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How does an untimely death of an executive affect stock prices and company performance?

Yu Zhang (Sharon)

Of

MASTER OF SCIENCE

In Financial Economics

Introduction

The main purpose of this project is to investigate if the sudden death of an executive will affect the company's stock price and/or performance, and to examine any other impacts of an executive's untimely death. Are executives the most important person in a company? If so, how much is an executive worth in comparison to the company's overall value? Is a CEO's pay actually worth what the company is getting in return? Many researchers believe that the CEO and executives are the soul of a company, however, there is limited evidence to prove that hypothesis (Fama and Jensen, 1983). There is plenty of research looking into how CEO and executives' value correlate with the company's overall value; however, there is very limited research on how much the other board members contribute to a company to be used for comparison as well.

The research used and collected for this project was comparing the stock prices as a result of a CEO's sudden passing. This research was based on deaths that occurred between 1980 and 2013. The research studied found that evidence and data supported the hypothesis that if an executive came to a sudden death, the stock prices and returns were negatively affected. When some executives died unexpectedly during the weekend, or after the end of the work day, and their death news did not come out until the next day. When that was the case the stock was not shown to have statistically significant results until the next business day.

Proxies for entrenchment used in earlier studies include age and/or tenure of the executive (Berger, Ofek, and Yermak 1997; Yermak 2005). There was limited evidence to demonstrate a strong correlation between the CEO's age or how long they have been the CEO of the company and the effect it had on the stock. Also, the results showed that how the stock price reacted to a sudden executive death was also negatively correlated with the company's past performance. Those who had been a CEO of the company for a longer period of a time had a statistically significant negative correlation in comparison to the CEO who had spent a shorter time in the company.

Literature review

Senior management is seen as the key determinant for a successful company, it is proven to be an important variable which affects the board members' value (Etebari, Horrigan and Landwehr, 1987). Senior management can generally be divided in to two categories: there are the high-ranking positions which are generally the Presidents, CEO, CFO, etc. In a broader sense senior management can also include chairman of the board, and chairman of the supervisory committee. In academic research, all of the position listed above are generally considered senior management, it is only within the companies that the specific distinctions are made between who is and is not considered senior management.

Two methods were observed to see how the CEO's sudden death affected the company. The first method was to test the stock prices two days before and three days after the CEO's sudden death and observe for any reactions or changes that occurred. Some early research indicates that a CEO's sudden death can cause the stock prices to slightly increase (Warrell et al., 1986; Etebari, Horrigan and Landwehr, 1987). Some of

the speculated reasons for this increase are that the company sees a potential to bring in a new CEO with fresh ideas and this could lead to better performance. In a more recent research paper by Sals (2010), it is shown that the sudden death of a CEO can cause the stock price to change by -0.64% as a result.

Throughout the research, similar results were found and the stock prices were proved to be similarly changed as found by Salas (2010). It was also shown that depending on whether the replacement CEO came from within the company or was an external hire also affected the stock prices after the CEO's death. Candidates are often internal executives who have been trained for higher levels of responsibility and whose skills, experiences, and leadership qualities match the strategic, operating, and cultural requirements of the company (Larcker and Tayan, 2012). A specific example which demonstrates this is that when Steve Jobs, who was not the only CEO but the cofounder of Apple, passed away on Oct 5, 2010 there was an significant effect on the stock prices(Larcker and Tayan, 2012). The stock prices dropped 1.5% as a result of his death(CRSP). While Job's was ill and his health was declining, whenever the press would run stories about his declining health, the stock prices were negatively affected even though he was only ill. Apple's successor Tim Cook was selected internally from the company (Larcker and Tayan, 2012) and he had been around the company for many years before Jobs' death on the board of directors and had already proven his worth to the company. After the press announced the new successor of Apple, the stock price not only went back to its previous price but it actually raised by 5.13% (Combs, Ketchen Jr, Perryman and Donahue, 2007). An example that does not show the negative correlation between a CEO's death and the company's stock prices, is when the CEO of Cott

Corporation died on Feb 3, 1998 because of cancer. The company's stock return of that day was actually raised by 8.1% (CRSP) instead of decreasing as people expect and is generally the case. This shows that Investors have more confidence for those companies, if they think the internal successor can boost the company growth(Larcker and Tayan, 2012). So it is debatable of whether one CEO's death can cause a negative returns of the company or not.

Insert Table 1 here.

Data Methodology

The list of executives names who passed suddenly were found in the research paper: "Sudden Death of a CEO: Are Companies Prepared When Lightning Strikes?" Most of the data was collected throughout internet resources. Each company's death information was verified through Google Finance, Yahoo Finance, or searching their obituaries directly. There was also press and media information that helped to decipher the cause of death for those executives whose information was not readily available elsewhere. There were thirty executives among the list in the original research paper who were not used because there was either a lack of information on the company, the death, or some of the financial specifics. The rest of the financial data, such as stock prices, and returns, were collected from The Center for Research in Security Prices (CRSP).

Insert Table 2 here

The following table shows the observed details from the research. As can be seen from the summary statistic table, the majority of deaths from the sample of CEOs died of a heart attack. There is a 53% of chance that the CEO died because of a heart attack, followed by cancer(12%), and plane crash(17%). There are also other possible reasons

for death such as suicide, brief illness, and so on (Larcker and Tayan, 2012). The age of the CEO's sudden death varied between the ages of 45 and 71. The average age of death was 57 years old between the CEO's. The tenure of the CEO had a wide range of experience from 1 year to 10 years. The mean of a CEO's tenure at the time of their death was approximately 8 years.

Insert Table 3 here

In my regression, the dependent variable is abnormal return. To calculate abnormal returns, the first step is by using the formula:

$$R_{i,t} = \alpha + \beta R_{m,t} + \epsilon_t$$

Using (t) to represent the day the CEO died, a regression can be run to see what is the systematic risk for prior two trading day and three days after their death. In this formula, “ $R_{i,t}$ ” shows one company's return at the time of death (t), and “ $R_{m,t}$ ” represents the amount for a market return. Alpha and beta each shows the abnormal returns for a company on each trading day. Then residuals were matched for each company.

Daily abnormal returns (AR_{it}) were obtained by subtracting predicted or normal returns from actual returns for each day of the event window (Combs, Ketchen Jr, Perryman and Donahue, 2007):

$$AR_{i,t} = R_{i,t} - \alpha_i - \beta_i R_{m,t}$$

Cumulative abnormal return can be calculated as

$$CAR(\tau_1, \tau_2) = (1/N) \sum_{t=\tau_1}^{\tau_2} CAR_i(\tau_1, \tau_2)$$

Where $CAR(\tau_1, \tau_2)$ is the cumulative buy and hold abnormal return for period (τ_1, τ_2) for firm i. It is necessary to calculate Cumulative Abnormal Returns (CAR) using

standard event methodology around the sudden executive death. An event study is run over a two day event window in order to better capture market responses for transactions that occurred after the close of trading on the day of the announcement (Combs, Ketchen Jr, Perryman and Donahue, 2007). This is shown using the 2 days before the trading days and 3 days after the event happened.

Since my regression model dependent variable is CAR, it is important to use a few independent variables to control the regression. Age is the CEO's age when he or she died suddenly. How long the CEO was in one company is used as their tenure. Whether after the executives died the company's successor is from internal or external is called governance, it is a dummy variable in the regression which represents if their company executives replace by an insider is 0, 1 otherwise. Board size is how many board members the company has. Competitor is the number of firms with the same SIC code. It is as follows:

$$CAR_{company,i} = b_0 + b_1 ROA + b_2 age + b_3 tenure + b_4 governance + b_5 boardsize + b_6 competitors + u$$

The following tables show the regression result. The number in parenthesis is the p-value according to each variable. Generally speaking, when a CEO died suddenly, the stock price will react on the same day or the next trading day, it will also cause some negative impact on the returns. Age and tenure variable from the regression is a positive number, and it show statistically significant, suggesting that shareholders often view older CEOs as entrenched or inflexible and are pleased by their departure (Combs, Ketchen Jr,

Perryman and Donahue, 2007). We can see from the regression results that, for every one percent change in dependent variable, there is a 0.136 percent change in CEO's age. Variable return on asset (ROA) and board size shows a negative relationship between abnormal returns, for every percent change in the abnormal returns, there is a negative 0.073074 change in return on asset(ROA). The sudden death of a CEO also provides an unfortunate opportunity to receive insight into the general quality of the firm's governance (Salas, 2010). When a CEO dies, there are two ways to announce the CEO's death information and the successor. The first is the announcement of the death itself. The second is the announcement of the successor. The price of a company tends to go down following news of a CEO's death if the CEO is seen as a strong leader or vital to the company, and it tends to go up if the CEO is seen as entrenched, a poor leader, or inhibiting a sale of the company. In this way, a positive stock price reaction implies the presence of poor corporate governance, while a negative stock price reaction implies good governance (Larcker and Tayan, 2012).

Insert Table 4 here

Conclusion

This research used CEO death information from 1980 to 2013 to analyze the stock reaction and what other variables will affect the company's overall performance. It shows as well as the analysis completed found that stock price and return were positively correlated with each other. When age of a CEO from the regression is a positive number, it shows a statistical significance. The correlation was not as high as had been expected before the analysis was completed. Also, a surprising component that greatly affected the

company's stock prices and success after a CEO's untimely death was who was instated as their replacement. If a successor was hired from within it seems to rebuild the investor's confidence in the company and their future performance. Take Cott Corporation for example, the stock price went up significantly, which indicates that if a CEO was older and seen as a hindrance to the company, the new successor will bring more new energy to the company and has great expectation that he or she has the willingness to lead the company for a better future.

Table 1 Stock price reaction due to sudden death of CEO

This Table presents the detail information of the CEOs death, including the company name, death date , cause of death and the first trading day reflection of the stock market.

The stock market changes reflects combined causes.

Company Name	Death Date	CEO	Return(D0)	Return(D1)	Cause
		Steven			
Micron Technology	2/3/2012	Appleton	2.979%	-2.830%	Plane crash
Apple	10/5/2011	Steve Jobs	1.544%	-0.233%	Cancer
		Jai			
Sigma-Aldrich Corp	11/13/2010	Nagarkatti	-0.982%	-1.872%	Heart Attack
		Bruce			
Lazard	10/14/2009	Wassertein	5.537%	-1.109%	Heart Attack
		Jim			
McDonald's	4/19/2004	Cantalupo	-2.586%	-0.748%	Heart Attack
		Joseph			
Dana Corp.	9/22/2003	Magliochetti	-0.509%	1.597%	Panceratitis
		Trangile			
Pharmaceutical	1/28/2002	David Bary	3.316%	0.988%	Heat attack
		Michael			
Atlas Air	1/24/2001	Chwdry	0.173%	-5.000%	Plane crash

Park Place		Arthur			Bone Marrow
Entertainment	10/19/2000	Goldberg	1.861%	-6.393%	Failure
Herbalife	5/21/2000	Mark Hughes	-12.025%	-12.025%	Overdose
Wendy's	12/18/1999	Gordon Teter	0.303%	-1.511%	Heart Attack
Cott Corp	2/3/1998	GeraldPencer	-2.273%	8.140%	Cancer
Texas Instruments	5/29/1996	Jerry Junkins	4.662%	0.223%	Heart Attack
McCormick &Co	7/14/1994	Bailey homas	-3.693%	-0.885%	Heart Attack
Woolworth F.W.		Edward			Brief Illness
Co.	10/26/1982	Gibbons	3.402%	1.015%	
Texasgulf Inc.		Charles			Accident(plane
	2/11/1981	Fogarty	-1.136%	-3.908%	crash)
Dresser Industries		James R.			Heart Attack
	7/21/1982	Brown, Jr.	2.913%	0.000%	
Host International		Hulsey			Heat Attack
	9/29/1980	Lokey	-7.843%	6.383%	

Table 2 Observation count by year.

Table 2 shows observation count of unexpected CEOs death by year, from 1980-2014

Year	Count
1980	1
1981	2

1982	2
1994	1
1996	1
1998	1
1999	1
2000	2
2001	1
2002	1
2003	1
2004	1
2009	2
2000	2
2010	1
2011	1
2012	1
Total	22

Table 3 Summary Statistics

The following are descriptive statistic for different characteristics for the dataset. The dataset includes all 19 observations collected for sudden CEO death from 1980 – 2000 period. Panel A shows the CEO characteristics. Panel B shows the cause of death, and Panel C shows the company detail information.

Source: Borokhovich, Brunarski, Donahue, and Harman. The Importance of Board Quality in the Event of a CEO Death. The Financial Review 41.

	Mean
Panel A	
CEO characteristics	
Mean Age	56.29 years old
CEO Died younger than the Mean Age	26.316%
CEO Died older than the Mean Age	73.68%
Panel B	
Cause of death	
death due to heart attack	53%
death due to airplane crash	17%
death due to cancer	12%
Other cause	18%
Successor internal	75%
Cumulative abnormal returns	0.86%
Panel C	
Firm characteristics	
Average firm asset	2,100,000
Average Board size	8.95

Table 4 Abnormal Return Regression Analysis Result

Results from regression analysis of the stock price reaction of sudden CEO deaths are listed as below. In this regression model, the independent variable is the cumulative abnormal return .

Variable	Model 1	Model 2
intercept	-0.0713 (0.6047)	-0.1102 (0.5540)
governance	0.054 (0.015)	0.047 (0.026)
ROA	-0.073074 (0.30994)	-0.072088 (0.41994)
age	0.00119 (0.5732)	0.00136 (0.00283)
tenure	0.00113 (0.7255)	0.0018 (-0.00418)
boardsize	-0.001 (0.531)	-0.001 (0.43)
competitors	0.454 (0.438)	0.376 (0.574)
R-squared	0.3917	0.3505

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Salas, J.M., 2010, “Entrenchment, Governance, and the Stock Price Reaction to Sudden Executive Deaths”, *Journal of Banking and Finance* 34: 656-666.

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```
options ls=256 ps=30000 nocenter;
proc import datafile = 'D:\FIN 6460\Efficiency, Markets,
Instruments\week 2 code\techstocks.csv' out=d1 replace;getnames=yes;
proc print data=d1 (obs=20);run;

proc sort data=d1;by TICKER;
proc reg data=d1 noprint;
model RET = vwretd;by TICKER;
output out=d2 r=u;
proc print data=d2 (obs=20);run;

proc means data=d2;var u;run;

proc sort data=d2;by TICKER descending date;
data d3;
set d2;
u_t1 = lag(u);
u_t2 = lag2(u);
CAR01=u+u_t1;
CAR02 = u+u_t1+u_t2;
if date ^= 20111005 then delete;
if TICKER = "AAPL" then delete;
proc print data=d3 (obs=20);run;
proc ttest data=d3;var CAR01 CAR02;run;
```