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The Quality of Corporate Governance and the Length it Takes to Remove aPoor Performing CEO. Does performance of the former firm affect a CEO's ability to find an identical with a subsequent firm?

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ESSAY 1: THE QUALITY OF CORPORATE GOVERNANCE AND THE LENGTH IT TAKES TO REMOVE A POOR-PERFROMING CEO.

Abstract:

In this paper, we investigate the effects of internal corporate governance on the length it takes to remove a CEO after the initial sign of poor firm performance. We find that firms that have a better quality of internal corporate governance are quicker to remove poor-performing CEOs. This result persists after controlling for other factors that might influence the CEO removal decision.

Keywords: CEO turnover, quality of internal corporate governance, length
Firm performance, board structure

1. Introduction

Empirical evidence suggests that the quality of a firm's corporate governance impacts its decision to terminate a poor performing CEO (e.g., Weisbach (1988), Morck et al. (1988), McConnell and Servaes (1990), Jensen (1993), Shivdasani (1993), Ofek (1993), Denis and Denis (1994), Denis, Denis and Sarin (1995); Mikkelson and Partch (1996), Borokhovich, Parrino, and Trapani (1996), Yermack (1996), Karpoff, Malatesta, and Walkling (1996), Mikkelson and Partch (1997)), Denis, Denis and Sarin (1997); Perry (2000), Faleye (2003), Maury (2006), Kato and Long (2006), and Conyon and He (2008)). Pursuing the same line of research, we posit in this paper that a firm with a better quality of governance mechanisms will likely be quicker to terminate its CEO after the initial sign of poor firm performance. Specifically, we test the hypothesis that the better the quality of corporate governance in place, the shorter is the time taken by the firm to get its poor-performing CEO removed.

Based on the existing literature on corporate governance, we employ, along with some control variables, a group of proxies that reflect the quality of corporate governance system. The proxies include fraction of outside directors on board, board size, level of managerial ownership, levels of holdings by CEO, levels of holdings by controlling shareholder, and the magnitude of incentive compensations

to outside directors. We use three proxies to measure firm performance: ROA (return on assets), ROE (return on equity), and M/B (market-to-book).

Our sample consists of S&P 500 firms in which involuntary CEO turnovers occur from during the 2004-2011 period. We compute the length by measuring the number of quarters it takes for such a turnover to take place subsequent to the firm's first poor performance during the tenure of the CEO in question. This sample selection process might induce a bias when interpreting results as it allows one to observe only those firms that actually fire their CEOs but not the ones that choose not to take such an actions in spite of the poor performances. To address this problem known as incidental truncation, we employ Heckman's two step procedure. The first step in this procedure is to apply a probit model to the whole population 500 firms. The second step applies the least square estimates to the selected sample (i.e., firms that actually remove their CEOs).

Consistent with the hypothesis, we find that a firm with a better quality of governance is quicker to fire its poor-performing CEO. Although several studies examine the linkage between CEO firings and good system of corporate governance, we contribute to literature by relating corporate governance quality to the speed at which a poor-performing CEO is removed.

The remainder of this paper is organized as follows. Section 2 discusses the pertinent literature, while Section 3 describes the sample, testing models, and

methodology. Section 4 presents results supported by robustness checks and Section 5 concludes.

2. Literature Review

2.1. Why do CEOs get removed?

Why do firms remove CEOs? This question has been broached by researchers. In this paper, we present three, not necessarily mutually exclusive, explanations in answer to the question. They are information asymmetry between the CEO candidate and the board, sociopolitical forces, and poor firm performance.

Rijck (2011) suggests information asymmetry that exists at the time of hiring the CEO is a reason for firing CEOs when the asymmetry is subsequently removed. In this construct, the board is the principal, and the potential CEO candidate is the agent. The candidate will do everything to fit the profile for the position and exaggerate his or her personality traits that are positive. The candidate has the incentive to hide information that might hinder the suitability of his candidacy. Such information, which can be highly relevant to the board for the decision-making process, is kept from the board. The resulting information asymmetry leads to the initial hire and, upon removal of information asymmetry, subsequent fire of the CEO.

Fredrickson et al (1988) propose a model (figure 1) suggesting that the board's actions can be explained by several sociopolitical forces, dealing with

interpersonal relations, coalitions, and power. Four such forces appear critical-(a) the board's expectations and attributions, (b) the board's allegiances and values, (c) the availability of alternative candidates for CEO, and (d) the power of the incumbent CEO. Therefore, the event of dismissal can be explained best by using a combination of social and political forces, not simply by considering

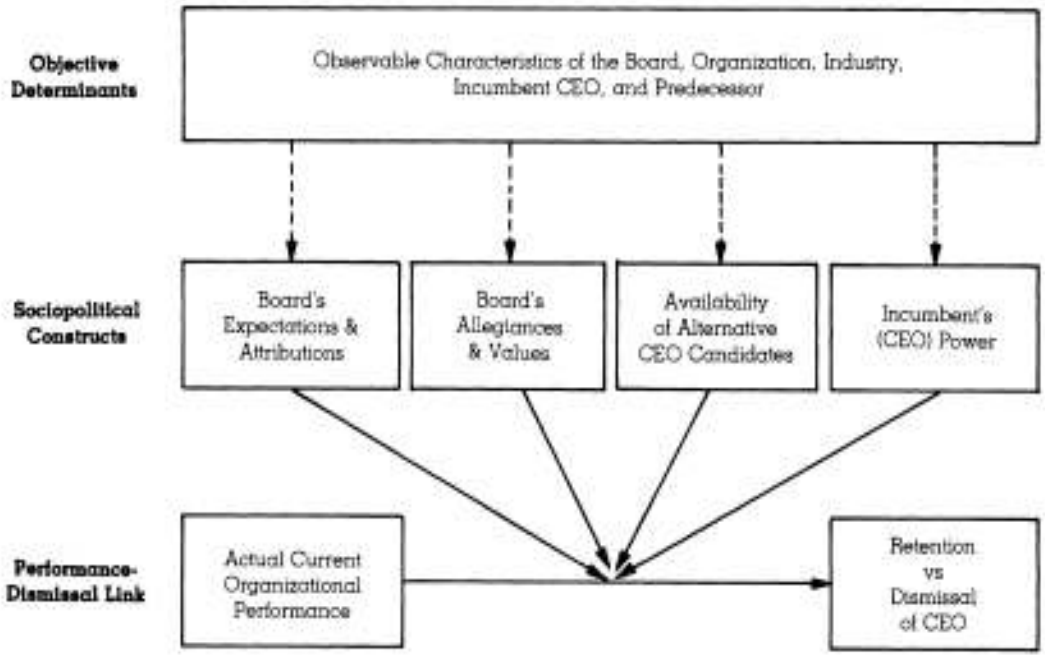

Figure 1: A model of CEO dismissal

whether it is rational for the organization to remove or retain executives associated with a given level of organizational performance. It should be emphasized that the four sociopolitical forces, along with organizational performance, operate in a ceteris paribus manner to affect the likelihood of dismissal. For example, the

poorer the firm's actual performance, the greater the incumbent's power must be in order to keep his or her job. Similarly, the stronger the board's allegiance to the CEO, the more abundant the pool of possible replacements must be for the board to consider dismissal, and so on. None of the forces operates alone, although one extreme condition (e.g., high expectations of the board or a very powerful incumbent) may create the appearance that the other forces do not matter.

The third category of explanations focuses on the sub-par firm performance when the incumbent CEO at its helm. In the next subsection, we survey this literature.

2.2. On the linkage between poor performing firm and dismissal of its CEO

The linkage between forced termination of CEOs and their subpar performance has been established in several studies. , including McEachern (1975), Salancik & Pfeffer (1980), James & Soref (1981), Coughlan and Schmidt (1985), Brickley et al. (1988); Weisbach (1988); Warner, Watts, and Wruck (1988), Morck et al. (1988); McConnell and Servaes (1990); Denis, Denis and Sarin (DDS) (1995); Borokhovich et al (1996); Yermack (1996); Denis, Denis and Sarin (1997); Parrino (1997), Huson (2000) ; Perry (2000); Maury (2006); Kato and Long (2006); Conyon and He (2008)).

Parrino (1997) document negative relation between firm performance and the probability of forced chief executive officer (CEO) turnover, Coughlan and

Schmidt (1985) and Warner, Watts, and Wruck (1988) provide supports by showing that poor performance is associated with CEO turnover. These studies discuss about the board's effectiveness in replacing CEO following poor firm performance; however, these studies do not explore the differences in monitoring between the managers who serve as inside directors (full-time employees of the company) and directors who are outside directors (not full-time employees of the company, neither work for the corporation nor have extensive dealings with the company).

Weibach (1988) examines how differently inside and outside directors behave in their decisions to remove top management. By testing on 485 publicly held corporation between 1977 and 1980, he argues that firms with outsider dominated boards (all firms in which at least 60% of the board are outsiders are designated outsider-dominated firms) are significantly more likely than firms with insider dominated boards (all firms in which outsiders make up no more than 40% of the directors are considered insider-dominated firms) to remove the CEO following poor firm performance. His findings suggest that outside directors are more likely than inside directors to fire CEO after poor firm performance because successors from outside the firm are more willing to break with the failed policies of their predecessors. He also argues that outsider-dominated boards tend to add to firm value through their CEO changes. This addition to firm value is largest when

the change is preceded by poor performance. Similar results are reported in Maury (2006), Kato and Long (2006), Canyon and He (2008), Chen (2012).

The relation between firm performance and top executive is also driven by many other factors such as board size (Yermack (1996)), ownership (Morck et al (1988), DDS (1997), Kato and Long (2006), Conyon and He (2008)), director compensation (Perry (2000). This relation is also affected by takeover market which is reported in Mikkelson and Partch (1997) and Hadlock and Lumer (1997). This evidence suggests that top managers face reduced disciplinary pressure in periods where there is less takeover activity.

The association between CEO turnover and firm performance increases during the recession than boom time. A related study by Jenter and Kanaan (2008) tests the first prediction that the increased probability of CEO dismissals in recessions should be concentrated on underperforming CEOs. Underperformance in bad times reveals low CEO skills or a lack of the specific skills required to succeed in bad times, and thus leads to the CEO's dismissal. They test this idea by estimating whether the sensitivity of CEO turnover to peer performance depends on whether a CEO underperforms or outperforms the benchmark. The result shows that the marginal effects of peer performance on CEO dismissals separately for underperformers and for out performers. They conclude that the peer performance effect on CEO turnovers is driven by boards being much more likely to remove

underperforming (but not outperforming) CEOs in bad times than in good times. The closely related second prediction is that CEO turnover should be more sensitive to firm specific performance in recessions than in booms. They found that the effect of firm-specific performance on CEO turnover is smallest when industry performance over the prior two years was high, and is largest when industry performance was low.

Similar evidence that CEO turnover is negatively associated with firm performance also appears in Australia (Suchard et al (2001)), Belgium (Renneboog (2000)), Britain (Conyon (1998), Conyon and Florou(2002)), and China (Conyon and He (2008), Kato, and Long (2006)).

3. Sample, Data, and Methodology

3.1. Sample

Our sample originates from the S&P 500 firms covering the 2004-2011 periods. The firms with CEO turnovers are then identified by consulting with the ExecuComp database**.** The resulting lists of CEO turnovers are then cross-checked with the Wall Street Journal (WSJ) and Wall Street Journal Index (WSJI) to confirm the dismissal announcement date as well as to ascertain the stated reason for dismissal.

We classify all CEO turnovers into two categories: voluntary CEO turnovers and involuntary CEO turnovers based on the reasons given by the firm. A CEO

change is considered as a voluntary CEO turnover when it occurs due to planned succession, retirement, voluntary resignation, stepping down, bad health, death, or interim replacement. An involuntary turnover occurs when a CEO is fired, forced to resign, or resigned due to scandal, accounting conflicts, and poor performance. This yields a final sample of 421 CEO turnovers, including 405 voluntary CEO turnovers and 16 involuntary CEO turnovers. 3.8% of the CEO turnovers are classified as involuntary. The annual average forced CEO turnover (Forced CEO turnover/Number of years) is 47.5% which is consistent with what reported in Taylor (2010) (48.85%, a sample of firms over 1970-2007) and that in Chen (2012) (41.4%, a sample of firms over 1995-2009). Out of the total 405 voluntary turnovers, only 58 are strictly voluntary in the sense these turnovers are not related to retirement, death, illness etc. I refer to these cases as truly voluntary turnovers.

3.2 Main Model

Consistent with my hypothesis, given below is the general model I test in this paper. Controlling for other variables that might be relevant,

LENGTH = f (quality of corporate governance) where the LENGTH is measured by the time it takes to fire a CEO after the first poor performance of the firm.

3.2.1. Length Defined: Incidental Truncation

The length it takes to replace CEOs after the initial sign of poor firm performance (LENGTH) is measured by the difference between the time the firm

shows the first sign of poor firm performance and the time when the CEO is dismissed. The length is observed only for a subset of population ---the firms that actually remove their CEOs consequent upon their first poor performance; it cannot be observed for firms that choose not to fire their CEOs. This common form of sample selection is called incidental truncation.

The usual approach to incidental truncation is to use the Heckit method based on the work of Heckman (1976). First, we need to add an explicit selection equation to the population model:

$$y = x\beta + u, E(u|x) = 0 \text{.....(1)}$$
$$s = 1[z\gamma + v \geq 0] \text{.....(2)}$$

Where, s=1 if we observe y (the length), and zero otherwise. We assume that elements of x and z are always observed, we write $x\beta = \beta_0 + \beta_1 x_1 + ... + \beta_k x_k$ and $z\gamma = \gamma_0 + \gamma_1 z_1 + ... + \gamma_m z_m$

The equation of primary interest is (1), and we could estimate β by OLS given a random sample. The selection equation (2), depends on observed variables, z_h, and an unobserved error, v. A standard assumption, which we will make, is that z is exogenous in (1): $E(u|x,z) = 0$

In fact, for the following proposed methods to work well, we will require that x be a strict subset of z: any x_j is also an element of z, and we have some elements of z that are not also in x.

The error term v in the sample selection equation is assumed to be independent of z (and therefore x), we also assume that v has a standard normal distribution. We can easily see that correlation between u and v generally causes a sample selection problem. To see why, assume that (u,v) is independent of z. Then taking the expectation of (1), conditional on z and v, and using the fact that x is a subset of z gives $E(y|z,v) = x\beta + E(u|z,v) = x\beta + E(u|v)$,

Where $E(u|z,v) = E(u|v)$ because (u,v) is independent of z. Now if u and v are jointly normal (with zero mean), then $E(u|v) = pv$ for some parameter ρ. Therefore,

$$E(y|z,v) = x\beta + \rho v$$

We do not observe v, but we can use this equation to compute $E(y|z,s)$ and then specialize this to s=1. We now have:

$$E(y|z,s) = x\beta + \rho E(y|z,s)$$

Because s and v are related by (2), and v has a standard normal distribution, we can show that $E(v|z,s)$ is simply the inverse Mills ratio, $\lambda(z\gamma)$ then s=1. This leads to the important equation

$$E(y|z,s=1) = x\beta + \rho\lambda(z\gamma).....(3)$$

Equation (3) shows that the expected value of y, given z and observability of y, is equal to $x\beta$, plus an additional term that depends on the inverse Mills ratio evaluated at $z\gamma$. Remember, we hope to estimate β. This equation shows that we

can do so using only the selected sample, provided we include the term $\lambda(z\gamma)$ as additional regressor.

If $\rho = 0, \lambda(z\gamma)$ does not appear, and OLS of y on x using selected sample consistently estimates β. Otherwise, we have effectively omitted a variable, $\lambda(z\gamma)$, which is generally correlated with x. When does $\rho = 0$? The answer is when u and v are uncorrelated. Because γ is unknown, we cannot evaluate $\lambda(z_i\gamma)$ for each i. However, from the assumptions we have made, s given z follows a probit model:

$$P(s = 1|z) = \Phi(z\gamma) \text{.....(4)}$$

Therefore, we can estimate γ by probit of s_i on z_i using the entire sample. In a second step, we estimate β. The procedure can be summarized as follows:

(i) Using all n observation, estimate a probit model of s_i on z_i and obtain the estimate $\hat{\gamma}_h$. Compute the inverse Mills ratio, $\hat{\lambda}_i = \lambda(z_i\hat{\gamma})$ for each i. (Actually, we only need these for the i with $s_i = 1$.)

(ii) Using the selected sample, that is, the observations for which $s_i = 1$ (say, n_1 of them), run the regression of y_i on x_i, $\hat{\lambda}_i$. The $\hat{\beta}_j$ are consistent and approximately normally distributed

We use t-statistic from the second step (ii) on $\hat{\lambda}_i$ to test the hypothesis $H_0 : \rho = 0$. Under H_0, there is no sample selection problem.

3.2.2. ***Measures of firm performance***

Following Smith (1990), Denis & Denis (1995), Yermack (1996), Allgood and Farrell (2000), Anderson and Reed (2003), Dezso (2005), We employ three measures of firm performance---Return on asset (ROA), return on equity (ROE) and market-to-book ratio (M/B). ROA is defined as EBITDA over the book value of total assets, ROE is defined as EBITDA over total equity at the start of the year, and M/B as book value of assets plus market value of common stock less the book value of common equity divided by book value of total assets. Since operating income does not include taxes, dividends, or interest income received, or dividends paid to stockholders, it is argued to be a robust measure of changes in the operating performance of an organization and less vulnerable to managerial manipulation (Smith, 1990; Denis & Denis, 1995). In order to control for industry effects, we control for industry performance while measuring the firm performance. In so doing, we subtract the industry performance from the firm performance. The industry average is based on all firms that have the same 4-digit SIC code as the sample firm.

In addition to the three measures of performance discussed above, we also use a fourth measure based on previous studies, including Yermack (1996) and Farrell (2002). This measure calculates surprise earnings and abnormal returns by examining performance changes from two years prior to turnover to two years after the turnover. Surprise earnings are defined as the difference between the actual

return and forecasted return, while abnormal returns are calculated by two methods---actual returns minus market returns, and actual returns minus the return predicted by the market model.

3.2.3. Initial sign of poor firm performance

Several studies have documented that the average CEO tenure is between 6 and 7 years. For instance, Kaplan and Minton (2008) place such tenure to less than seven years based on a sample of large U.S during the 1992-2005 period and Coates and Kraakman (2010) find that the average tenure is 6.91 years (sample of S&P 500 from 1992-2004). Therefore, in this paper we will focus on a 7 year period prior to the CEO firing to identify the initial sign of poor firm performance. Initial sign is defined as the first time the firm performance is inferior to the industry performance.

3.2.4. Factors affecting the efficacy of the corporate governance system

3.2.4.1. Board Structure

We focus on only three aspects of the board structure that have been shown to have implications for the effectiveness of the board. They are a) percentage of outside directors, b) board size, and c) CEO-Chairman duality.

Percentage of outside directors on the board: The board is the shareholders' first line of defense against incompetent management. And, the board becomes more independent and therefore, more effective, with increasing representation by

outside directors. Fama and Jensen (1983) argue that outside directors, who tend to be major decision-makers at other organizations, have incentives to signal to the labor market that they are experts in decision control by acting in shareholder interests. Outside directors increase the value of their human capital by strengthening their reputations as decision control experts. Inside directors, on the other hand, are more apt to be concerned about maintaining their current position in the firm. Existing literature supports this argument. For instance, Weisbach (1988) reports that outside directors (directors who neither work for the corporation nor have extensive dealings with the company as outside directors) represent shareholder interests better than inside directors (directors who are full-time employees of the corporation). Weisbach reports that firms with outsider dominated boards (all firms in which at least 60% of the board are outsiders are designated outsider-dominated firms) are significantly more likely than firms with insider dominated boards (all firms in which outsiders make up no more than 40% of the directors are considered insider-dominated firms) to remove the CEO following poor firm performance. He adds that outsider-dominated boards tend to add to firm value through their CEO changes and the addition to firm value is largest when the change is preceded by poor performance.

Extending Weisbach's (1988) line of reasoning, Borokhovich et al (1996) argue that the decision to fire a CEO after bad firm performance does not benefit

shareholders unless the board also appoints a more capable successor. They show that there is a positive relationship between the proportion of outside directors and the likelihood that an outsider is appointed CEO. In other words, outside directors are also more likely to fire a CEO with an executive from outside the firm since new CEOs from outside the firm appear to be perceived as more likely to alter firm policies in a way that benefits shareholders. Huson et al (2000) also support this point. They argue that successors from outside the firm are more willing to break with the failed policies of their predecessors. Based on the preceding discussion, we expect that there will be a negative relation between the length to fire a poor-performing CEO and the percentage of outsider directors on board.

Board size: The empirical work predominantly suggests that smaller board size is more effective than larger board size because the problems with coordination and processing overwhelm the advantages gained from having more people to draw on (Steiner (1971) and Hackman (1990)). Lipton and Lorch (1992) suggest that large boards can be less effective than small boards, and recommend limiting the size to seven or eight people in the board. Jensen (1993) reports that when a board gets beyond seven or eight members it is less likely to function effectively and easier to be controlled by the CEO. Yermack (1996) finds that a firm with smaller board is more likely to remove its CEO following a bad firm

performance.[1] To be consistent with Yermack (1996) and Dezso (2005), I measure board size as the number of members of the board of directors as of the annual meeting date during each fiscal year, and then take the natural log of each..

CEO-Chairman Duality: When CEO also serves as the Board Chairman, the role of the board in monitoring CEO actions is compromised, jeopardizing board independence (e.g., Palvia (2011), Goyal and Park (2002), Adams, Almerda, and Ferreira (2005)). Other studies take the view that duality entrenches CEOs and adversely affects the firm performance (e.g., Dalton and Rechner, 1991)).[2] We expect to find a positive relation between duality and the length of time it takes to fire the CEO.

3.2.4.2. Ownership Structure

CEO ownership: If a CEO is also a significant owner of the company, the probability of firing himself/herself after the poor firm performance dwindles due to conflict of interest (Denis et al (1997), Mikkelson and Partch (1997), Perry (2000), Coates and Kraakman (2007), and Coates and Kraakman (2010)), Thus, a

[1] Although the overwhelming majority supports the greater efficiency of the smaller board size, this opinion is not unanimous. For example, Faleye (2003) do not find significant differences in the sensitivity of CEO turnover to performance based on the board size. Faleye suggests that both small and large boards are likely to terminate the CEO when faced with significant and consistent deterioration in performance.

[2]Not all scholars view duality as having negative implications for the firm. These researchers argue that duality is merely a "natural result of succession process" and thus has no systematic impact on firm performance (e.g., Brickley, Jeffrey, and Gregg (1997), Adams et al (2005), and Chen (2012)). Zajac and Westphal (1996) argue that the power of a board is decided by its tenure relative to that of the CEO. It is reasonable to assume that duality alone will not significantly increase the power of a successor CEO over the board since the former is new to the CEO position.

negative relation is expected between CEO ownership and CEO turnover. Consequently, the length it takes to fire the CEO gets higher as the ownership of the CEO in the firm increases. We calculate CEO percentage shareholdings by dividing the number of CEO shares by total shares outstanding.

Insider (managerial) ownership: Insider ownership has an important influence on internal monitoring mechanisms. Empirical work (for example, Ofek (1993), Denis and Denis (1994), Mikkelson and Partch (1996)) reports a negative relation between the managerial ownership and the rate of CEO turnover, suggesting that higher managerial ownership reduces the effectiveness of internal monitoring. To provide further evidence on whether equity managerial ownership affects internal monitoring mechanisms, Denis, Denis, and Sarin (DDS) (1997) allow the relation between CEO turnover and firm performance to vary with the levels of various managerial ownerships of 1,394 Value Line Investment Survey firms over the period 1985-1988. Following Morck et al (1988), DDS classify managerial ownership into three categories: less than or equal to 5%, between 5% and 25%, and greater than 25%. Their results suggest that managerial ownership has a significant impact on the sensitivity of turnover to performance. The probability of turnover is negatively related to performance when managerial ownership is less than 5% and significantly less sensitive to performance when the managerial ownership is between 5% and 25%. Their overall findings are

consistent with the hypothesis that higher ownership partially insulates managers from internal monitoring mechanisms. We expect a positive relation between the degree of managerial ownership and the length taken to dismiss CEOs. We use ownership by all officers and directors as a proxy for managerial ownership. Managerial ownership is calculated by the number of all officers and directors' shares divide by total shares outstanding.

Block ownership by outsiders: DDS (1997) find that the negative relation between turnover and performance is significantly stronger in firms with higher outside block ownership.[3] We expect that higher ownership by outside block-holders would lead to more effective corporate governance measures such as the time elapsed between poor performance and dismissal of the CEO would be shorter[4]. Consistent with Denis et al (1997), Mikkelson and Partch (1997), Perry (2000)), we calculate outside block holder ownership by dividing the number of outside block holder shares by total shares outstanding.

3.2.4.3. Directors Compensation

[3] A block-holder is defined as the one who owns at least 5% of the firm's shares and is not related to the top management team (or do not own shares over which managers have some voting authority).

[4] However, the effect of outside block holders on the sensitivity of turnover to performance might not be as the sensitivity with respect to managerial ownership. The reason is that different outside block holders have different incentives to monitor managers. For example, Brickley et al (1988) argue that certain institutional investors with potential business relationships with a firm are more likely to align themselves with incumbent managers. Other institutions, lacking the potential for a business relationship are less likely to have their actions affected by the conflict of interest.

Since the early 1980's, the proportion of outside directors receiving stock options and stock grants has increased dramatically. In a 1989 Conference Board Survey of 909 firms, Bacon (1989) finds that six percent of firms granted stock to outside directors and 14 percent granted stock options. In the 1997 Conference Board survey, the percentage of firms paying stock-based compensation to outside directors had increased to 84 percent (Worrell (1997)). In addition, Pearl Meyer and Partners (1996) report that the stock-based compensation paid to outside directors at the 200 largest industrial and service corporations increased from 2 percent to 22 percent of directors' total pay between 1985 and 1995.

Stock or option grants are likely to complement the managerial labor market in providing outside directors with incentive to represent stockholder interest. Some researchers argue that firms can increase the monitoring of management by providing outside directors with a financial stake in the performance of the firm. For instance, firms can encourage outside directors to "think like shareholders" by compensating directors with incentive-based compensation. Perry (2000) reports that the likelihood of CEO turnover following poor stock performance is significantly greater when directors of independent boards (outside dominated board[5]) are given incentive-based compensations. Following Perry (2000), we include a dummy equal to one when directors of independent boards receive

[5] The percentage of outsiders on the board is at least 60% .

incentive compensation, it is zero otherwise. We expect the relation between incentivized directors and the length of time it takes to fire the CEO to be negative.

3.2.5. Control variables

3.2.5.1. Number of subsidiaries

Firm size has been used as a control variable in many studies related to CEO turnover. These studies show that firm size affects the relationship between firm performance and CEO turnover (see, for example, Warner et al (1988), Denis, Denis and Sarin (1997), Perry (2000), Huson et al (2001), and Dezso (2005)). These studies, in general, agree that smaller firms are more likely than larger firms to remove CEOs after poor firm performance. For example, Denis, Denis and Sarin (1997) document that CEO turnover following bad firm performance is significantly less likely in larger firms. In addition, (Parrino, 1997) finds that larger firms are more likely to appoint an insider to replace an outgoing CEO. A potential explanation for this empirical regularity is that smaller firms tend to have fewer senior managers that are qualified to replace the outgoing CEO and an outside candidate is more likely to be effective in a smaller, less complex organization.

However, in this paper, we use number of subsidiaries as one of the control variables because it is more difficult to appraise the CEO's contribution to the firm's performance in a complex organization (many subsidiaries). We would expect the length (elapsed between poor performance and CEO firing) would be

positively related to the number of subsidiaries. Number of subsidiaries is defined as the number of 4 digit subsidiaries for each firm.

3.2.5.2. CEO tenure

CEO tenure has been considered as a potential factor that influences the likelihood of turnover after poor firm performance in several studies (for example, Denis et al. (1997), Parrino (1997), Allgood and Farrell (2000), and Goyal and Park (2002)). While Denis et al. (1997) find no significant relation between CEO tenure and CEO turnover after poor firm performance, Parrino (1997), Allgood and Farrell (2000), and Goyal and Park (2002) report a positive and significant association. In this paper, we expect the relation between tenure and the length of being fired to be negative and measure this variable in terms of the number of years a CEO has held the position.

3.2.6. Expanded equation

$$\begin{aligned} LogOfLENGTH = y = {} & \beta_0 + \beta_1 * (PercentageOfOusideDirectors) + \beta_2 * (BoardSize) + \\ & + \beta_3 * (ManagerialOwnership) + \beta_4 * (CEOOwnership) + \\ & + \beta_5 * (OutsideBlockholderOwnership) + \beta_6 * D_1 + \\ & + \beta_7 * (LogOfTheNumberOfSubsidiaries) + \beta_8 * (LogofCEOTenure) + \\ & + \beta_9 * (LogofCEOTenure)^2 + \beta_{10} * D_2 + \varepsilon \end{aligned} \quad \text{.....(5)}$$

where

- LENGTH: is the time it takes to get CEOs replaced after the initial sign of poor firm performance

- Percentage of outside directors: number of outside directors divided by the number of directors of the board
- Board size: log of number of members of the board of directors
- Managerial Ownership: number of all officers and directors shares divided by total shares outstanding (%)
- CEO Ownership: number of CEO shares divided by total shares outstanding (%)
- Outside Block holder Ownership: number of outside block holder shares divided by total shares outstanding (%)
- D_1: is dummy variable that is 1 if the company uses incentive compensation for outside directors
- D_2: is dummy variable that is 1 if a CEO is also a chairman

Number of subsidiaries, CEO tenure and D_2: are control variables

- CEO tenure: is measured by the number of quarters a chief executive had been in office
- Number of subsidiaries: is measured by the number of 4 digit subsidiaries for each firm

3.3. Data Sources

Ownership and compensation is collect from ExecuComp database and Compact Disclosure. Board size and board composition data can be collected from Institutional Shareholder Services (ISS), Investors Responsibility Research Center (IRRC) and Compact Disclosure. Stock returns data are obtained from the Center for Research in Security Prices (CRSP) and accounting data from the Compustat database. We also require each company to have other data available besides CEO turnover between 1997 and 2011.

3.4. Econometric model

To be consistent with Huson et al. (2004) and Chen (2012), we use a two-step model developed in Heckman (1979)[6] to deal with sample selection issue because some firms in the sample do not have involuntary CEO turnover until the end of the period 2004-2011. In the first step, we use probit model (6) to estimate the probability of removing CEOs and the inverse Mill's ratio ($\hat{\lambda}_i$):

$$P = \alpha_0 + \alpha_1 * quality\_of\_corporate\_governance + \\ + \alpha_2 * (LogOfTheNumberOfSubsidiaries) + \\ + \alpha_3 * (LogofCEOTenure) + \alpha_4 * (LogofCEOTenure)^2 + \\ + \alpha_5 * D_2 + u \quad \text{.....(6)}$$

where P is a binary variable that takes a value of 1 if there is a forced CEO turnover in firms, and 0 otherwise. Other variables are defined in previous sections.

[7] See Heckman (1979) for details in section 3.2.1

In the second step, we estimate OLS model (7) with the $\hat{\lambda}_i$ added as an independent variable. The $\hat{\lambda}_i$ is supposed to capture the omitted variables in OLS regressions where data are censored (e.g., Heckman, 1979).

$$LogOfLength = \pi_0 + \pi_1 * quality\_of\_corporate\_governance + \pi_2 * \hat{\lambda}_i + v \quad \text{.....(7)}$$

4. Results

4.1. Summary statistics

Table 1 shows a median company board has 10 directors, of which 80.02% is outside directors. While the percentage of independent director (the number of independent directors/board size) is high, the median percentage of inside directors (the number of inside directors on a board/board size) is only 19.05%. This board size is very close to recent years. The average size of S&P 500 boards is 10.8 directors in 2008 and 2007, and 10.7 directors in 2005[7]. A median CEO has served on the board for 5.02 years. A median CEO age is 54.56 years which is close to CEO average age reported in Wall Street Journal. All officers and directors, CEO, outside block holders own 6.1%, 5.16%, 8.89%, respectively.

[8] Source: www.spencerstuart.com

Table 1: Summary Statistics

Statistics are for a sample of 421 turnovers during the 2004-2011 period.

Variables	N	Mean	Median	Std.dev
Board size	421	10.8	10.01	3.02
CEO age	421	54.79	54.56	7.08
CEO tenure	421	6.71	5.02	4.04
% outside directors (*)	421	83.43	80.02	10.76
% inside directors	421	18.03	19.05	15.43
% ownership by directors (**)	421	5.54	6.1	3.21
% ownership by CEO (***)	421	7.56	5.16	6.12
% ownership by outside block holders (****)	421	10.5	8.89	4.8

(*) Directors who neither work for the corporation nor have extensive dealings with the company as outside directors. Directors who are full-time employees of the corporation as inside directors. Those directors who are not employees, but who may not be independent of current management because of extensive business dealings with the company or family relationships with management, are classified as grey (lawyers, consultants, investment bankers, major suppliers).

(**) Ownership by directors: the number of all officers and directors shares divided by total shares outstanding.

(***) Ownership by CEO: the number of CEO shares divided by total shares outstanding.

(****) Ownership by outside block holders: the number of outside block holders shares divided by total shares outstanding (block holders are individuals, organizations or institutions who has at least 5% ownership of a firm)

Table 2 reports sample frequencies of reasons for CEO turnovers over the 2004-2011 periods. Of all the 421 CEO turnovers identified in this study, 405 are classified as voluntary turnovers and 16 are classified as forced turnovers. The average annual rate (the annual number of turnovers/the number of firms) is 10.53% similar to that reported in Wall Street Journal over the recent period. However, it is higher than the average annual bank CEO turnover rate 7.04% documented in Chen (2012) (a sample of firm in banking industry during 1995-2009). The reason is because S&P 500 firms are more likely replace CEO than

firms in the banking industry. Table 2 shows that 19 turnovers due to planned succession, 164 turnovers due to retirement, 64 turnovers due to voluntary resignation, 126 turnovers due to stepping down, 6 turnovers due to bad health, 6 turnovers due to death, 20 turnovers due to interim CEO replacement, 11 turnovers due to being forcing out, 2 turnovers comes from resignation due to scandal, 2 turnovers comes from resignation due to accounting conflicts, and 1 turnovers comes from termination due to CEO poor performance. The percentage of internal CEO turnover replacement (72.21%) is higher than the percentage of external CEO turnover replacement (27.79%). In other words, firms are more likely replace their CEO internally. During these eight years, we identified 421 cases of CEO turnover; of these, 405 (96.2%) are voluntary and 16 (3.8%) are forced turnovers.

Table 2: CEO turnovers frequency

Sample frequencies of reasons for CEO turnovers. The sample is obtained by identifying any change in the set of individuals occupying the positions of Chief Executive Officer (CEO) for the S&P 500 firms included during the period 2004-2011. CEO changes are identified from ExecuComp database and confirmed in the Wall Street Journal, Wall Street Journal Index and the website www.spencerstuart.com

Reasons for CEO turnover	Number	% of sample	2004	2005	2006	2007	2008	2009	2010	2011
Voluntary CEO turnover	**405**	**96.2%**								
1. Planned succession	19			1		1	10	2	5	
2. Former CEO retired	164		28	25	21	24	16	12	13	25
3. Former CEO resigned	64		5	12	12	15	5	8	5	2
4. Former CEO stepped down	126		23	26	22	11	25	12	7	
5. Former CEO in bad health	6		2		1				2	1
6. Former CEO passed away	6		3		1	1			1	
7. Permanent CEO replaced Interim CEO	20			3	1	4	5	4	2	1
Involuntary CEO turnover	**16**	**3.8%**								
8. Former CEO forced out	11		3	1	2	2	2		1	
9. Resignation of former CEO due to scandal	2		1		1					
10. Resignation of former CEO due to accounting conflicts	2		1	1						
11. Former CEO terminated due to poor performance of the CEO	1		1							
Internal vs. External Placement										
Total	421									
Internal	304	72.21%	44	43	50	38	50	27	28	24
External	117	27.79%	23	26	11	20	13	11	8	5

4.2. Market reaction to CEO turnover announcements

In this section, we examine firm long-run abnormal stock performance around CEO turnovers with a sample of 421 CEO turnovers as described in previous section. Table 3 reports average abnormal stock returns over six window periods around the announcement [-Q7, -Q1], [-Q4, -Q1], [-Q1], [+Q1], [+Q1, +Q4], [+Q1, +Q7]. Following Chen (2012), stock returns are measured by a four factor model that includes the market risk premium (the spread between CRSP value-weighted

market return and risk-free rate), SMB (the return spread between portfolios of small and big capitalization stocks), HML (the return spread between portfolios of high and low book-to-market stocks), and a momentum factor. The market model parameters are estimated with data over the 24-month period seven quarters before the turnover announcement quarter.

Table 3: Abnormal stock performance around CEO turnovers

This table reports abnormal stock performance over six window in the pre-turnover and post-turnover periods around the announcement [-Q7, -Q1], [-Q4, -Q1], [-Q1], [+Q1], [+Q1, +Q4], [+Q1, +Q7] . Stock returns are adjusted by a four factor model that includes the market risk premium (the spread between CRSP value-weighted market return and risk-free rate), SMB (the return spread between portfolios of small and big capitalization stocks), HML (the return spread between portfolios of high and low book-to-market stocks), and a momentum factor. The market model parameters are estimated with data over the 24-month period seven quarters before the turnover announcement quarter.

Abnormal returns based on turnover and replacement types

Period	All turnovers	Forced	True Voluntary	Internal replacement	External replacement
	(1)	(2)	(3)	(4)	(5)
-Q7 to -Q1	-6.65%**	-11.11%*	3.06%**	-3.32**	-15.56*
	-2.45	*-1.73*	2.59	-2.43	-1.67
-Q4 to -Q1	-7.67%	-9.12%**	2.12%	-3.10%	-10.32%
	-1.31	*-0.14*	0.4	*-0.04*	*-0.92*
-Q1	-5.56%	-7.34%	-1.56%	-2.84%	-9.04%
	-0.17	*-0.24*	-0.39	*-0.23*	*-0.16*
+Q1	3.35%*	5.09%	-1.28%*	1.4%	2.50%
	1.78	*0.29*	*-1.75*	*0.39*	*1.09*
+Q1 to +Q4	2.56%	3.6%***	1.88%	1.18%*	3.78%*
	1.57	*2.50*	*0.75*	*1.69*	*1.55*
+Q1 to +Q7	1.59%**	2.15%	2.52%**	1.02%	2.56%
	2.31	*0.43*	2.90	*0.71*	*1.34*

***, **, * denote the significance level of 1%, 5%, 10%, respectively. T-statistics are reported in Italics.

Table 3 suggests that firms with involuntary turnovers have sharper decrease in abnormal return compare with firms which do not. Furthermore, table 3 indicates that firms showing a sharp decrease in pre-turnover abnormal stock performance

during the [-Q7, -Q1], [-Q4, -Q1], and [-Q1] are more likely to remove CEO with outside successors.

4.3. Firm performance changes around CEO turnovers

4.3.1. Changes in return on assets (ROA) and return on equity (ROE)

To be consistent with Chen (2012), we examine firm performance over the two periods around the CEO turnover announcement [-Q7, -Q1] and [+Q1, +Q7]. Firm performance can be measured by: unadjusted and industry-adjusted return on assets (ROA), unadjusted and industry-adjusted return on equity (ROE), and market-to-book ratio. In this section, we compare changes in return on assets (ROA = operating income/the book value of total assets) and return on equity (ROE= EBITDA/the book value of total assets) across turnover types (forced vs. voluntary) and replacement type (internal vs. external) in two post-turnover periods. Changes in unadjusted ROA and industry-adjusted ROA are significantly higher in the case of forced turnover than in the case of voluntary turnovers (columns 1 and 2). It implies that purpose of changing in forced turnover is to improve firm performance. Table 4 also indicates that the poorer the firm performance, the higher the external CEO replacement (column 5 and column 4). For instance, both firms A and B have CEO replacement as result of poor firm performance, however firm B performs poorer than firm A. Therefore, firm B is more likely to replace a CEO with an outsider. In addition, outside directors tend to

outperform inside directors in the pre-turnover period, although not significantly. Unadjusted ROE and Industry-adjusted ROE in table 4 tell the same story.

Table 4: Changes in return on assets (ROA) and return on equity (ROE) by turnover type and replacement type around CEO turnovers

This table presents average changes in unadjusted and industry-adjusted ROA (operating income/the book value of total assets), and unadjusted and industry-adjusted ROE (EBITDA/book value of total assets) during two periods [-Q7,-Q1], [+Q1, +Q7] around CEO turnovers for a sample of 421 turnovers for S&P 500 firms during the 2004-2011 periods.

Panel A: Change in ROA

Period	All turnovers	Forced	True Voluntary	Internal replacement	External replacement
	(1)	(2)	(3)	(4)	(5)
Unadjusted ROA					
-Q7 to -Q1	-1.78	-3.28*	1.79**	-0.65*	-2.34***
+Q1 to +Q7	-1.52*	2.12**	1.20*	-1.23	2.54*
Industry-adjusted ROA					
-Q7 to -Q1	-1.85	-3.01*	1.52	-0.23*	-1.76**
+Q1 to +Q7	-1.59	2.00	1.01	-1.09	2.24*

Panel B: Change in ROE

Period	All turnovers	Forced	True Voluntary	Internal replacement	External replacement
Unadjusted ROE					
-Q7 to -Q1	-1.43	-2.67*	2.77	-1.14**	-2.23*
+Q1 to +Q7	1.73**	3.04**	2.07*	-0.92	-2.86
Adjusted ROE					
-Q7 to -Q1	-1.16*	-2.22**	2.47	-1.89	-1.78*
+Q1 to +Q7	1.69	2.56*	1.68**	-0.72*	-2.5

***, **, * denote the significance level of 1%, 5%, 10%, respectively.

4.3.2. Changes in market-to-book ratio

We report the percentage average changes in market-to-book ratio of 421 turnovers for S&P 500 firms over the period 2004-2011 in the table 5. Again, market-to-book ratio is defined as book vale of assets plus market value of common stock less the book value of common equity over book vale of total assets. Table 5 implies that forced turnovers and external replacement are both

preceded by a significant decrease in market-to-book ratio (column 2 and 5). Table 5 further suggests that with experiencing a significant decline in market-to-book ratio, firms tend to remove their CEOs and select an outside successor (column 5).

Table 5: Percentage change in market-to-book ratio around CEO turnovers

This table presents average percentage change in market-to-book ratio over two periods [-Q7,-Q1], [+Q1,+Q7] around the CEO turnover announcement for a sample of 421 turnovers for S&P 500 firms during the period 2004-2011. Market-to-book ratio is defined as book vale of assets plus market value of common stock less the book value of common equity over book vale of total assets.

Change in market-to-book ratio around CEO turnovers					
Period	All turnovers	Forced	True Voluntary	Internal replacement	External replacement
	(1)	(2)	(3)	(4)	(5)
-Q7 to -Q1	-2.04	-3.56**	2.66	-1.56***	-2.45***
+Q1 to +Q7	-1.58	-1.21	2.09	-1.09	-2.06*

***, **, * denote the significance level of 1%, 5%, 10%, respectively.

4.4. Length vs. Quality of Corporate Governance

We report results for probit model (6) and model (7) in column 1 and column 2 of Table 6. Table 6 indicates that the coefficients on percentage of outside directors are negative ((-0.03114) for model (6) and (-0.02145) for model (7), and significant (at 1% and 5% in the model (6) and (7), respectively); it suggests that there is a shorter length to remove CEOs after the initial sign of poor firm performance for firms with higher proportion of outside directors. This result is consistent with Weisbach (1988), Borokhovich et al (1996), Huson (2000), Maury (2006), Kato and Long (2006), Conyon and He (2008)). Outside directors are more likely motivated in removing CEOs by poor performance compared with inside directors.

Table 6: Regression analysis of determinant of the length it takes to remove CEOs after the initial sign of poor firm performance

This table reports regression results for the Heckman two-step model. Column 1 presents results for the first step where probit model (6) is employed to estimate the probability of involuntary CEO turnover and the inverse Mill's ratio (λ). P is a binary variable that takes a value of 1 if there is a involuntary CEO turnover in companies, and 0 otherwise. Percentage of outside directors: number of outside directors divided by number of directors of the board. Board size: log of number of members of the board of directors. Managerial Ownership: number of all officers and directors shares divided by total shares outstanding (%). CEO Ownership: number of CEO shares divided by total shares outstanding (%).

Outside Blockholder Ownership: number of outside block holder shares divided by total shares outstanding (%). D_1 : is dummy variable that is 1 if the company uses incentive compensation for outside directors. Number of subsidaries: number of 4 digit subsidiaries for each firm. Firm performance is measured by ROA (return on assets). D_1 *firm performance: interaction between firm performance and incentive compensation for outside directors. Column 2 presents results for the second step in the model (7). length: the number of quarters a firm takes to fire its CEO subsequent to its first poor performance. CEO tenure: is measured by number of years a chief executive had been in office. D_2 : is dummy variable that is 1 if a CEO is also a chairman.

	P	Log of length
	(1)	(2)
Intercept	0.00452	0.00238*
Percentage of outside directors	-0.03114***	-0.01932**
Board size	0.00371	0.02385*
Managerial Ownership	0.0349**	0.04529**
CEO Ownership	0.00638**	0.006205***
Outside Blockholder Ownership	-0.00310	-0.00307*
D_1	0.00325*	0.06822***
Log of number of subsidiaries	0.00528**	
D_1 * firm performance	-0.00892*	
Log of CEO tenure	-0.00522**	
$(Log of CEO tenure)^2$	-0.00412	
D_2	0.00318***	
$\hat{\lambda}_i$		0.00558*
R-square	0.2615	0.3127

***, **, * denote the significance level of 1%, 5%, 10%, respectively.

Table 6 further reports coefficient on board size is positive and significant at 5% in model (7). According to Lipton and Lorch (1992)), Jensen (1993) and Yermack (1996), smaller board sizes are more effective especially in the case of firing CEOs after poor performance. They argue that keeping boards small can help improve their performance since when firms have large boards they are less likely to function effectively.

Coefficients on managerial ownership in both models are positive and significant (significant at 5% in the model (6) and 10% in the model (7)). It implies that there is a positive relationship between managerial ownership and the length to

get CEOs removed after the initial sign of poor firm performance. This suggests that higher equity managerial ownership partially insulates managers from internal monitoring mechanisms, which is also reported in DDS (1997) who find that higher levels of holdings by top managers decrease the sensitivity of turnover to performance, implying that higher CEO ownership will increase the length it takes to get the CEOs removed. Coefficients on CEO ownership in both models (6) and (7) are positive and significant at 5% and 10%, respectively.

There is a negative relationship between outside block holder ownership and the length to dismiss a CEO. The coefficient on outside block holder ownership is negative (-0.00231) and significant at 5% for model (6). Large equity stakes in the company provide block-holders an increased incentive to monitor management, resulting in higher performance-turnover sensitivities. Therefore, firms with higher outside block ownership are more likely to quickly terminate poor-performing CEOs. In the models (6) and (7), we also investigate the impact of incentive compensation for outside directors on the length on removing poor performing CEO. The results show that the length is significantly shorter when directors of independent boards (outside dominated board) receive incentive compensation than when they do not. Firms can increase the monitoring of the management team by providing directors with a financial stake in the performance of the firm.

We also investigate the interaction between firm performance and incentive compensation for outside directors. Perry (2000) documents that the likelihood of CEO turnover following poor stock return performance is significantly greater when outside directors of the board receive incentive compensation than when they do not. Our result supports Perry (2000)[8]. Number of subsidiaries is one of many factors that affect the length of removing CEOs. Table 6 yields the expected result regarding the relationship between the number of subsidiaries[9] and the length in removing the CEO. We find that in the sense that smaller firms tend to remove CEOs following poor firm performance faster than small firms, which is consistent with DDS (1997). The coefficient of log of number of subsidiaries is positive 0.00528 and significant at 5% in model (6).

Several papers report a positive and significant relationship between CEO tenure and CEO turnover (Parrino (1997), Allgood and Farrell (2000), and Goyal and Park (2002)). This implies a negative relation between the tenure and the length of dismissal. Consistent with this finding, we find a negative association between CEO tenure and the length. As regards CEO/chairman duality, we find a positive association between this factor and the length. This result is consistent

[9] Our result persists when we use ROE and abnormal returns as alternative measurements of firm performance.

[10] We also use CEO gender and CEO age as control variables. The results tell us the same story that firm with better quality of internal corporate governance in place are quicker to replace their CEO following the poor firm performance. However, CEO gender does not have any effect on the length it takes to replace CEO following the poor firm performance, which is consistent with Hays et al (2011)

with that found in Palvia (2011), Goyal and Park (2002), and Adams, Almerda, and Ferreira (2005). The finding suggests that CEO/chairman duality jeopardizes board independence by increasing CEO power over the board. Coefficient on $\hat{\lambda}_i$ is positive 0.00713 and significant at 5%. A simple test of selection bias is available from regression (7). We can use the usual t statistics on $\hat{\lambda}_i$ as a test of $H_0 : \pi_2 = 0$. Under H_0, there is no sample selection problem. The coefficient on $\hat{\lambda}_i$ has a very small t statistics (0.1175), so we fail to reject $H_0 : \pi_2 = 0$, there is no evidence of a sample selection problem in estimating the length of removing CEOs.

4.5. Robustness test

There are a few firms in our sample in which the first poor performance is followed by a second one. In this section, we examine whether the length to terminate a CEO is shortened in firms where there are two successive poor performances. The main regression:

$$\begin{aligned} LogOfLENGTH = {} & \gamma_0 + \gamma_1 * (PercentageOfOutsideDirectors) + \gamma_2 * (BoardSize) + \\ & + \gamma_3 * (ManagerialOwnership) + \gamma_4 * (CEOOwnership) + \\ & + \gamma_5 * (OutsideBlockholderOwnership) + \gamma_6 * D_1 + \\ & + \gamma_7 * (LogOfTheNumberOfSubsidiaries) + \gamma_8 * (LogOfCEOTenure) + \\ & + \gamma_9 * (LogOfCEOTenure)^2 + \gamma_{10} * D_2 + \gamma_{11} * D_3 + \upsilon \end{aligned} \quad \text{.....(8)}$$

D_3 is a binary variable, equals 1 if firm performance is inferior to the industry performance once, 0 otherwise. The other variables are defined as in the section

3.2.6. Using the same procedure Heckman two-step, overall finding suggests that the better the quality of internal corporate governance, the shorter is the time taken by the firm to get its poor performing CEO removed. In addition, firms experiencing poor performance more than once are more likely to remove their CEO faster.

Table 7: Regression analysis of determinant of the length it takes to remove CEOs after the second sign of poor firm performance
This table reports regression results for the Heckman two-step model. Column 1 presents results for the first step where probit model (6) is employed to estimate the probability of involuntary CEO turnover and the inverse Mill's ratio (λ). P is a binary variable that takes a value of 1 if there is a involuntary CEO turnover in companies, and 0 otherwise. Percentage of outside directors: number of outside directors divided by number of directors of the board. Board size: log of number of members of the board of directors. Managerial Ownership: number of all officers and directors shares divided by total shares outstanding (%). CEO Ownership: number of CEO shares divided by total shares outstanding (%). Outside Blockholder Ownership: number of outside block holder shares divided by total shares outstanding (%). D_1 : is dummy variable that is 1 if the company uses incentive compensation for outside directors. Number of subsidaries: number of 4 digit subsidiaries for each firm. Firm performance is measured by ROA (return on assets). D_1 *firm performance: interaction between firm performance and incentive compensation for outside directors. Column 2 presents results for the second step in the model (7). length: the number of quarters a firm takes to fire its CEO subsequent to its second poor performance. CEO tenure: is measured by number of years a chief executive had been in office. D_2 : is dummy variable that is 1 if a CEO is also a chairman. D_3 : is dummy variable that is 1 if firm performance is inferior to the industry performance once, 0 otherwise

	P	Log of length
	(1)	(2)
Intercept	0.00213*	0.01945
Percentage of outside directors	-0.00451*	-0.00926**
Board size	0.04544*	0.00278*
Managerial Ownership	0.00651*	0.00877**
CEO Ownership	0.00193***	0.00822*
Outside Blockholder Ownership	-0.00229*	-0.00911*
D_1	0.02238*	0.00835*
Log of number of subsidiaries	0.00650***	
D_1 * firm performance	0.03428	
Log of CEO tenure	-0.05060*	
$(Log\ of CEO tenure)^2$	0.00297	
D_2	0.00432*	
$\hat{\lambda}_1$		0.00445**
D_3	-0.00238*	
R-square	0.2523	0.3034

***, **, * denote the significance level of 1%, 5%, 10%, respectively.

5. Conclusion

In this paper, we investigate the effect of internal corporate governance on the length it takes to terminate CEOs after the initial sign of poor firm performance. Our sample consists of voluntary and involuntary CEO turnovers that occurred in the S&P 500 firm during 2004-2011. We investigate changes in firm performance proxied by three factors: ROA (return on assets), ROE (return on equity), and market-to-book ratio (M/B) by CEO turnover types.

The main result of this paper is that firms with more effective internal corporate governance are likely to be quicker to terminate CEOs after the initial sign of poor firm performance. This result is consistent with the findings in the previous literature (for instance Brickley et al. (1988); Weisbach (1988); Morck et al. (1988); McConnell and Servaes (1990); Denis, Denis and Sarin (1995); Borokhovich et al (1996); Yermack (1996); Denis, Denis and Sarin (1997); Huson (2000) ; Perry (2000); Maury (2006); Kato and Long (2006); Conyon and He (2008)). Specifically, firms with higher proportion of outside directors, smaller board size, greater outside block-holder ownership, and higher incentive-based compensation for directors are associated with quicker dismissal of poor-performing CEOs. These three aspects of corporate governance have been found in empirical research to promote effectiveness of the governance system. On the other hand, firms with higher managerial as well as CEO ownership and in which CEO

is also the Chairman of the board are likely to take a longer time to fire the CEO. These features often lead to conflict of interests and partially insulate managers from internal monitoring mechanisms.

The above results prevail even after controlling for three factors that are not directly related to internal governance mechanisms----- number of subsidiaries, CEO tenure, CEO gender, CEO age. Smaller firms and firms in which the CEO has been in the same position for a longer time are likely to be faster in firing their CEOs.

In addition, by dividing CEO turnover into two categories: voluntary vs. involuntary CEO turnover based on the reason given by the firm to the news media, and internal replacement vs. external replacement, we find that selection of outside directors is likely motivated by poor performance. Moreover, outside directors tend to outperform inside directors in the pre-turnover period. We also test market reaction to CEO turnover announcement. The result suggests that involuntary turnovers have sharper decrease in abnormal return compared to voluntary turnovers.

It might be argued that this paper suffers from selection bias. To address this issue, we performed d a simple test of selection bias. The result shows that there is no evidence of a sample selection problem in estimating the length of removing CEOs. In summary, the more effective the internal corporate governance, the

shorter the length it takes to get CEO removed following the initial sign of bad firm performance.

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ESSAY 2: DOES PERFORMANCE OF THE FORMER FIRM AFFECT A CEO'S ABILITY TO FIND AN IDENTICAL POSITION WITH A SUBSEQUENT FIRM?

Abstract:

Employing a sample of voluntary CEO turnovers selected from S&P 500 firms over the period 2004-2009, I investigate the impact prior firm performance on a CEO's potential of being hired on an equivalent job in a similar company. I find that the better the performance of the previous firm, the quicker is CEO being hired. In other words, the better the previous firm performance, the better is the CEO's potential to a land a similar job faster. The result prevails even in the presence of control variables, such as the CEO's education, tenure, age and gender. The better performers in previous firms also seem to yield greater improvement in performance of their new employers.

Key words: CEO characteristics, Firm performance, Quality of CEO
CEO turnover, Job potentials

1. Introduction

One of the primary roles of a corporate board is to hire a chief executive officer (CEO) with superior abilities. An obvious question facing the board is: What makes a CEO tick? To put it differently, are there some reliable factors that can predict how successful a CEO would be in this position? However, the identification and measurement of CEO ability is a difficult, imprecise and expensive process as evidenced by the growing "executive search" industry, and the considerable resources that are expended in the CEO search process.

Many researchers have broached this issue in an attempt to aid the board in its CEO-hiring process and identified some objective and relatively easily measurable characteristics that might affect a potential CEO's ability and, as a result, strengthen or weaken the chances of him/her being hired as CEO. Four of the prominent characteristics are education, tenure, age, and gender of the applicant. Bhagat, Bolton, and Subramanian (2001) find no evidence to support their proposition that the higher the level of education, all else the same, the superior is the CEO's ability to perform. Miller and Shamie (2001) find that it is common for managers' performance to decline later (after 15 years in office) in the careers due perhaps to their declining propensity to new experimentation. A similar view is shared by Katz (1982), Fredrickson, Hambrick, and Baumrin (1988), Sonnenfeld (1988); Hambrick and D'Aveni (1992), Hambrick, Geletkanycz, and

Fredrickson (1993), Miller (1990), (1991), (1994), Finkelstein and Hambrick (1995) and Walsh (1995). Not all scholars associate longer experience of a CEO with declining firm performance. For example, Gabarro (1987); and Hambrick and Fukutomi (1991) argue that increased knowledge of the organization and superior ability to compete actually allow CEOs with longer tenures to perform better. Wagner, Pfeffer, and O'Reilly (1984), Salancik and Pfeffer (1985), Boeker (1992); and Finkelstein and Hambrick (1995) provide an alternative argument as to why CEOs with long experience might perform better. They argue that poor performing CEOs are weeded out early and, consequently, mostly stronger performers survive. According to Gibbons and Murphy (1992), career concerns of CEOs change with age: at younger age, they are not too concerned about their career and are willing to take more costly unobservable actions, as the age advances, the CEO's career concerns increase, and finally, concerns fall again as the CEO approaches retirement. Thus, the age of the person applying for the CEO position might influence the board's decision to hire him/her. According to Blease, Elkinawy and Stater (2009), female executives are more likely than male executives to resign their positions voluntarily but are less likely than men to depart voluntarily as firm size increases or board size decreases. Consequently, the gender too might affect a candidate's chance of being hired as CEO.

Fee and Hadlock (2003) propose a model of managerial ability that predicts a positive relationship between prior firm performance and the likelihood that a manager moves to a superior position at another firm. Their evidence is broadly consistent with the predictions of the managerial ability model that prior firm performance is used by the labor market as a signal of managerial ability- a key assumption in many of the career-concerns models.

Following Fee and Hadlock (2003), I posit in this essay that performance record of a CEO with a prior firm is likely to play a dominant role in this person being hired in a similar position with a subsequent firm. Specifically, I examine the subsequent employment history of persons who voluntarily resign CEO positions from the S&P 500 firms during the period 2004-2009. I hypothesize that CEOs who performed better during their tenure with preceding firms are likely to more quickly find similar jobs with subsequent firms. I define CEO turnover as voluntary when a CEO leaves the firm voluntarily and equivalent position as CEO, directors of the board, chairman of the board, or founder of a new company. My findings are largely consistent with the main hypothesis: better previous firm performance leads to a CEO finding a similar job with a similar company quicker (within six months). I also find evidence that these CEOs continue to out-perform their slower (between six and 24 months) counterparts in their new place of employment.

The remainder of this study is organized as follows. Section 2 provides literature review. Section 3 describes the data. Section 4 presents the methodology and provides measure of each variable. Section 5 discusses results and Section 6 presents conclusions.

2. Literature review

Previous literature, to our understanding, has not examined how CEO characteristics and prior firm performance affect the probability of a person who leaves his/her firm voluntarily as a CEO finding an equivalent job at another firm. Here I summarize the findings of papers that have examined the characteristics of a person who is likely to be hired as a CEO. The following characteristics have often cited in the literature as the desired attribute of CEO of a public held company: education, tenure, gender and age.

Bhagat et al (2010) documents that CEO education appears to play an important role in the hiring of CEOs. CEO education influences CEO ability in three ways. First, education provides CEO knowledge to utilize all the technique and concepts into the real world. Second, higher education can help CEOs solve and overcome challenges quickly and intelligently. Finally, the social networks acquired in college and graduate school can be quite helpful professionally in the future. On the other hand, they do not find a significant systematic relationship between CEO education and long-term firm performance. It implies that CEO education does not

affect the long-term performance of firms. However, CEO education is just one of the determinants of CEO ability.

Miller and Shamie (2001) assert that CEOs' abilities to make changes may vary across their tenures. They document that executive tenure may be associated with both good and poor performance—but at different stages of an executive's career. They find that it is common for managers' performance to decline later in their careers. Although some might argue for CEO term limits to counter this tendency, they found that decline occurred quite late, usually after 15 years in office. Moreover, this decline was associated with a fall in experimentation, a trend that might be combated by greater awareness of the problem. Other papers argue that CEO knowledge of their organization and its ability to compete helps them to contribute to better performance (Gabarro (1987); Hambrick and Fukutomi (1991)). Long experience is also said to be associated with success because those who perform very poorly tend to be dismissed—mostly the strong survive (Boeker (1992); Finkelstein and Hambrick, (1995); Salancik and Pfeffer (1985); Wagner, Pfeffer, and O'Reilly (1984)). Other research, however, shows that executives who stay on the job too long become 'stale in the saddle'—overly committed to the status and thus less effective ((Finkelstein and Hambrick (1995); Fredrickson, Hambrick, and Baumrin (1988); Hambrick and D'Aveni (1992); Hambrick et al (1993); Katz (1982); Miller (1990), (1991), (1994); Sonnenfeld (1988); Walsh

(1995)). Overall findings suggest that top executives have ability to change firm performance based on their tenure. Therefore, tenure may be an important factor to be considered during hiring process.

CEO gender and CEO age may have some influence on hiring decision. According to Gibbons and Murphy (1992), younger CEO are willing to take more risky actions because of lower career concerns, such as leaving their job voluntarily without having a guaranteed job somewhere else. The CEO's career concern sensitivity should increase as the CEO ages (CEO experience). On the other hand, there will be fewer career concerns as the CEO is near retirement. Therefore, CEO's career concerns will be high at a certain time of CEOs' age. Another related study by Blease, Elkinawy and Stater (2009) suggests that female executives are more likely than male executives to depart their positions voluntarily, and women are less likely than men to depart voluntarily as firm size increases or board size decreases. Therefore, age and gender may affect a person's potential in job market for CEOs.

Previous firm performance is also a signal of managerial ability to find a job elsewhere after leaving a firm voluntarily. Fee and Hadlock (2003) constructs a model of managerial ability that predicts a positive relationship between prior firm performance and the likelihood that a manager moves to a superior position at another firm, and no apparent relationship between prior firm performance and the

likelihood of downward moves to new employers. These findings suggest that CEO characteristics and previous firm performance might play an important role in the hiring of CEOs.

3. Sample, Methodology, Variables and Data

3.1. Sample:

My sample includes the S&P 500 firms during the period 2004-2009. I collect the information about CEO turnovers for these firms from ExecuComp database**.** All CEO turnovers are cross-checked with the Wall Street Journal (WSJ), Wall Street Journal Index (WSJI) or both to get exact date of the announcement of the change as well as the reason given by the company for the change. I classify all CEO turnovers into two categories: voluntary CEO turnovers and involuntary CEO turnovers based on the reasons given by the firm to the news media. A CEO change is considered as a voluntary CEO turnover when it occurs due to planned succession, retirement, voluntary resignation, stepping down, bad health, death, or interim replacement. An involuntary turnover occurs when a CEO is fired, forced to resign, or resigned due to scandal, accounting conflicts, and poor performance. This yields a final sample of 356 CEO turnovers--341 voluntary and 15 involuntary. Out of the total 341 voluntary turnovers, only 51 are strictly voluntary in the sense these turnovers are not related to retirement, death, illness etc. I do not find any reference to ten of the 51 CEOs subsequent to their resignation from the

previous job and, therefore, use the remaining 41 observations in my sample. Twenty two CEOs find an equivalent job within 6 months, and 19 CEOs find an equivalent job within 6 to 24 months.

3.2. Model:

My main model is as follows:

The length of time to find a similar job = f (prior firm performance and control variables).

The length of time is a binary variable that equals one if a CEO gets a job at another company less than 6 months after she or he leaves the firm voluntarily and equals zero otherwise. Following Fee and Hadlock (2003), since potential employers will look back over a fairly long period in assessing a CEO's potential for their firm, I choose to measure firm performance over the five-year period that precedes the executive's departure. Return on asset (ROA), return on equity (ROE) and market-to-book ratio (M/B) are my primary performance measures. Follow Smith (1990); Smith and Watts (1992); Denis & Denis (1995), Yermack (1996); Shin and Stulz (1998); Allgood and Farrell (2000); Palia (2000); Anderson and Reed (2003), Dezso (2005); Gottesman and Morey (2006) I define return on assets (ROA) as earnings before interest, tax, depreciation, and amortization (EBITDA) over the book value of total assets, return on equity (ROE) as earnings before interest, tax, depreciation, and amortization (EBITDA) over total equity at the start

of the year, market-to-book ratio (M/B) as book value of assets plus market value of common stock less the book value of common equity. Since operating income does not include taxes, dividends, or interest income received, nor any dividends paid to stockholders, it is argued to be less subjected to managerial manipulation and, therefore, a robust measure of changes in the operating performance of an organization (Smith, 1990; Denis & Denis, 1995).

3.2.1. Control variables

My control variables are education, tenure, age and gender of the CEO along with the industry demand and overall employment scenario in the economy. Definition of each variable follows.

CEO education: Since my sample is small, proxy for CEO education is binary variable that takes 1 if a CEO has a master degree or a higher degree, and 0 otherwise.

CEO tenure: To be consistent with Denis et al. (1997); Parrino (1997); Allgood and Farrell (2000); Goyal and Park (2002)); Bhagat et al (2010), I define tenure as the length of time a CEO has served in this capacity prior to joining the new firm.

CEO age: Following Bhagat et al (2010), I define age as the age the CEO attains at the end of the fiscal year in which he/she resigned from the previous company.

***CEO gender*:** This is a dummy variable that takes on a value of 1 when the CEO is a male and 0 when the CEO is a female.

3.2.2. Other Control Variables

Firm Size: Following Bhagat et al (2010), I use firm size as a control variable. Firm size is measured as the natural log of book value of total assets for the fiscal year.

Number of subsidiaries: I use it as one of the control variables because it is more difficult to appraise the CEO's contribution to the firm's performance in a complex organization (many subsidiaries). Number of subsidiaries is defined as the number of 4 digit subsidiaries for each firm.

Unemployment Rate: The other control variable that I use is the prevailing unemployment rate in the economy surrounding the time period when the voluntary turnover occur for each CEO.

Industry Unemployment Rate: I use the industry unemployment rate to control for the industry effect.

I use Probit model to investigate the impact of CEO characteristics (CEO education, CEO tenure, CEO age, CEO gender), unemployment rates and prior firm performance on CEOs' potentials of being hired on an equivalent job for the case of voluntary CEO turnover:

$$\Pr(1,0) = \beta_0 + \beta_1 * CEOEducation + \beta_2 * CEOTenure + \beta_3 * CEOAge +$$
$$+\beta_4 * CEOGender + \beta_5 * UnemploymentRate + \beta_6 * \Pr iorFirmPerformance +$$
$$+\beta_7 * (CEOAge * CEOTenure) + \beta_8 * (CEOGender * FirmSize)$$
$$+\beta_9 * Logofassets + \beta_9 * LogofNumberOfSubsidiaries +$$
$$+\beta_{10} * (LogofCEOtenure)^2 + \beta_{10} * IndustryUnemploymentRate + \varepsilon \text{.....(1)}$$

where

Pr = Length of time to find a similar position with another company: it takes on a value of 1 when a CEO obtains an equivalent job within 6 months after resigning and zero when the length of time is between over 6 months but equal to or below 24 months.

Performance of the Prior Company= measured by M/B, ROA, ROE.

CEO education: is binary variable that equals 1 if a CEO owns at least a master degree or higher degree, and 0 otherwise

CEO tenure: is measured by the number of years that the CEO has been the CEO (years) (log of CEO tenure)

CEO age: is the age of the CEO at the end of the fiscal year (years): log of age;

CEO gender: is binary variable that equals one if a CEO is female, 0 otherwise

Unemployment rate (%) when a CEO resigns from the previous company.

Firm size: is measured as the natural log of book value of total assets for the fiscal year

Number of subsidiaries: is defined as the number of 4 digit subsidiaries for each firm.

Industry Unemployment Rate (%): the unemployment rate of the industry to which a sample firm belongs.

Following Gottesman and Morey (2006), I collect information include the CEO tenure, age, gender, and educational background for each CEO from the Register Executives publication provided by Standard and Poor's NetAdvantage database for S&P 500 firms during the period 2004-2009. CEO tenure, CEO age and CEO gender information are also cross-checked from Execucomp, and website www.spencerstuart.com. The educational background information provides the name of the educational institution where each CEO received their undergraduate and graduate degrees, and whether the graduate degree was an MBA, law degree, or other graduate degree. To be consistent with Bhagat (2010), if the CEO obtains a degree during his/her tenure as CEO, I do not distinguish this as there are very few CEOs in this situation. Using Execucomp database, as well as the Compustat and CRSP databases, I gather annual operational performance measures such as total assets, total sales, M/B, ROA, ROE. Total sales are the net annual sales as reported by the company. Return on assets (ROA) is calculated as earnings before interest, tax, depreciation, and amortization (EBITDA) over the book value of total assets, return on equity (ROE) is measured by earnings before interest, tax,

depreciation, and amortization (EBITDA), divided total equity at the start of the year, market-to-book ratio (M/B) is calculated as book vale of assets plus market value of common stock less the book value of common equity over book value of total assets. Occupational unemployment rates were collected from the Current Population Survey's monthly estimates, at http://ferret.bls.census.gov/cgi-bin/ferret, consistent with other recent work (Trevor (2001) and Kammeyer (2005))

4. Results

4.1. Summary Statistics

Table 1 provides descriptive statistics for the characteristics of the CEOs and the firms in which they are employed for the full sample firm experiencing CEO turnovers and the sub sample firms experiencing CEO voluntary turnovers. I report summary statistics for the full sample firms experiencing CEO turnovers (Panel A) as well as firms experiencing CEO voluntary turnovers (Panel B). These variables include CEO age, CEO tenure, CEO gender, firm's total assets, return on assets (ROA), return on equity (ROE), market-to-book ratio (M/B) and stock industry sales. Table 1 show a median CEO age is 54.43 years for the whole sample and 55.19 for the sub sample which are very close to the recent years[10]. A median CEO has served on the board for 5 years. The means indicate that 3.2% of the.

[2] The median age for S&P 500 CEOs is 55 in 2007, and 54 in 2008
(Source www.spencerstuart.com)

Table 1: Descriptive Statistics

This table presents the mean, median, standard deviation values of the CEO education, CEO age, CEO tenure, firm performance, firm size and industry sales for S&P 500 firm during the period 2004-2009. Panel A presents the statistics for firms that experienced CEO turnovers; Panel B presents the statistics for only firms that expericenced CEO voluntary turnovers.

Panel A

Variables	N	Mean	Median	Std.dev
CEO age	356	55.01	54.43	7.01
CEO tenure	356	6.5	5.01	4.11
CEO gender	356	0.88	0.78	0.09
ROA	356	12.05	11.34	5.2
ROE	356	15.55	13.25	4.5
M/B	356	2.5	2.1	0.9
Firm size, millions	356	80,256	82,376	20,035

Panel B

Variables	N	Mean	Median	Std.dev
CEO age	341	55.01	55.19	5.06
CEO tenure	341	6.41	5.23	4.98
CEO gender	341	0.89	0.81	0.11
ROA	341	12.67	11.23	5.03
ROE	341	15.03	13.12	4.2
M/B	341	2.6	2.2	0.87
Firm size	341	80,356	83,372	19,652

CEO tenure: is measured by the number of years that the CEO has been the CEO (years)

Firm performance can be measured by: ROA (return on assets), ROE (return on equity) and M/B (market-to-book ratio). ROA as earnings before interest, tax, depreciation, and amortization (EBITDA) over the book value of total assets, ROE as earnings before interest, tax, depreciation, and amortization (EBITDA) over total equity at the start of the year, M/B as book vale of assets plus market value of common stock less the book value of common equity.

Firm size: is measured as total assets for the fiscal year (in millions)

observations are female CEO for the full sample, and 3.1% for sub sample. Medians on return on assets (ROA) are 11.34% for the sub sample compare to 11.34% for the full sample. Median on return on equity (ROE) for the full sample is 13.25% while it is 13.12% for the sub sample. Market-to-book ratios have a median of 2.2 and 2.1 for the full sample and the sub sample, respectively. Firm size has a median of 82,376 (millions) for the full sample and 83,372 for the sub

sample. A median on industry sales is 75,266 (millions) for the full sample and 74,877 for the sub sample

Table 2 presents the reasons for CEO turnovers from 2004-2009. During these six years, I identified 356 cases of CEO turnover; of these, 341 (95.79%) are voluntary and 15 (4.21%) are forced turnovers. Percentage of voluntary turnovers increases from 91.04% in 2004 to 100% in 2011, while that of forced turnovers decreases from 8.96% in 2004 to 0% in 2011.

Table 2 Reasons for CEO turnovers

The sample is obtained by identifying any change in the set of individuals occupying the positions of Chief Executive Officer (CEO) for the S&P 500 firms included during the period 2004-2009. CEO changes are identified from ExecuComp database and confirmed in the Wall Street Journal, Wall Street Journal Index and the website www.spencerstuart.com. A CEO change is classified as a voluntary CEO turnover when it occurs due to planned succession, retirement, voluntary resignation, stepping down, bad health, death, or interim replacement. A forced turnover occurs when a CEO is fired, or resigned due to scandal, accounting conflicts, and poor performance.

Years	Volunaty		Forced		Total
	Number	%	Number	%	Number
2004	61	91.04%	6	8.96%	67
2005	67	97.10%	2	2.90%	69
2006	58	95.08%	3	4.92%	61
2007	56	96.55%	2	3.45%	58
2008	61	96.83%	2	3.17%	63
2009	38	100.00%	0	0.00%	38
Total	341	95.79%	15	4.21%	356

4.2. Market reaction to CEO turnover announcements

In this section, I examine current firm long-run abnormal stock performance around CEO turnovers with a sample of 41 CEO turnovers including 22 CEOs

finding a job within 6 months (group 1) and 19 CEOs finding a job within 6 to 24 months (group 2). Following Chen (2012), stock returns are measured by a four factor model that includes the market risk premium (the spread between CRSP value-weighted market return and risk-free rate), SMB (the return spread between portfolios of small and big capitalization stocks), HML (the return spread between portfolios of high and low book-to-market stocks), and a momentum factor. Table 3 reports average abnormal stock returns over six window periods around the announcement [-Q7, -Q1], [-Q4, -Q1], [-Q1], [+Q1], [+Q1, +Q4], [+Q1, +Q7]. The market model parameters are estimated with data over the 24-month period seven quarters before the turnover announcement quarter. (Insert table 3). Table 3 suggests that firms in group 2 have sharper decrease in abnormal return compare with firms in group 1 in pre-turnover, especially in the period [-Q7, -Q1], [-Q1, -Q4],. The abnormal returns for group 1 are -15.34% and -12.12%, significant at 10% and 5% in the period [-Q7, -Q1], [-Q4, -Q1], respectively. The abnormal return for group 2 is -17.89%, significant at 5% in the period [-Q7, -Q1]; however it is not significant in the period [-Q4, -Q1]. Their abnormal stock performance improves in the post-turnover period for both groups, which is consistent with Denis and Denis (1995), Huson et al (2004)). The abnormal return for group 1 is 3.13%, significant at 1% in the period [+Q1, +Q4].The abnormal return for group 2 is 2.78%, significant at 10% [+Q1, +Q4]. However, the abnormal returns for group

1 are significant higher then abnormal returns for group 2. The abnormal returns for both groups are not significant in the periods [-Q1] and [+Q1]. It indicates that the market does not react immediately a quarter before and a quarter after to the CEO turnover announcement.

Table 3: Abnormal stock performance around CEO turnover annoucenment

This table reports abnormal stock performance over six window periods in the pre-turnover and post-turnover around the announcement [-Q7, -Q1], [-Q4, -Q1], [-Q1], [+Q1], [+Q1, +Q4], [+Q1, +Q7] for two groups. Group 1 includes all current firms that CEOs can find an equivalent job within 6 months. Group 2 includes all current firms that CEOs can find an equivalent job within 6 to 24 months. Stock returns are adjusted by a four factor model that includes the market risk premium (the spread between CRSP value-weighted market return and risk-free rate), SMB (the return spread between portfolios of small and big capitalization stocks), HML (the return spread between portfolios of high and low book-to-market stocks), and a momentum factor. The market model parameters are estimated with data over the 24-month period seven quarters before the turnover announcement quarter. T-statistics are reported in Italics.

Abnormal returns around CEO turnover annoucenment for two groups

Period	All turnovers	Group 1	Group 2	Difference
	(1)	(2)	(3)	(4) = (2) -(3)
-Q7 to -Q1	-16.15%**	-15.34%*	-17.89%**	2.55%*
	-1.45	*-1.23*	*-2.32*	*2.76*
-Q4 to -Q1	-13.76%	-12.12%**	-15.59%	3.47%
	-2.31	*-1.71*	*-0.38*	*2.16*
-Q1	-12.01%	-11.34%	-14.45%	3.11%**
	-0.67	*-1.32*	*-0.62*	*1.80*
+Q1	6.34%*	8.09%	5.4%	2.69%
	2.61	*0.09*	*2.12*	*0.20*
+Q1 to +Q4	3.23%	3.13%***	2.78%*	0.35%*
	0.67	*2.50*	*2.89*	*2.21*
+Q1 to +Q7	2.9%**	2.35%	1.02%	1.33%
	2.31	*0.34*	*0.12*	*0.56*

***, **, * denote the significance level of 1%, 5%, 10%, respectively.

4.3. Previous firm performance and time it takes to find an equivalent job

$$\Pr(1,0) = \beta_0 + \beta_1 * CEOEducation + \beta_2 * CEOTenure + \beta_3 * CEOAge + \\ + \beta_4 * CEOGender + \beta_5 * UnemploymentRate + \beta_6 * \Pr iorFirmPerformance + \\ + \beta_7 * (CEOAge * CEOTenure) + \beta_8 * (CEOGender * FirmSize) \\ + \beta_9 * Logofassets + \beta_0 * LogofNumberOfSubsidiaries + \\ + \beta_{10} * (LogofCEOtenure)^2 + \beta_{10} * IndustryUnemploymentRate + \varepsilon \text{.....(1)}$$

Table 4: Result from running regression (1)

Coefficient	(1)	(2)	(3)
Intercept	0.01156	0.02251	0.00334
	0.94	0.59	0.73
CEO education	0.03190**	0.02211**	0.00157*
	2.75	2.96	1.98
CEO tenure	0.00238**	0.00469*	0.00392
	2.91	1.88	0.78
CEO age	0.0915	0.00825	0.00423
	0.52	0.78	0.21
CEO gender	-0.0298	-0.00972	0.00290
	-1.16	-0.83	0.02
Unemployment rate	-0.05210*	0.3266	-0.02935*
	-1.94	0.25	-2.01
ROA	0.03721***		
	3.26		
ROE		0.02562**	
		2.59	
M/B			0.00778**
			2.78
CEO tenure*CEO age	0.00923	0.03921	0.00961
	0.09	1.08	0.18
CEO gender*Firm size	-0.00524	-0.28542	0.01982
	-0.93	-0.91	0.33
Log of assets	0.01773*	0.00936**	0.01556*
	1.92	2.70	1.75
Log of number of subsidiaries	-0.07570	0.01767*	0.00547
	-1.23	1.92	0.44
$(LogOfCEOTenure)^2$	0.00345	0.00267**	0.00249*
	0.55	2.88	1.99
Industry Unemployment Rate	-0.00376	0.00561	0.00359
	-0.85	1.16	0.80

***, **, * denote the significance level of 1%, 5%, 10%, respectively. T-statistics are reported in Italics.

Pr =1: if a CEO receives an equivalent job within 6 months after she or he leaves the firm voluntarily and equals zero otherwise

CEO education: is binary variable that equals 1 if a CEO owns at least a master degree or a higher degree, and 0 otherwise

CEO tenure: is measured by the number of years that the CEO has been the CEO (years)

CEO age: is the age of the CEO at the end of the fiscal year (years)

CEO gender: is binary variable that equals one if a CEO is female, 0 otherwise

Unemployment rate (%) can be collected from the Current Population Survey's monthly estimates, at http://ferret.bls.census.gov/cgi-bin/ferret

Prior Firm Performance are measured by ROA (operating income/the book value of total assets), ROE (EBITDA/book value of total assets), and M/B (book value of assets plus market value of common stock less the book value of common equity over book vale of total assets)

Firm size: is measured as the natural log of book value of total assets for the fiscal year

Number of subsidaries: number of 4 digit subsidiaries for each firm

Industry Unemployment Rate (%): is the unemployment rate of the industry which a sample firm belongs to

As Table 4 shows, there is a positive association between prior firm performance and CEO's potentials of getting hired (coefficient = 0.03721, significant at 1% in column 1, coefficient = 0.02562, significant at 5% in column 2, coefficient = 0.00778, significant at 10% in column 3). Higher returns on assets (ROA), higher

return on equity (ROE) and higher market-to-book ratio (M/B) increase the probability of CEOs finding an equivalent job, consistent with the findings of Huson, Malatesta, and Parrino (2004). My findings therefore support the notion that CEOs are likely to more quickly find the employment under conditions of strong previous firm performance[11].

Column 1, 2, and 3 in the table 4 shows that coefficients on CEO education are 0.03190, 0.02211 and 0.00157 which are positive and significant at 5%, 5% and 10%, respectively. It suggests that CEOs with master degree or higher degree can find an equivalent job faster than those who do not. In other word, the higher the CEO education, the faster of being hired. This result is consistent with the previous hypothesis. There is a positive association between CEO's experience (CEO tenure) and CEO's potentials of getting a job (the coefficients are 0.00238 in column 1 and 0.00469 in column 2, significant at 5% and 10%). It indicates that the more experience CEO have, the faster they can be hired on an equivalent job. However, there is no effect of CEO age and CEO gender on their potentials of finding a job since the coefficient is not significant. In addition, I also investigate the interaction between CEO gender and firm size. However, the coefficients are not significant. The chance of CEOs getting a job depends on the market condition.

[3] I found the similar result by running this regression:

$$(LogOfTheLengthOfTimeToFindAJob) = \beta_0 + \beta_1 * CEOEducation + \beta_2 * CEOTenure + \beta_3 * CEOAge +$$
$$+ \beta_4 * CEOGender + \beta_5 * UnemploymentRate + \beta_6 * \text{Pr}iorFirmPerformance +$$
$$+ \beta_7 * (CEOAge * CEOTenure) + \beta_8 * (CEOGender * FirmSize)$$
$$+ \beta_9 * Logofassets + \beta_9 * LogofNumberOfSubsidiaries +$$
$$+ \beta_{10} * (LogofCEOtenure)^2 + \beta_{10} * IndustryUnemploymentRate + \varepsilon$$

The result tells that when the job market is down (higher unemployment rates), the chance of CEOs being hired is less likely that when the job market is up (lower unemployment rates).

There is no interaction between CEO tenure and CEO age to CEO's potential of being hired since the coefficient is not significant. Coefficient on firm size are 0.01773, significant at 10% in column 1, 0.00936 significant at 5% in column 2 , 0.01556 significant at 10% in column 3, which indicates that firm size has a positive effect on CEO's potentials of being hired, which suggests that CEOs in larger firms are more mobile in the market. Coefficients on industry unemployment rate are not significant; therefore there is no industry effect on CEOs' potentials of getting an equivalent job somewhere else.

Table 5: Performance comparison of previous firms

Table 5 reports old firm performance over three year window periods in the pre-turnover (-Y3), (-Y2) and (-Y1) for two groups. Group 1 includes all current firms that CEOs can find an equivalent job within 6 months. Group 2 includes all current firms that CEOs can find an equivalent job beyond 6 months. Industry-adjusted firm performance are measured by subtracting the industry performance from the firm performance. Firm performance are measured by ROA (operating income/the book value of total assets), ROE (EBITDA/book value of total assets) and M/B (book value of assets plus market value of common stock less the book value of common equity over book vale of total assets). The industry average is based on all firms that have the same 4-digit SIC code as the sample firm.

Period	Group 1			Group 2			Difference		
	AdjROA	AdjROE	AdjM/B	AdjROA	AdjROE	AdjM/B	AdjROA	AdjROE	AdjM/B
	(1)	(2)	(3)	(4)	(5)	(6)	(7) (1) - (4)	(8) (2) - (5)	(9) (3) - (6)
-Y3	12.50%	15.90%	2.50	12.61%	15.77%	2.34	-0.11%	0.13%(**)	0.16
-Y2	12.73%	16.21%	2.44	12.70%	16.32%	2.58	0.03%	-0.11%	-0.14
-Y1	12.80%	16.26%	2.54	12.75%	16.04%	2.45	0.05%	0.22% (*)	0.09 (**)
Average	12.68%	16.12%	2.49	12.69%	16.04%	2.46	-0.01%	0.08%(**)	0.04 (*)

***, **, * denote the significance level of 1%, 5%, 10%, respectively.

Table 5 compares the performance of previous firms for the two groups –the group that finds job within 6 months and the group that takes longer. It shows that on

average, firms associated with group 1 significantly outperform the firms associated with group 2.

4.4. Relative Performance of the new firms associated with two groups

Table 6: Performance comparison of new firms

Table 6 reports new firm performance over three year window periods in the pre-turnover and post turnover (-Y3,0) and (0,+Y3) for two groups. Group 1 includes all current firms that CEOs can find an equivalent job within 6 months. Group 2 includes all current firms that CEOs can find an equivalent job beyond 6 months. Industry-adjusted firm performance are measured by subtracting the industry performance from the firm performance. Firm performance are measured by ROA (operating income/the book value of total assets), ROE (EBITDA/book value of total assets) and M/B (book value of assets plus market value of common stock less the book value of common equity over book vale of total assets). The industry average is based on all firms that have the same 4-digit SIC code as the sample firm.

Period	(-Y3,0)			(0,+Y3)			Difference		
	AdjROA	AdjROE	AdjM/B	AdjROA	AdjROE	AdjM/B	AdjROA	AdjROE	AdjM/B
	(1)	(2)	(3)	(4)	(5)	(6)	(7) (4) - (1)	(8) (5) - (2)	(9) (6) - (3)
Group 1	-12.11%	-5.17%	2.20	5.67%	7.01%	2.50	17.78%**	12.18%	0.30
Group 2	-12.38%	-5.02%	2.41	2.21%	3.78%	2.47	14.59%*	8.80%*	0.06

***, **, * denote the significance level of 1%, 5%, 10%, respectively.

Table 6 shows that the performance of new firms improves with the hire of new CEOs. However, the improvement rendered by the first group (the CEOs who find jobs within 6 months) is higher than that of the second group.

Table 7 demonstrates that CEO characteristics, in general, have relatively low or no impact on the performance of new firms, with the exception of CEO-tenure which has statistically significant positive impact on performance of new firms.

$$CurrentFirmPerformance = \alpha_0 + \alpha_1 * CEOeducation + \alpha_2 * CEOtenure + \\ + \alpha_3 * CEOage + \alpha_4 * CEOgender + \alpha_5 * LogOfAsset + \alpha_6 * LogOfNumberOfSubsidiaires + \\ + \alpha_7 * (LogOfCEOTenure)^2 + \upsilon \quad \ldots\ldots(2)$$

Table 7: Result from running regression (2)

Coefficient	(1) ROA as dependent variable	(2) ROE as depedent variable	(3) M/B as dependent variable
Intercept	0.004127**	-0.00572	0.00729
	3.21	*-0.16*	*0.32*
CEO education	0.00761*	0.00272	0.01083**
	1.88	*0.78*	*2.11*
CEO tenure	0.08292**	0.00775	0.008109
	2.25	*0.56*	*-0.15*
CEO age	0.001144	0.02114*	0.00266
	1.02	*1.74*	*0.22*
Log of assets	0.005221	0.02262*	0.03141
	0.50	*1.76*	*0.75*
Log of number of subsidiaries	0.00283*	-0.00509	0.00891
	1.64	*-1.35*	*0.11*
$(LogOfCEOTenure)^2$	0.00523	-0.00421	0.003115
	1.35	*-1.33*	*0.14*

***, **, * denote the significance level of 1%, 5%, 10%, respectively. T-statistics are reported in Italics.

CEO education: is binary variable that equals 1 if a CEO owns at least a master degree or a higher degree, and 0 otherwise

CEO tenure: is measured by the number of years that the CEO has been the CEO (years)

CEO age: is the age of the CEO at the end of the fiscal year (years)

CEO gender: is binary variable that equals one if a CEO is female, 0 otherwise

Current Firm Performance are measured by ROA (operating income/the book value of total assets), ROE (EBITDA/book value of total assets), and M/B (book value of assets plus market value of common stock less the book value of common equity over book vale of total assets)

Firm size: is measured as the natural log of book value of total assets for the fiscal year

Number of subsidaries: number of 4 digit subsidiaries for each firm

6. Conclusions.

By using the Probit model I investigate the impact of CEO characteristics and previous firm performance on their potentials of being hired on an equivalent job in case of S&P 500 firms during the period 2004-2009. I found that the better the quality of CEOs, the faster they can find an equivalent job somewhere else, and the better the previous firm performance, the higher chance of them getting an equivalent job. Specifically, a CEO with a master degree or a higher degree can get a job faster than a CEO who does not. The more CEO's experience, the more potentials of them being hired on an equivalent job. Older CEOs with higher

experience are more likely being hired faster. Female CEOs are less likely to get a job as fast as male CEOs due to the fact that male CEOs are more mobile and active in the job market than female CEOs. I also found that there are abnormal returns around CEO turnover announcement, which indicates that the market is very sensitive and reacts to the CEO turnover announcement immediately.

In addition, I test the relationship between CEO characteristics and current firm performance. There is a positive association between CEO tenure and current firm performance in the case of using ROA (return on assets) as proxy for firm performance. The rest of results show that there is no evidence of the relationship between CEO education, CEO age, CEO gender and current firm performance. The reason might be that the proxies of CEO characteristics are not correct or I have not controlled appropriately for variables. This suggests that future research can look at this by using appropriate proxies for CEO characteristics and control for the right variables.

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