holding _{t-1}	0.0121	0.0075	0.0107	0.0057	0.0281*	0.2201*	0.0345*	-0.0220*	1						
Board Size _t	-0.0203	0.0151	0.0116	0.0148	-0.0289*	0.5944*	0.0307*	-0.0307*	-0.0114	1					
Indp. Board _t	-0.0045	-0.0064	0.0037	-0.0094	-0.0268*	0.1996*	-0.0208*	-0.0579*	0.0930*	0.1643*	1				
CEO Tenure _t	-0.0470*	-0.0113	-0.1583*	-0.0556*	-0.0195	0.0414*	0.0418*	0.0790*	0.0397*	-0.0217*	-0.0043	1			
CEO Duality _t	0.0065	-0.0112	-0.0058	-0.0029	0.0379*	0.0558*	0.0728*	0.0482*	-0.0224*	0.0251*	-0.0376*	0.0755*	1		
CEO Hold _t	-0.005	-0.0036	-0.0500*	-0.0268*	0.01	-0.1661*	0.0019	0.0202	-0.0647*	-0.1663*	-0.1680*	0.2008*	0.0028	1	
Tail Risk _{t-1}	0.0490*	0.0225*	0.0425*	0.0272*	0.0226*	-0.1622*	-0.1057*	-0.0910*	-0.0299*	-0.1095*	-0.0295*	-0.0746*	-0.0381*	0.0332*	1

Notes: This table reports the correlation matrix between the variables used in the study. In order to fit the table in the desired space, we report only 5% or less than 5% statistical significance. * indicates statistical significance at 5% or less.

Table 3. CFO turnover and CEO turnover

	Model-1	Model-2	Model-3	Model-4	Model-5	Model-6
CEO Turnover _{t-1}	1.341*** (0.097)	1.259*** (0.121)	1.322*** (0.160)	1.183*** (0.145)	1.227*** (0.162)	1.236*** (0.172)
ROA _{t-1}	-0.002 (0.002)	-0.006* (0.003)	-0.009* (0.005)	-0.007* (0.004)	-0.009* (0.005)	-0.008* (0.005)
Restatement _{t-1}	0.074 (0.099)	0.097 (0.114)	0.119 (0.149)	0.084 (0.136)	0.118 (0.149)	0.092 (0.161)
Instit. Holdings _{t-1}		0.056 (0.178)	0.023 (0.255)	0.093 (0.228)	0.032 (0.254)	-0.176 (0.259)
Tail Risk _{t-1}						10.218*** (2.330)
Accruals _{t-1}	-0.603*** (0.202)	-0.674*** (0.228)	-0.739** (0.336)	-0.929*** (0.306)	-0.727** (0.339)	-0.825** (0.385)
Firm Size _t	-0.085*** (0.021)	-0.080*** (0.025)	-0.083** (0.039)	-0.059** (0.029)	-0.084** (0.039)	-0.013 (0.043)
Log of Board Size _t			0.146 (0.246)		0.118 (0.249)	0.013 (0.267)
Board Independence _t			-0.043 (0.444)		-0.154 (0.448)	-0.227 (0.482)
CEO Tenure _t				-0.132** (0.054)	-0.144** (0.060)	-0.130** (0.066)
CEO Duality _t				0.12 (0.146)	0.238 (0.154)	0.440*** (0.170)
CEO Holdings _t				-0.004 (0.008)	-0.001 (0.007)	-0.001 (0.008)
Year Dummies	YES	YES	YES	YES	YES	YES
Log-likelihood	-8805.49	-6486.17	-3758.52	-4671.17	-3755.01	-3087.78
N. of obs	9708	7839	5167	6168	5167	4251

Notes: This table reports the estimates from competing-risks hazard regressions that examine the likelihood of CFO turnovers (both **forced** and **voluntary**). A positive coefficient means the covariate increases the hazard rate for a CFO to be replaced, whereas a negative coefficient means the covariate decreases the hazard rate for the CFO to be replaced. Our specific interest was to find out the impact of previous year's CEO replacement on the CFO replacement. The covariate CEO Turnover_{t-1} is positive and significant. Variable definitions are provided in the appendix. Robust standard errors are reported in the parenthesis. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 4. Panel A: CFO forced and CEO forced

	Model-1	Model-2	Model-3	Model-4	Model-5	Model-6
CEO Forced _{t-1}	2.510*** (0.214)	2.164*** (0.285)	2.116*** (0.350)	1.987*** (0.355)	2.059*** (0.349)	2.088*** (0.390)
ROA _{t-1}	-0.008 (0.007)	-0.009 (0.008)	-0.015 (0.013)	-0.009 (0.011)	-0.016 (0.013)	-0.017 (0.014)
Restatement _{t-1}	0.350* (0.197)	0.593*** (0.210)	0.446 (0.278)	0.510* (0.263)	0.465* (0.278)	0.384 (0.311)
Instit. Holdings _{t-1}		0.229 (0.392)	0.015 (0.507)	-0.195 (0.481)	-0.002 (0.509)	-0.395 (0.508)
Tail Risk _{t-1}						7.746 (5.714)
Accruals _{t-1}	0.384 (0.562)	-0.351 (0.630)	-0.199 (0.975)	-0.545 (0.866)	-0.19 (0.982)	-0.33 (1.064)
Firm Size _t	0.005 (0.050)	0.074 (0.059)	0.042 (0.091)	0.083 (0.070)	0.039 (0.089)	0.143 (0.099)
Log of Board Size _t			0.776 (0.477)		0.729 (0.484)	0.764 (0.514)
Board Independence _t			-1.317 (0.839)		-1.400* (0.850)	-1.484* (0.894)
CEO Tenure _t				-0.143 (0.122)	-0.143 (0.123)	-0.13 (0.137)
CEO Duality _t				0.335 (0.345)	0.631* (0.376)	0.858** (0.404)
CEO Holdings _t				-0.003 (0.015)	-0.001 (0.015)	0.002 (0.013)
Year Dummies	YES	YES	YES	YES	YES	YES
Log-likelihood	-1765.87	-1286.56	-867.76	-948.38	-866.04	-728.89
N. of obs	8298	6782	4550	5371	4550	3737

Panel B: CFO forced and CEO voluntary

	Model-1	Model-2	Model-3	Model-4	Model-5	Model-6
CEO Voluntary _{t-1}	0.529 (0.382)	0.604 (0.458)	0.432 (0.597)	0.195 (0.603)	0.275 (0.608)	0.379 (0.609)
ROA _{t-1}	-0.01 (0.006)	-0.013 (0.008)	-0.017 (0.013)	-0.015 (0.011)	-0.018 (0.013)	-0.018 (0.014)
Restatement _{t-1}	0.363* (0.201)	0.576*** (0.218)	0.388 (0.286)	0.437 (0.268)	0.399 (0.286)	0.262 (0.323)
Instit. Holdings _{t-1}		0.275 (0.401)	0.084 (0.521)	-0.115 (0.490)	0.089 (0.520)	-0.295 (0.533)
Tail Risk _{t-1}						8.335 (5.778)
Accruals _{t-1}	0.134 (0.607)	-0.553 (0.626)	-0.12 (0.924)	-0.69 (0.853)	-0.111 (0.933)	-0.234 (1.016)
Firm Size _t	0.043 (0.050)	0.109* (0.059)	0.06 (0.089)	0.1 (0.071)	0.054 (0.088)	0.135 (0.097)
Log of Board Size _t			0.817* (0.478)		0.793 (0.483)	0.801 (0.519)

Board Independence _t			-1.291 (0.846)		-1.428 (0.868)	-1.608* (0.917)
CEO Tenure _t				-0.169 (0.133)	-0.168 (0.137)	-0.15 (0.149)
CEO Duality _t				0.314 (0.341)	0.605 (0.371)	0.769** (0.390)
CEO Holdings _t				-0.003 (0.015)	-0.002 (0.016)	-0.002 (0.016)
Year Dummies	YES	YES	YES	YES	YES	YES
Log-likelihood	-1791.03	-1288.72	-866.596	-946.712	-864.76	-727.484
N. of obs	8658	7043	4655	5562	4655	3830

Notes: Panel A reports the estimates from competing-risks hazard regressions that examine the likelihood of **forced** CFO turnovers while last year's CEO replacements were **forced**. A positive coefficient means the covariate increases the hazard rate for a CFO to be replaced forcefully, whereas a negative coefficient means the covariate decreases the hazard rate for the CFO to be replaced forcefully. The covariate CEO Forced_{t-1} is positive and significant. Variable definitions are provided in the appendix.

Panel B reports the estimates from competing-risks hazard regressions that examine the likelihood of **forced** CFO turnovers while last year's CEO replacements were **voluntary**. A positive coefficient means the covariate increases the hazard rate for a CFO to be replaced forcefully, whereas a negative coefficient means the covariate decreases the hazard rate for the CFO to be replaced forcefully. The covariate CEO Voluntary_{t-1} is positive, however, not statistically significant. Variable definitions are provided in the appendix.

Robust standard errors are reported in the parenthesis. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 5. CFO Attributes and CFO Forced Turnover

	CFO Degree	CFO Personal Attributes
CFO Professional Degree	3.666*** (0.333)	3.116*** (0.721)
Female CFO		0.324 (0.425)
CFO Age		-0.015 (0.027)
CEO Forced _{t-1}	2.070*** (0.380)	1.837*** (0.550)
Restatement _{t-1}	0.399 (0.288)	0.513 (0.401)
Ln of Sales _{t-1}	0.143 (0.091)	0.027 (0.106)
ROA _{t-1}	-0.016 (0.013)	-0.008 (0.012)
Accruals _{t-1}	0.067 (1.054)	-1.199 (1.176)
Instit. Holdings _{t-1}	-0.193 (0.494)	0.291 (0.644)
CEO Tenure _t	-0.124 (0.132)	-0.165 (0.197)
CEO Duality _t	0.822** (0.380)	-0.253 (0.619)
CEO Holdings _t	-0.002 (0.014)	-0.014 (0.019)
Log of Board Size _t	0.931** (0.412)	0.15 (0.626)
Board Independence _t	-1.408* (0.800)	-2.321* (1.272)
TailRisk _{t-1}	9.634* (5.060)	1.053 (7.183)
Year Dummies	YES	YES
Log Likelihood	-807.844	-384.858
N. of obs	3750	1786

Notes: This table reports the estimates from competing-risks hazard regressions that examine the likelihood of **forced** CFO turnovers while last year's CEO replacements were **Forced** along with CFO professional degrees (such as CFA, CPA, CGA, Esq. PA, CPA & MBA, CPA & CFA, CPA & CVA, CPA & Esq, and CPA & JD). A positive coefficient means the covariate increases the hazard rate for a CFO to be replaced forcefully, whereas a negative coefficient means the covariate decreases the hazard rate for the CFO to be replaced forcefully. Variable definitions are provided in the appendix. Robust standard errors are reported in the parenthesis. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 6: Independent CFO and Turnover

	Independent CFO	Dependent CFO
CEO Forced _{t-1}	1.065 (0.907)	2.515*** (0.343)
Restatement _{t-1}	0.265 (0.384)	0.408 (0.361)
Ln of Sales _{t-1}	0.124 (0.125)	0.248** (0.109)
ROA _{t-1}	-0.009 (0.017)	-0.024* (0.014)
Accruals _{t-1}	-0.903 (1.240)	-0.24 (1.407)
Instit. Holdings _{t-1}	-0.405 (0.620)	-0.03 (0.627)
TailRisk _{t-1}	11.580* (6.312)	7.933 (6.656)
CEO Tenure _t	-0.033 (0.179)	-0.199 (0.152)
CEO Duality _t	0.954** (0.443)	0.834* (0.491)
CEO Holdings _t	0.006 (0.010)	-0.001 (0.019)
Log of Board Size _t	0.827 (0.603)	0.03 (0.567)
Board Independence _t	-0.952 (1.070)	-1.12 (0.999)
Log Likelihood	-554.88762	-525.19528
N. of obs	3714	3712

Notes: This table reports the estimates from competing-risks hazard regressions that examine the likelihood of **forced** CFO turnovers while last year's CEO replacements were **forced** under two conditions: a) CFOs were hired before the current CEO (thus, defined *Independent CFO*) and b) CFOs were hired after the current CEO (thus *dependent CFO*). A positive coefficient means the covariate increases the hazard rate for a CFO to be replaced forcefully, whereas a negative coefficient means the covariate decreases the hazard rate for the CFO to be replaced forcefully. Variable definitions are provided in the appendix. Robust standard errors are reported in the parenthesis. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 7. CEO external/internal succession to CFO forced

	InterSuccM1	InterSuccM2	ExterSuccM3	ExterSuccM4
CEO Internal Succession _{t-1}	1.052 (0.712)	0.746 (0.735)		
CEO External Succession _{t-1}			-17.488*** (0.462)	-20.827*** (0.529)
ROA _{t-1}	-0.030 (0.023)	-0.045*** (0.017)	-0.03 (0.025)	-0.046** (0.019)
Restatement _{t-1}	-0.296 (1.245)	0.119 (1.153)	-0.218 (1.255)	0.145 (1.227)
Instit. Holdings _{t-1}	-0.290 (1.179)	-0.009 (1.133)	-0.378 (1.174)	-0.077 (1.090)
Tail Risk _{t-1}		19.913 (16.427)		18.024 (15.396)
Accruals _{t-1}	0.255 (0.783)	0.451 (1.012)	0.337 (0.939)	0.57 (1.292)
Firm Size _t	-0.279 (0.314)	-0.025 (0.211)	-0.239 (0.321)	0.005 (0.225)
Log of Board Size _t	0.421 (1.827)	0.098 (1.934)	0.266 (1.838)	-0.16 (1.956)
Board Independence _t	-3.379 (2.416)	-4.240* (2.417)	-3.669 (2.426)	-4.179 (2.665)
CEO Tenure _t	0.16 (1.051)	0.188 (1.058)	0.274 (0.934)	0.238 (0.963)
CEO Duality _t	0.471 (1.041)	1.16 (1.113)	0.245 (1.096)	0.931 (1.155)
CEO Holdings _t	0.029 (0.027)	0.049 (0.037)	0.02 (0.029)	0.042 (0.039)
Year Dummies	YES	YES	YES	YES
Log-likelihood	-65.522	-56.729	-65.59	-56.15
N. of obs	630	513	630	513

Notes: This table reports the estimates from competing-risks hazard regressions that examine the likelihood of **forced** CFO turnovers while last year's CEO **successions** were from inside the firm (Internal Successions) or outside the firm (hire from the external labor markets or External Successions). A positive coefficient means the covariate increases the hazard rate for a CFO to be replaced forcefully, whereas a negative coefficient means the covariate decreases the hazard rate for the CFO to be replaced forcefully and to stay on the current job. The covariate CEO Internal Succession_{t-1} is positive, however, not significant. The covariate CEO External Succession_{t-1} is negative and statistically significant. Variable definitions are provided in the appendix. Robust standard errors are reported in the parenthesis. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 8. CFO turnover and CEO turnover in crisis period

	<i>Pre-Crisis Period</i>		<i>Crisis Period</i>		<i>Post-Crisis Period</i>	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
CEO Turnover _{t-1}	0.151	0.275	1.670***	1.578***	1.341***	1.360***
	(0.472)	(0.474)	(0.234)	(0.270)	(0.173)	(0.190)
ROA _{t-1}	-0.008	-0.015	-0.009	-0.008	-0.009	-0.007
	(0.011)	(0.012)	(0.008)	(0.008)	(0.007)	(0.007)
Restatement _{t-1}	-0.020	0.015	-0.218	-0.23	0.380*	0.275
	(0.262)	(0.288)	(0.350)	(0.372)	(0.198)	(0.219)
Instit. Holdings _{t-1}	-0.316	-0.265	-0.229	-0.281	0.406	-0.122
	(0.475)	(0.500)	(0.440)	(0.466)	(0.384)	(0.385)
Tail Risk _{t-1}		9.680***		7.485*		9.428***
		(3.471)		(4.343)		(3.550)
Accruals _{t-1}	-1.208*	-1.187	-0.845**	-1.069**	-0.087	0.069
	(0.725)	(0.806)	(0.414)	(0.484)	(0.670)	(0.678)
Firm Size _t	-0.109	-0.02	-0.061	0.013	-0.082	-0.026
	(0.074)	(0.085)	(0.075)	(0.083)	(0.054)	(0.061)
Log of Board Size _t	-0.124	-0.132	-0.01	-0.051	-0.212***	-0.165*
	(0.117)	(0.138)	(0.118)	(0.129)	(0.082)	(0.090)
Board Independence _t	0.336*	0.551**	0.064	0.292	-22.848***	-27.204***
	(0.196)	(0.223)	(0.211)	(0.221)	(1.019)	(1.024)
CEO Tenure _t	-0.035	-0.039	0.014	0.013	0.01	0.01
	(0.022)	(0.026)	(0.014)	(0.016)	(0.013)	(0.014)
CEO Duality _t	-0.658	-0.762	0.241	-0.24	0.607*	0.584
	(0.463)	(0.514)	(0.517)	(0.525)	(0.349)	(0.381)
CEO Holdings _t	-1.149	-1.473*	0.782	0.722	0.126	0.162
	(0.705)	(0.783)	(1.030)	(1.098)	(0.665)	(0.711)
Year Dummies	YES	YES	YES	YES	YES	YES
Log-likelihood	-856.431	-644.538	-741.143	-647.216	-1671.377	-1390.195
N. of obs	1160	824	1221	1114	2786	2313

Notes: This table reports the estimates from competing-risks hazard regressions that examine the likelihood of CFO turnovers (both forced and voluntary) in three sub-periods: pre-crisis, during crisis, and post-crisis. 2005-2007 is defined as pre-crisis, 2008-2009 is defined as crisis, and 2010-2014 is defined as post-crisis period. A positive coefficient means the covariate increases the hazard rate for a CFO to be replaced, whereas a negative coefficient means the covariate decreases the hazard rate for the CFO replacements. The covariate CEO Turnover_{t-1} is positive and insignificant under pre-crisis, however, positive and significant under both crisis and post-crisis period. Variable definitions are provided in the appendix. Robust standard errors are reported in the parenthesis. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 9. CFO turnover and firm future activities

	Restate _{t+1}	Restate _{t+2}	ROA _{t+1}	ROA _{t+2}	Insthold _{t+1}	Insthold _{t+2}
CFO Turnover _t	0.051 (0.163)	0.362** (0.157)	-1.256*** (0.462)	-1.584*** (0.487)	0.015 (0.009)	0.022** (0.009)
ROA _t	0.002 (0.005)	-0.004 (0.005)			-0.001** 0.000	0.000 0.000
Restatement _t			0.073 (0.441)	0.05 (0.464)	-0.014* (0.009)	-0.019** (0.009)
Instit Holding _t	0.049 (0.241)	-0.406 (0.262)	-1.653** (0.680)	-1.511** (0.719)		
Accruals _t	-0.292 (0.397)	-0.835* (0.435)	7.544*** (1.125)	2.487** (1.184)	0.041* (0.022)	0.066*** (0.023)
Firm Size _t	-0.080* (0.042)	-0.074* (0.044)	1.386*** (0.119)	1.328*** (0.125)	0.007*** (0.002)	0.008*** (0.002)
Log of Board Size _t	0.613** (0.247)	0.610** (0.269)	-3.234*** (0.703)	-2.161*** (0.739)	0.004 (0.014)	-0.002 (0.015)
Board Independence _t	-0.535 (0.381)	-1.133*** (0.418)	-2.613** (1.200)	-2.649** (1.258)	0.044* (0.023)	0.024 (0.025)
CEO Tenure _t	0.048 (0.073)	0.126* (0.075)	-0.238 (0.186)	-0.051 (0.195)	0.007** (0.004)	0.007* (0.004)
CEO Duality _t	-0.165 (0.136)	-0.16 (0.150)	0.869** (0.412)	0.877** (0.431)	0.018** (0.008)	0.015* (0.008)
CEO Holding _t	-0.003 (0.007)	-0.013 (0.009)	-0.001 (0.022)	0.020 (0.023)	-0.002*** 0.000	-0.002*** 0.000
Fixed Effect	Industry	Industry	Industry	Industry	Industry	Industry
Year Dummies	YES	YES	YES	YES	YES	YES
LL/AdR2	-3757.4242	-3174.107	0.042	0.034	0.018	0.017
N. of obs	5367	5367	5253	5042	5306	4665

Notes: This table reports firm activities post-CFO replacements. We have taken next two years after the CFO replacement. **Restate** means accounting restatements, **ROA** is return on assets and is used as a proxy for operating performance, and **Insthold** means firm institutional share holdings. Variable definitions are provided in the appendix. Robust standard errors are reported in the parenthesis. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 10. Multinomial logit model: CFO turnover and CEO turnover

	Model-1	Model-2	Model-3	Model-4	Model-5	Model-6
CEO Turnover _{t-1}	1.532*** (0.101)	1.466*** (0.119)	1.524*** (0.149)	1.371*** (0.139)	1.418*** (0.151)	1.452*** (0.168)
ROA _{t-1}	-0.004 (0.003)	-0.007* (0.004)	-0.010* (0.006)	-0.010* (0.005)	-0.010* (0.006)	-0.009 (0.006)
Restatement _{t-1}	0.089 (0.106)	0.133 (0.121)	0.161 (0.155)	0.114 (0.141)	0.157 (0.154)	0.102 (0.167)
Instit. Holdings _{t-1}		0.108 (0.191)	0.077 (0.266)	0.152 (0.238)	0.098 (0.265)	-0.151 (0.281)
Ln of Sales _{t-1}	-0.091*** (0.024)	-0.086*** (0.030)	-0.091** (0.042)	-0.062* (0.033)	-0.089** (0.042)	-0.018 (0.047)
Accruals _{t-1}	-0.728*** (0.238)	-0.790*** (0.271)	-0.809** (0.378)	-1.120*** (0.363)	-0.780** (0.379)	-0.871** (0.427)
Log of Board Size _t			0.185 (0.262)		0.149 (0.262)	0.07 (0.282)
Board Independence _t			-0.03 (0.451)		-0.118 (0.460)	-0.157 (0.491)
CEO Tenure _t				-0.156*** (0.060)	-0.171*** (0.065)	-0.155** (0.074)
CEO Duality _t				0.099 (0.156)	0.215 (0.165)	0.444** (0.181)
CEO Holdings _t				-0.003 (0.008)	0.000 (0.008)	0.001 (0.008)
Tail Risk _{t-1}						11.107*** (2.649)
Constant	-1.668*** (0.198)	-1.766*** (0.268)	-2.303*** (0.607)	-1.667*** (0.337)	-1.887*** (0.644)	-2.469*** (0.742)
Year Dummies	YES	YES	YES	YES	YES	YES
PR-squared	0.06	0.058	0.063	0.062	0.065	0.074
Wald Chi2	375.875	267.859	194.501	215.368	195.612	193.963
N. of obs	9708	7839	5167	6168	5167	4251

Notes: This table reports the estimates from multinomial logit model that examine the likelihood of CFO turnovers (both **forced** and **voluntary**). A positive coefficient means the covariate increases the likelihood for a CFO to be replaced. Our specific interest was to find out the impact of previous year's CEO replacement on the CFO replacement. The covariate CEO Turnover_{t-1} is positive and significant. Variable definitions are provided in the appendix. Standard errors are clustered by firm ID (GVKEY). Robust standard errors are reported in the parenthesis. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Appendix: Variable Definition

ROA: it is measured as EBIT over average total assets.

Restatement: it is an indicator variable; takes a value of 1 if the firm restated earnings, otherwise 0. Restatement data is obtained from Audit Analytics.

Institutional Holdings: We extract the variables from Thompson Reuters of Wharton Database (13f, s34 dataset). The database has three types of holding direct institutional holding, indirect institutional holding and total institutional holding as a percentage of total stock outstanding. We use total holding by institutions such as mutual funds and other professional investment or money managers.

Tail Risk: tail risk is defined following Srivastav et al. (2017). It is the share of extreme negative returns (lowest 5% of the distribution) and signifies the financial situation of a firm in the form of extreme risk/failure.

Accruals: accruals are calculated following Dechow et al. (2011). It is calculated as, $(\Delta WC + \Delta NCO + \Delta FIN) / \text{Average total assets}$, where $WC = [\text{Current Assets} - \text{Cash and Short-term Investments}] - [\text{Current Liabilities} - \text{Debt in Current Liabilities}]$; $NCO = [\text{Total Assets} - \text{Current Assets} - \text{Investments and Advances}] - [\text{Total Liabilities} - \text{Current Liabilities} - \text{Long-term Debt}]$. $FIN = [\text{Short-term Investments} + \text{Long-term Investments}] - [\text{Long-term Debt} + \text{Debt in Current Liabilities} + \text{Preferred Stock}]$.

Board size: it is the total number of directors on the board.

Independent Directors are the fraction of directors who are independent.

CEO Tenure: the natural log of the number of years CEO is serving the current company.

CEO Duality is an indicator variable that takes a value of 1 if CEO also holds the chair position of the board.

CEO Holding: it is CEO's shareholding in the company.

Firm size: the natural log of firm's annual sales

Footnotes:

Introduction Section

¹ For example, McAnally, Weaver, and Srivastava (2008), Graham and Harvey (2001), Parrino (1997), and Jiang, Petroni, and Wang, (2010).

² Hayes et al. (2002), and Fee and Hadlock (2004) take a broader perspective in modeling CEO and non-CEO manager turnover.

Related Literature and Hypothesis Development Section

³ The CFO retains the ultimate responsibility for the design and implementation of the policy decisions related to the company's financial performance.

Data and Methodology Section

⁴ Please refer to <http://www.auditanalytics.com/>

⁵ The database was accessed at the author's previous institution.

⁶ Please refer to <https://www.sec.gov/rules/final/33-8400.htm>

⁷ The benefits of using hazard models are manifold: a) They explicitly account for the right censoring in our data, as CEOs in office are yet to leave their office in 2014 (the last year of our sample); b) They use all data including both events (voluntary and forced turnover) and non-events to estimate specific coefficients for voluntary and forced turnovers; and c) They overcomes sample selection biases which may arise from only one non-randomly selected observation per firm, which usually the case in terms of static logit model Davidson et al. (2015).