Investigating CEO Succession after Sudden Death

Samay Gupta

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Abstract
This paper attempts to examine the relationship between stock market reaction to CEO death and whether they are succeeded by an existing employee at the firm or an external hire. We use data from 81 CEO deaths and the stock prices around the date of death to conduct an event study analysis. We find a significant positive stock price reaction to CEO deaths. We predict that positive stock price reactions increase the likelihood of internal succession. We do not find a significant relationship between stock price reaction and the nature of CEO succession. However, we provide suggestive evidence and argue for our hypothesis using prior literature, and an anecdote from our data.

Keywords: Executive promotion, Event study, Stock market reaction

JEL Codes: M12, M51

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1. Introduction:

CEOs are often the most important employees in a company. In fact, a CEO's performance is often seen as an indicator of the company's success (Finkelstein et al., 2009; Kesner and Sebora, 1994). Consequently, CEO succession is a pivotal process in determining the future performance of a company. To that end, we intend to further study the mechanisms which govern the decision-making process behind CEO succession. We focus specifically on whether new CEOs are chosen from within the organization or recruited externally.

In this paper, we use the sudden death of CEOs as a natural experiment to examine how initial responses to CEO death influence whether they are succeeded internally or externally. Our paper contributes to the existing literature through a few avenues. First, no studies have investigated the link between stock price response to CEO turnover and CEO succession using only CEO deaths. We argue that the sudden nature of CEO deaths allows us to circumvent issues of endogeneity that are natural to studies of CEO turnovers. Second, prior literature in the field has been confined to studying time periods that are not very recent. In our search, the most recent data used was by Jenter et al. (2023) and their data covered up till 2012. Our data, on the other hand, covers CEO deaths up until 2022.

We first examine the stock price reactions to CEO deaths using cumulative abnormal returns. Then, we find the relationship between the stock price reactions and whether a CEO is succeeded internally or externally. Our findings allow us to make inferences about the mechanisms governing internal/external CEO succession.

2. Literature Review:

Internal/External CEO Succession

Research has consistently demonstrated the profound influence of CEOs on organizational outcomes. Finkelstein and Hambrick (2009) argue that CEOs shape corporate strategies, culture, and ultimately, financial performance. Empirical studies by Hambrick and Quigley (2014) reinforce this by highlighting the correlation between CEO characteristics and company success, emphasizing the significance of a well-aligned CEO for sustained growth and profitability. Besides the actual effects of CEOs on a company's performance, Finkelstein et al. (2009) argue that CEO performance is perceived as an indicator of company success outside of its actual effects on a company's performance. These papers highlight the significance of a CEO on a company's workings. Essentially, a good CEO can be conducive to growth and success within a company while a bad CEO can be quite detrimental.

CEO hiring is a very difficult task for companies. However, the decision between external recruitment and internal promotion for CEO positions carries its own set of implications. Past research has shown that there are advantages to both internal promotion and external recruitment. However, Kauhanen et al. (2012) and Tsoulouhas et al. (2007) find that external recruitment tends to be far less common for higher positions within firms. In their data from firms in Finland, they see that internal hires account for 19% of the hires at the fifth job level, but account for 48% of all hires at the top of the hierarchy. Lazear and Oyer (2004) observe similar behavior in Swedish data; internal promotions make up 43% of positions at the lowest of five job levels while they make up 88% of the highest job level. Further evidence of this can be found in Harvard Business Review's

2019 list of the best-performing CEOs of the world, compiled by Citrin et al., of which only 1 was hired externally. This suggests that most firms tend to exhibit a bias towards internal promotion for the position of CEO.

The decision to favor internal promotion over external recruitment is not necessarily an illogical one. After all, internal hires have better understanding of how the company works. Furthermore, they may also have relationships with the company's current business partners. At the CEO position, these relationships can be leveraged to secure better deals for the company. Besides that, internal hires present an inherently safer option for the board of directors. Since the internal hire has a history with the company, the board has a better understanding of their capabilities and work style. At the same time, by favoring internal promotion, companies can incentivize current employees to work harder as they compete for promotion.

However, internal promotion comes with risks. Chan (1996) finds that incentivizing internal hiring leads to inefficiencies as companies significantly limit their pool of applicants. This leads to a lot of qualified participants being ruled out for reasons that have nothing to do with their qualifications. In fact, Baker et al. (1994) observe that external hires look much better on paper compared to those employees promoted internally. This suggests that overcoming the bias towards internal promotion requires external candidates to be significantly more qualified than internal participants. They also found that external candidates are older and have more experience on average than internal candidates. Consequently, companies are clearly not always choosing the right person for the job. External applicants who are better, albeit not significantly, than internal applicants are not picked even though they are the best fit for the job.

This is not to say that incentivizing external hiring is a better solution. That comes with its own disadvantages. The first of which is that it discourages worker performance (Waldman, 2003). If a

company is open about favoring external hires, workers lose the incentive of promotion and may be discouraged from working hard at their job. Furthermore, this may also lead to lower attachment from workers to their current companies. Since the prospect of promotion is lower, employees may look to other firms for opportunities for career advancement. Hence, companies that favor external hiring may have a hard time holding on to their employees.

External recruitment can lead to positive outcomes too. For instance, even though internal promotion can be an incentive for current employees, it also presents an opportunity for collusion. If a small team of workers decides to share the benefits of a promotion/bonus, then they may all become complacent and lower their level of productivity across all members. External hires are also less likely to be entrenched in the internal politics of a firm. Moreover, they are not used to the work style of the firm. This is especially pertinent when a firm with deep structural issues looks to hire employees to change their trajectory. The fresh ideas and perspectives that external hires make them attractive candidates for firms looking to make major changes. Such hires may also be beneficial to firms looking to change their business model or diversify, even if it is not the result of poor performance.

Response to CEO Deaths

Many papers have examined the impact of CEO deaths. Starting with Johnson, Magee, Nagarajan, and Newman's (1985) seminal paper, many studies have used event study designs to look at stock price reactions to CEO deaths. This approach is advantageous because sudden deaths happen randomly and thus are exogenous to firm performance and characteristics. Consequently, sudden deaths can serve as a natural experiment to study how firms navigate CEO succession.

There is no consensus on stock price reactions to CEO deaths in the current literature. Hayes and Schaefer (1999) find a positive reaction to CEO deaths, while Worell et al. (1986) find a negative reaction to CEO deaths and a positive reaction to chairman deaths. Studies that further divide CEOs based on their characteristics have interesting findings. Johnson et al. (1985) find that founder CEO deaths have a negative reaction while professional CEO death have a positive reaction. This seems suggestive of managerial entrenchment. This is supported by Salas (2010) who finds a strong positive reaction to manager death when the manager has had a tenure longer than 10 years, and the company has been performing poorly.

Jenter et al. (2023) have similar findings. They note that CEOs in the upper tercile by age have positive and significant stock price reactions to their deaths. The same is observed when looking at older CEOs with long tenures, and founder CEOs who are old (regardless of tenure). For younger CEOs, the reaction is almost always negative. This seems to suggest that shareholders almost wait for older CEOs, founder CEOs, and CEOs with a long tenure to die because they may be very difficult to remove from their position otherwise.

The prevailing methodology for studying reactions to CEO death is to perform an event study analysis, specifically through cumulative abnormal returns. Salas (2010), Worell et al. (1986), Nguyen and Nielsen (2010), and others all use an event study analysis to look at stock price reactions to deaths of executives/managers. This methodology proves useful because sudden deaths amongst executives are not very common and event studies allow a robust analysis with small sample sizes. Furthermore, differences in firm characteristics are automatically accounted for through this methodology.

The cumulative abnormal returns from event studies also allow researchers to study the effects of firm/CEO characteristics on stock price reactions through cross-sectional regressions of

cumulative abnormal returns on each of the characteristics they are interested in. Jenter et al. (2023) uses this methodology to study the effects of age, tenure, being a founder CEO, and other CEO characteristics on stock price reaction to deaths of CEOs. Nguyen and Nielsen (2010) similarly apply this methodology to study the relationship between the degree of independence of a director on the stock price reactions to their death. In summary, event studies provide a very useful and robust way of studying stock price reactions to executive deaths given that sample sizes tend to be very small in this field of study.

3. Data Discussion:

The data we use for this project is a combination of a dataset of CEO turnover and dismissal in S&P 1500 firms (Gentry et al., 2021), stock-price data from CAP-IQ, and hand-collected data on whether each CEO death resulted in internal succession. The source of the CEO turnover data set is EXECUCOMP and the CAP-IQ data set is proprietary data. The turnover data set has 8892 recorded CEO dismissals. Each observation is a CEO dismissal and has information on the following variables:

- Company
- Date of dismissal
- Reason for dismissal
- Name of dismissed CEO
- Interim CEO

The CEO turnover data set only classifies death as the reason for CEO dismissal when the death is unforeseen. Consequently, these turnovers do not include CEOs retiring due to terminal illnesses. This allows us to treat the CEO deaths in this data as sudden deaths. After restricting the turnovers to those whose reason is CEO death, we are left with 81 observations.

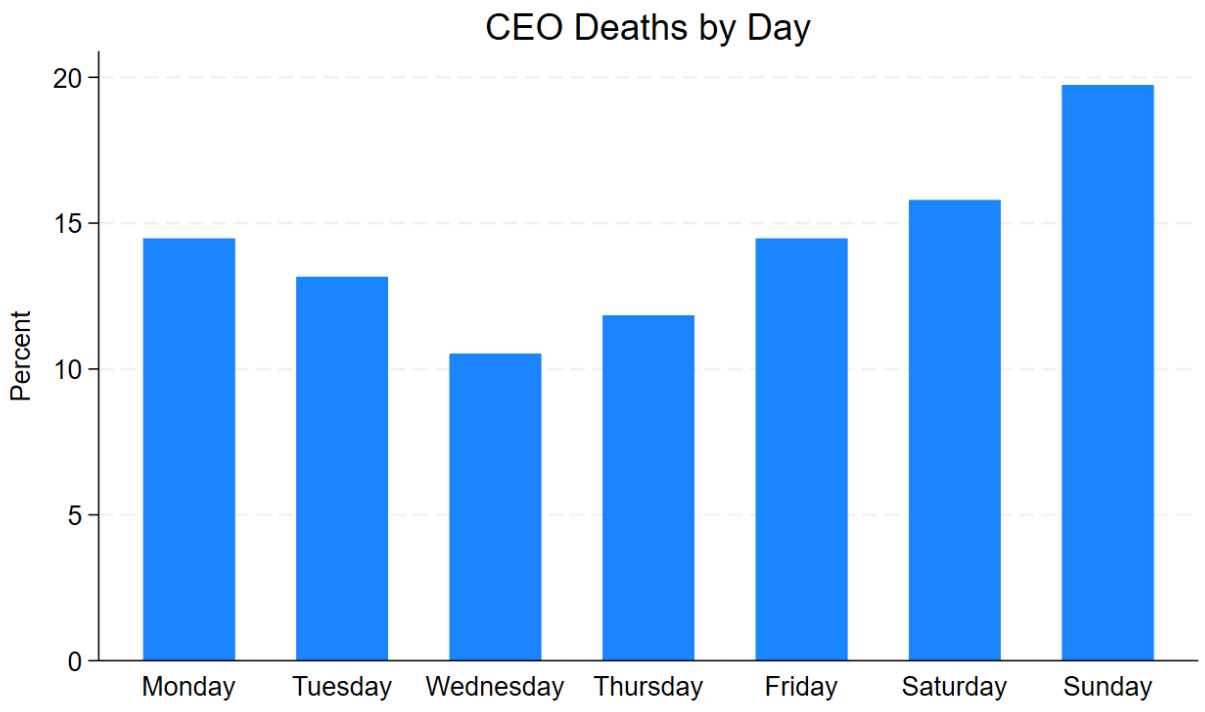

Figure 1 - CEO Deaths by Day of Week

Figure 1 shows a breakdown of CEO deaths by the day of the week. The observations are mostly uniformly distributed, but deaths seem to be less common in the middle of the week. However, this may be due to our small sample size.

To find data on internal/external succession, we scraped the internet for articles and announcements about new CEO appointments. Out of the 81 turnovers in our data set, we find that 8 of them were succeeded by people from outside the organization while the rest were internal

promotions. The discrepancy between the number of internal and external successions in our dataset affects the statistical power of any statistical analysis which separates the two groups.

The CAP-IQ data includes stock price information for each of the companies whose CEO died around the day of death. It also includes the average stock price for the S&P 1500 index from 1995-2024. Using the stock prices for the companies and the S&P 1500 index, we calculate stock price returns by finding the percentage change in stock prices from day-to-day.

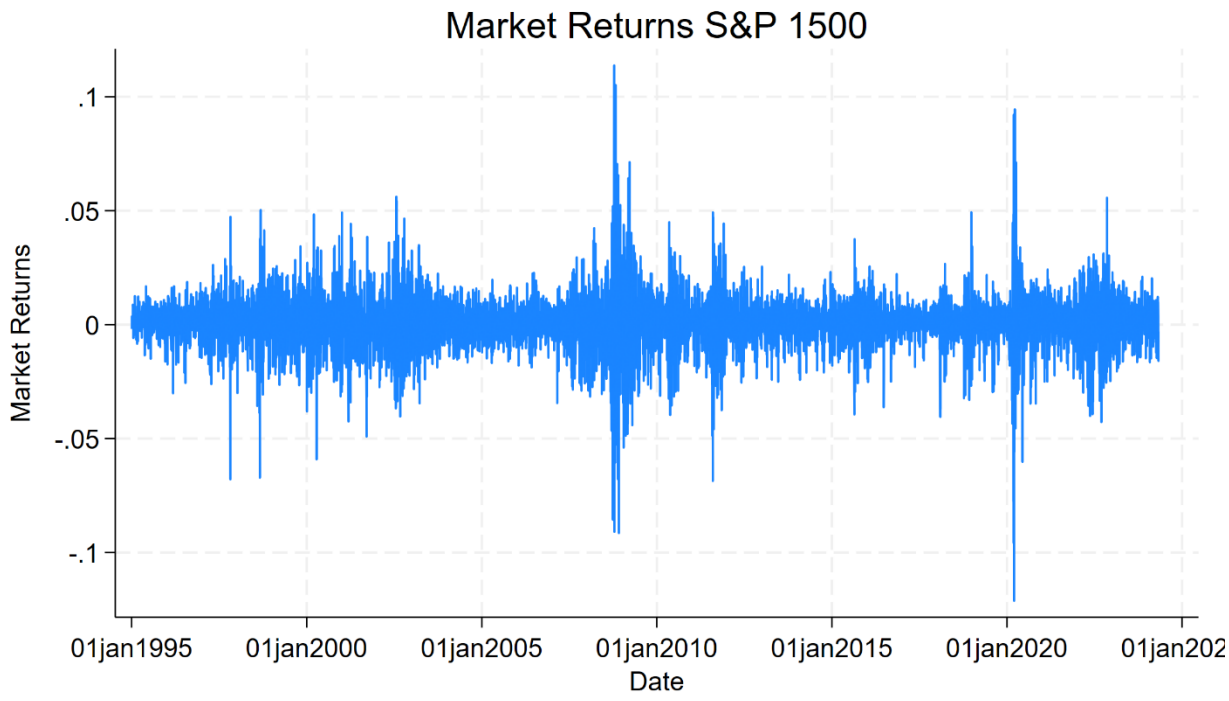

Figure 2 - Market Returns for S&P 1500 Firms

Figure 2 shows the calculated market returns for S&P 1500 firms. As can be seen, there are notable spikes in 2008 and 2020. These coincide with the 2008 recession and the onset of the COVID-19 pandemic respectively. Other than that, there are no considerable spikes in market returns during the time period of our analysis.

Table 4 - Summary Statistics for Company Stock Data					
Variable	**Observations**	**Mean**	**Std. dev.**	**Min**	**Max**
Firm ID	8,076	33404.39	46076.48	1632	184576
Date	8,076	17741.05	3397.181	12058	22888
Price	8,076	3.71E+01	33.0419	1	178.52
Stock Price Return	8,076	0.0005383	0.0279716	-0.311419	0.4358974

Table 1 - Summary Statistics for Stock Price Data

Table 1 shows summary statistics for the company stock data. The stock returns range from -0.311 to 0.435. So, the largest daily percentage increase for the stocks in our data is 43.5% while the largest daily decrease is 31.1%. The mean stock price return is 0.0005, indicating that on average, the percentage change in daily stock price is 0.05%.

4. Methodology

We adapt our event study design from Nguyen and Nielsen (2010). While they study the responses to director death, we restrict our analysis to only CEOs. We estimate a standard event study with and assume a single factor model.

For our event study, we define the estimation window as the period 60 days before the event to 20 days before. We choose a fairly small estimation window to avoid picking up the effects of another possible CEO turnover. Our aim is to have the estimation window represent only the tenure of the deceased CEO. We define our event date as the date that the CEO officially left their position.

Subsequently, to study the effects of stock price response on CEO succession, we estimate the following standard Probit model:

$$P_i(internal_i = 1|CAR_i) = \Phi(\beta_0 + \beta_1 CAR_i)$$

Here, $internal_i$ is a binary variable indicating whether a CEO death resulted in internal succession, CAR_i is the estimated cumulative abnormal return for each CEO death from our event study analysis, and Φ is the cumulative distribution function for the standard normal distribution.

5. Results/Discussion

Stock Price Reactions to CEO Death

Table 2 shows the results from our event study. Panel A shows the daily abnormal returns from 5 days before the event till 5 days after. Since our event study looks at multiple events, we report Patell p-values and adjusted Patell p-values, originally used in Patell (1978). We find that the daily abnormal returns one day after CEO death is positive and significant at a 95% confidence level.

Panel B reports the cumulative abnormal returns across different event windows. We find that the cumulative abnormal returns in the windows (-1, 2) and (-1, 5) are both positive. The CAR for (-1, 2) is significant at a 90% confidence level, while the CAR for (-1, 5) is significant at a 99% confidence level.

t	AR	Patell p-value	Adjusted Patell p-value
Panel A: Daily Abnormal Returns			
-5	0.0049	0.7377	0.7399
-4	0.0026	0.7306	0.7328
-3	-0.0037	0.3833	0.3874
-2	0.0018	0.1741	0.1779
-1	-0.0004	0.9197	0.9204
0	-0.0008	0.9750	0.9752
1	0.0047**	0.0204	0.0215
2	0.0043	0.3513	0.3555
3	-0.0009	0.3939	0.3980
4	-0.0030	0.5925	0.5957
5	0.0035	0.0761	0.0787
Panel B: Cumulative Abnormal Return			
(-1, 0)	-0.0010	0.8038	0.8066
(-1, 1)	0.0034	0.1477	0.1537
(-1, 2)	0.0078*	0.0539	0.0560
(-1, 5)	0.0075***	0.0058	0.0062
*, **, and *** signal significance at 90%, 95%, and 99% respectively.			

Table 2 - Results from event study of CEO death

We observe that there is a 0.47% significant positive reaction to stock returns immediately after the death of a CEO. If we consider longer windows after the death of the CEO, we observe cumulative abnormal returns of 0.78% by 2 days after the death and 0.75% after the death. This suggests that shareholders react positively to CEO death and that this positive reaction persists

until a few days after the death of the CEO. Figure 3 shows the cumulative abnormal returns in the window (-5 ,5). We observe a sharp jump relative to other time periods right after the event. However, we do not see any major, or significant, changes in the days following the first day after the death.

Our findings are not surprising based on the literature. Hayes and Schaefer (1995) similarly find a small, positive, yet significant stock price reaction to CEO death. Furthermore, the fact that the reaction is immediate suggests that the stock market acts frictionlessly and with a high degree of information.

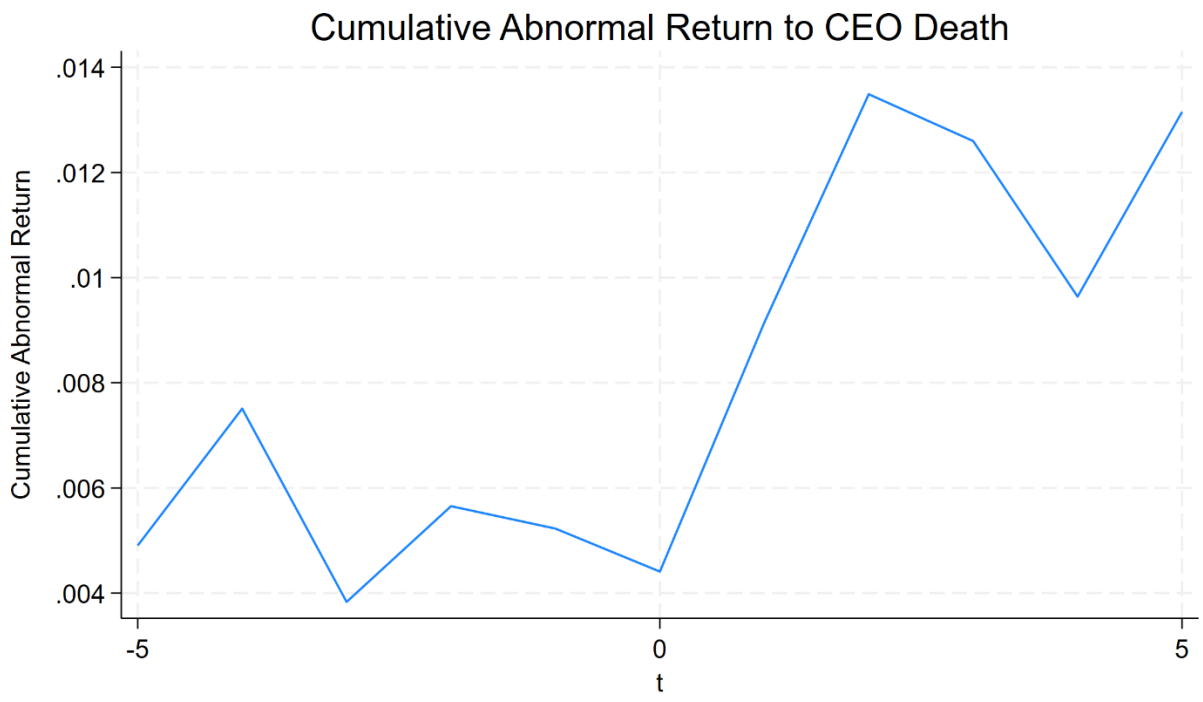

Figure 3 - Cumulative Abnormal Returns to CEO Death

Falsification Test

We perform a falsification test for our abnormal return analysis to address concerns about the selective nature of our sample. To do so, we randomly select a 3-day period between our estimation window and previous event window to be our new event window. We do not consider any window after our event window to avoid capturing any long-term effects of CEO death. Using this new window, we repeat our event study estimation.

t	**AR**	**Patell p-value**	**Adjusted Patell p-value**
Panel A: Daily Abnormal Returns			
-18	-0.0019	0.9043	0.9056
-17	0.0022	0.7093	0.7133
-16	0.0013	0.7759	0.7790
-15	0.0030	0.3454	0.3524
-14	0.0000	0.1695	0.1757
Panel B: Cumulative Abnormal Return			
(-18,-14)	0.0046	0.1634	0.1695

Table 3 - Results from Event Study for Falsification Test

Our randomly chosen event window is 18 days before death till 14 days before death. As can be seen in table 3, we observe no statistically significant daily abnormal returns during this window. Furthermore, the cumulative abnormal return is not statistically significant either. We can reasonably assume that our abnormal returns are not observed due to our model specification.

Estimating Effect of Short-term Shareholder Response on Internal/External Succession

Tables 3 and 4 show the results from regressing whether or not a CEO was succeeded by an internal candidate on the cumulative abnormal returns to stock prices following their death. While we observe a positive relationship, the statistical power is too low to make any conclusions (p-value is 0.892). We predict that this is due to the very low number of external successions in our data set. As a result, our model cannot accurately predict whether stock price reactions lead to internal/external succession. However, we provide suggestive evidence that positive responses to CEO death may increase the likelihood of internal succession in the next section.

Table 3 - Results from Regression of Internal Succession on CAR						
Variable	**Coefficient**	**Std. err.**	**t**	**P>t**	**[95% confidence interval]**	
CAR	0.5034805	3.706457	0.14	0.892	-6.761041	7.768002
Constant	1.94209	0.0451861	42.98	0	1.853311	2.030869
N=81						
R^2=0.0004						

Table 4 - Regression Results of Internal Succession on Cumulative Abnormal Returns

Table 4 - Marginal Means from Regression of Internal Succession on CAR						
Variable	**Coefficient**	**Std. err.**	**t**	**P>t**	**[95% confidence interval]**	
CAR	0.0953189	0.7017673	0.14	0.892	-1.28012	1.470758

Table 5 - Marginal Means from Regression of Internal Succession on Cumulative Abnormal Returns

6. Conclusion:

We find a positive, immediate stock price reaction to CEO deaths. Our findings are highly statistically significant and even pass a falsification test. These results are consistent with the literature on the topic which has found positive links between stock price reactions and CEO death. The results also provide evidence that the stock market has a very high degree of information transfer between firms and shareholders, and that the stock market operates with very few frictions because the reaction to CEO death is immediate and then disappears after the first time period.

While we are unable to make conclusions about the effect of stock price response on whether a CEO is succeeded internally or externally, we hypothesize that positive stock price responses to CEO death increase the likelihood of internal succession. We argue for this idea and provide a way to test our hypothesis using a real-life example and prior research on the subject.

Firstly, when we remove the external successions from the data, we observe a clear and significant spike in cumulative abnormal returns. Figure 4 clearly highlights this spike. While this itself does

not establish anything about the causal relationship between internal succession and positive stock price reaction, it is what we would expect to observe if there were a causal relationship.

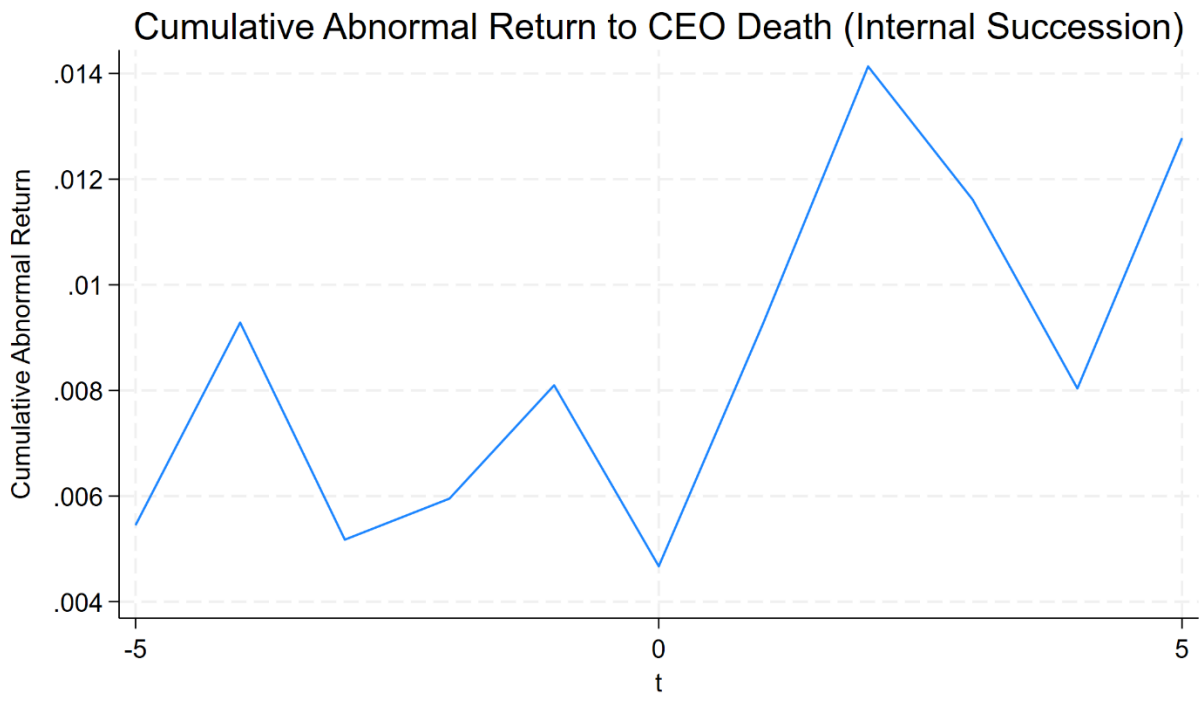

Figure 4 - Cumulative Abnormal Return to CEO Death (Internal Succession)

The best way to explain why positive stock price reaction would result in internal succession is through managerial entrenchment. If a CEO overstays in their position, shareholders will identify successors out of discontentment with the current CEO's performance. Meanwhile, other executives within the firm will be incentivized to portray themselves as worthy successors because they know that they might be better suited for that job. As a result, the heir apparent is likely to be from within the firm. Shareholders would have more information about executives within the firm and will be in a better position to gauge their abilities. On the other hand, looking externally for a CEO would be attached with a far greater deal of uncertainty. Shareholders would know little about how someone at another company would fare at the current one, especially compared to employees

that are already at the firm. Furthermore, if shareholders identify a potential successor for CEO but have no power to appoint him to that position, they would respond positively when their identified successor finally becomes CEO.

We can overcome the limitations in our study and test our hypothesis if we have data on individual CEO characteristics and our small sample of external successions. The required data is available on EXECUCOMP, a database which unfortunately we do not have access to. However, if we had data on the tenure/age of the CEOs, we could make a more compelling argument by including CEO tenure in our model and testing to see whether CEOs with longer tenures/higher ages tend to have positive stock price responses, and whether these stock price reactions predict internal succession for CEOs with longer tenures/ higher ages.

The literature supports this hypothesis as well. Jenter et al. (2023) find that older CEOs, CEOs with long tenures, and founder CEOs (the most likely candidates to overstay their ideal tenure) are all likely to have positive stock price reactions to their death. Similarly, Johnson et al. (1985) find that founder CEOs tend to have positive stock price reactions to their death, while professional CEOs have negative stock price reactions to their death. Since professional CEOs are usually appointed, unlike founder CEOs, it is more likely that they are chosen based on merit. So, the perception of their abilities, as compared to founder CEOs, is probably more favorable.

An example of this from our data is the succession of former Scholastic Corp. CEO, Richard Robinson. Mr. Robinson was CEO of the company for almost 50 years until his death at the age of 84. While Mr. Robinson oversaw the company through very profitable times, the company had been the subject of controversy towards the end of his tenure due to the publication of a book that was perceived to be racist. His replacement, Peter Warwick, had formerly been CEO of Thomson Reuters where he successfully oversaw their global expansion. He joined Scholastic in 2014 as an

independent director and was appointed President and CEO in 2021. It is quite plausible that his success at Thomson Reuters made him an excellent candidate to be successor to Mr. Robinson. The stock market definitely thought so as the abnormal returns to the death of Mr. Robinson was almost 8%.

The idea of entrenchment is not limited to CEOs or executives in corporations. Rather, it is indicative of the broader nature of leadership roles. Take for instance the current Presidential race between Joe Biden and Donald Trump. Many surveys have shown that the average American voter feels that both presidential candidates are too old to run for office. However, the power that each of them wield over their parties ensures that they remain the face of their parties even though they may not be the ones best suited for that role. This leaves American voters feeling helpless as they have to make do with candidates who, in their opinion, are not the most efficient choice for President. Countless other examples can be found of leadership entrenchment leading to inefficiencies, from more older athletes retaining their spots on a team regardless of their performance, to US Supreme Court judges having lifelong tenure regardless of their declining judgment with age.

The implications of what our study hoped to find are far-reaching because it potentially reveals a lot about the nature of leadership entrenchment. The potential for further studies on the topic is great and with access to the right data (which is available on EXECUCOMP), we could gain answers to the unsolved questions of this paper quite soon. On a somewhat morbid note, our predictions suggest that if one is faced with a situation with leadership entrenchment, an exogenous shock that removes the leader (death, serious illness, etc.) is the best case scenario one can hope for.

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