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The Pressure to Perform: Option Compensation and Forced CEO Turnover

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ABSTRACT

We study the relationship between the proportion of option compensation in the total compensation of a CEO and the likelihood of forced turnover. Our results confirm prior findings that CEOs who receive higher option compensation are more likely to lose their jobs for poor performance. However, this positive relation between option compensation and forced turnover does not hold for influential CEOs and firms with poor governance structures. Our results are robust to various measures of firm performance, alternative definition of forced turnover, more than one lags of option compensation, inclusion of total compensation, CEO equity ownership and firm risk.

JEL Classifications: *G30, J33*

Keywords: *stock options; compensation; termination; governance*

I. INTRODUCTION

The comfortable corner office in some of the largest firms of the world underwent tremendous transformation during the 1990s. The world of CEOs experienced two important trends simultaneously: skyrocketing increase in performance linked compensation and higher likelihood of performance related turnover. Business Week reports that two thirds of all major companies of the world replaced their CEOs at least once between 1995 and 2000. Similarly, the average pay of a CEO of S&P 500 firm increased from $2.7 million in 1992 to $14 million in 2000 (Daines, Nair, and Kornhauser, 2005). However, the increase in pay mainly came from performance linked compensation. Murphy (2000) reports that the proportion of options in total CEO compensation of S&P 500 Industrials increased from 27 percent to 51 percent from 1992 to 2000.

Whereas the trends in CEO compensation and forced CEO turnover were noted and discussed in both academics and popular press during the 1990s, few attempts were made to find out if these trends were related to each other. In this study we investigate if and how performance related CEO turnover is related to performance linked compensation for the period 1993-1999. Our results indicate that controlling for the economic determinants of forced turnover, lagged proportion of option compensation of a CEO is positively related to the likelihood of forced turnover. This implies that an increase in the proportion of option compensation increases the likelihood of forced turnover. However, further investigation shows that CEO influence and corporate governance also affect this positive relation between option compensation and forced turnover. We find that the positive relation between option compensation and forced turnover is not statistically significant for influential CEOs (i.e. for CEOs who stay in their jobs longer than the median tenure of their industry or have been hired from within the company). Similarly, the positive relation between option compensation and forced turnover is significant for firms that have strong governance structures. Our results show that there is no statistically significant relationship between option compensation and forced CEO turnover in firms that have poor governance structures.

Our empirical findings are robust to various measures of firm performance and an alternative definition of forced turnover. We also control for total compensation and find that our results do not change. The results are also robust to the inclusion of CEO equity holdings or firm risk. Moreover, this relation does not change when we use two lags of option compensation to mitigate concerns about simultaneity.

Our empirical results may be explained by the boards' attempt to justify huge (potential) payments to their CEOs. During the 1990s boards searched for "savior" CEOs (Khurrana, 2003) who were expected to lead their companies to El Dorado. In this hope these executives were paid like Hollywood celebrities, often in the form of executive stock options to avoid media attention. However, option compensation due to its very design offers the executives virtually unlimited upside if the company performs well but punishes them only marginally if the company performs poorly. This led to the growing perception that CEOs were greedy, overpaid and enjoyed huge compensation even when their firms performed poorly. By increasing the likelihood of termination along with higher performance linked compensation, the boards attempted to justify generous compensation packages to their CEOs. A higher likelihood of performance related turnover would convince shareholders that the high compensation was justified

given the high cost of poor performance (both in terms of loss of current compensation and future compensation due to performance related job loss).

The remainder of the study proceeds as follows. Section II describes related literature Section III describes the data set and our measures of forced turnover, performance and other variables. Section IV discusses estimation methodology and main results. Section V presents robustness checks and Section VI concludes.

II. RELATED LITERATURE

Both the executive compensation and CEO termination have been thoroughly investigated by many researchers. However, the literature on compensation, stock options and forced turnover has largely dealt with these issues separately. Weisbach (1988), Warner, Watts, and Wruck (1988), Murphy and Zimmerman (1993), Parrino (1997) and Huson, Parrino, and Starks (2001) all find that prior poor firm performance is the single most important determinant of forced CEO turnover. Goldman, Hazarika and Shivdasani (2003) show that firm performance affects CEO turnover only when it is negative and a positive performance has no effect on turnover. Huson, Parrino and Starks (2001) report a significant increase in forced CEO turnover during the period 1971-1994. Denis, Denis, and Sarin (1997) assert that managerial shareholdings affect the probability of top executive turnover. They report that the likelihood of forced executive turnover is negatively related to the ownership stake of officers and directors and positively related to the presence of an outside blockholder. Dahya, Lonie, and Power (1998) report that forced top management turnover is more frequent for executives who own less than 1% of their firm's equity. We also test the robustness of our results by including the CEO ownership of stock. Goyal and Park (2002) show that the combination of CEO and chairman positions makes it difficult for the boards to fire poorly performing CEOs.

Similarly, Murphy (1985, 1986), Abowd (1990), Jensen and Murphy (1990a), and Aggarwal and Samwick (1999) study the relationship between executive compensation and firm performance. These articles show that firm performance is largely positively related to pay-performance sensitivity after controlling for risk. Jensen, Murphy and Wruck (2004) present a detailed history and analysis of executive compensation and offer recommendations for reforming the system surrounding compensation. Hall and Murphy (2003) discuss the trouble with stock options by describing patterns in stock options since the 1990s. Although the trends in option based compensation and forced CEO turnover during the 1990s received a significant attention of the academic world, the attempt to find a link between the two did not attract many scholars. In this study, we attempt to fill this gap by investigating a link between option compensation and forced CEO turnover during the 1990s.

III. DATA AND VARIABLES

We collect our sample from the Standard and Poor's ExecuComp database for the years 1993-1999. We define turnover as a change in the identity of the CEO in the dataset. We consider changes for the fiscal years 1993-1999. Following previous literature, we exclude firms in the financial sector and regulated firms (SIC codes in the range 4910-4949 and 6000-6999). The ExecuComp database does not distinguish between forced

and voluntary turnover. We search the business news on the Lexis-Nexis Academic Universe to find out the true reason of a CEO change. In order to correctly identify the reason for the CEO change, we review multiple news items for each turnover. We classify CEO changes into forced and non-forced turnovers following Weisbach (1988), Fee and Hadlock (2004) and Huson, Parrino and Starks (2001) definition. Our dependent variable FORCED equals 1 for 141 forced turnovers and 0 otherwise. This definition excludes changes related to mergers and acquisitions and retirements. We then construct FORCED2 that includes changes due to mergers and acquisitions and all those who were reported retired before the age of 60 years. FORCED2 is used to check the robustness of our results to a change in the definition of forced turnover.

Option compensation which is our primary variable is defined as the ratio of the value of options in total compensation. Option values are calculated using Black and Scholes (1973) and Merton (1973) method. We lag this variable by one period to avoid concerns about simultaneity. Our results do not change when we use two period lag.

IV. ESTIMATION AND EMPIRICAL METHODOLOGY

In order to find the impact of option compensation on forced CEO turnover we estimate a Logit model of the determinants of forced turnover:

$$P(FORCED_t = 1) = F(\text{Option Compensation}_{t-1}, \text{Performance}_t, \text{CEO and Characteristics}_t, \text{Year and Industry Dummie}) \quad (1)$$

The dependent variable is FORCED1 as defined in the preceding section. Huson, Parrino, and Starks (2001) exclude the first two years that a CEO is in office from their sample since the overlap between the incoming and outgoing CEO implies that the performance measure for those years may not correctly reflect the new CEO's contribution. Our main results are also reported with the restriction that the CEOs in the sample should have been in office for at least two years. However, we also estimated our regressions without this restriction and found similar results. We use lagged values of option compensation to mitigate concerns about simultaneity which is very common in all corporate finance. We also use more than one lags and find similar results.

A. Control Variables

We include several control variables in our analysis that may affect the likelihood of forced CEO turnover. Prior firm performance is documented to be the most important determinant of the likelihood of forced turnover. Firms that perform poorly – particularly relative to their industry – are more likely to terminate their CEOs than firms that perform well. We use three measures of relative performance: the return on assets (ROA), the return on equity (ROE), and the one-year stock return (Stock Ret) of the firm. All variables are measured relative to the two-digit SIC industry averages.

Among the firm characteristics, we control for firm size, performance, growth opportunities and leverage. Larger firms have higher turnover-performance sensitivities because they are likely to have a larger talent pool from which to choose a successor (Parrino 1997). We use the natural log of sales as the measure of firm size. Our results are similar when we use log (assets) instead. The market-to-book ratio is commonly

used in literature as a proxy for the quality of investment policy and the presence of growth opportunities. Firms with more growth opportunities may use more option compensation (Clinch (1991), Gaver and Gaver (1993)). Also, firms with low market-to-book may be expected to face greater pressure from shareholders to make top executive changes. Firms that are leveraged may experience financial distress and higher probability of poor performance which is positively related to the likelihood of forced turnover. We use the debt-to-assets ratio to capture the impact of leverage on forced turnover and expect a positive sign. Following Smith and Watts (1992), we use the market-to-book ratio as a proxy for growth opportunities to control for the effects of any financial stress on CEO turnover.

We include total compensation, tenure, duality of CEO and chairmanship and founding family dummy to control for the impact of CEO characteristics on forced turnover. Highly paid CEOs are usually more powerful and less likely to be terminated for poor performance. We include the log (total compensation) to control for the level effect of total compensation. Longer tenure may allow CEOs to build powerful relationships with their board members, whom they can use to affect turnover decisions. Similarly, the combination of CEO and chairman positions adds the influence of the CEO and weakens the sensitivity of forced turnover to poor performance (Goyal and Park, 2002). We include a dummy Duality that equals one if the CEO is also the chair of the board and zero otherwise. CEOs who are members of a founding family may be difficult to remove for poor performance because they have close ties with the board and may hold significant stock of the firm. Previous studies have found that founding family CEOs have large stockholdings (Parrino, 1997), and that they appear to be removed less frequently (Morck, Shleifer, and Vishny, 1989). We include a Family dummy that equals one if the CEO belongs to the founding family and zero otherwise. In our tests of robustness we also include the CEO stock ownership to see if our results are sensitive to the inclusion of this variable.

The governance structure of firms plays a significant role in monitoring and turnover decisions. Firms with weaker governance structures or weaker shareholder rights are less likely to fire a CEO for poor performance relative to the firms with strong shareholder rights. Gompers, Ishii, and Metrick (2003) compile comprehensive data on corporate governance provisions and state laws from the publications of the Investor Responsibility Research Center (IRRC) and construct an index (called the G-index) by adding one point for each provision that restricts shareholder rights. A higher value of the index means weaker shareholder rights. We construct a dummy variable high G-index that equals one if the G-index of the firm is greater than its two digits SIC industry median and zero otherwise. High G-index implies poor governance. We expect that poorly governed firms are less likely to fire a poorly performing CEO than firms that are better governed. Lastly, we also control for year and industry specific effects by including year and industry dummies.

Table 1 gives the summary statistics for these variables for the forced turnover and no-turnover samples. We can see that option share is higher in firms that experience forced turnover than in no turnover firms. Similarly, CEOs that are forced out receive significantly higher total compensation. We can also see that forced turnover is relatively prevalent in firms that are large in size, have lower market-to-book ratios and have higher debt-to-asset ratios than the firms that experience no CEO change. Moreover, these firms perform poorly relative to their industries.

Table 1
Summary statistics

	No Turnover		Forced Turnover		p-values
	Median	Std. Dev.	Median	Std. Dev.	
Option Compensation (%)	25.28	29.37	38.03	29.99	0.00
Total Compensation ($000's)	1352.80	12412.65	1606.57	9357.89	0.00
CEO Tenure (years)	7.00	6.95	6.00	4.62	0.00
CEO Stock Ownership (%)	1.20	9.38	0.22	5.45	0.00
Sales ($ millions)	531.49	5039.36	1098.10	8912.53	0.00
Market-to-book	1.78	3.18	1.58	1.55	0.00
Debt to assets (%)	49.67	22.20	54.13	23.29	0.00
Outside Directors (%)	72.73	14.16	72.73	14.91	0.00
Industry Adjusted ROA (%)	1.43	9.66	(0.46)	11.70	0.00
Industry Adjusted ROE (%)	2.70	2.70	0.56	264.86	0.03
Industry Adjusted Stock Returns (%)	(5.51)	59.28	(14.79)	52.52	0.00

Comparison between firm-years with forced CEO turnover and no turnover in the following fiscal year. Option Share is the ratio of option based compensation to total compensation in previous year. Total Compensation includes salary, bonus, other annual compensation, restricted stock and stock options granted during the year and long term incentive payouts. Stock ownership is the stock ownership of CEO. ROA, ROE, and Stock returns are net of 2-digit SIC industry averages. Market to book is [Book Value of Debt + Market Value of Equity]/[Book Value of Assets]. Debt-to-assets is the ratio of total long term debt to total assets. Out directors is the ratio of outside directors to total directors. P-values indicate the difference between the two samples.

B. Results

1. Option Compensation and Forced Turnover

Table 2 presents the marginal effects of our benchmark Logit regressions of the determinants of forced CEO turnover. The marginal effects are calculated at the means of the data. The marginal effects of our primary variable, lagged option compensation is positive and significant in all three measures of relative firm performance. We did not have a prior expectation on the effect of option compensation on forced turnover. On its face it seems like CEOs who receive a higher proportion of their total compensation in the form of options also face higher likelihood of termination. The marginal effect of total compensation (which includes salary, bonus, other annual compensation, restricted stock and stock options granted during the year and long term incentive payouts) is negative and significant in all specifications. This is quite expected as highly paid CEOs have influential relations with the board and are face less pressures when they under perform their industry.

Table 2
Option compensation and forced turnover

	Industry Adjusted Return on Assets (ROA)	Industry Adjusted Return on Equity (ROE)	Industry Adjusted Stock Returns
Option $comp_{t-1}$	0.013**	0.018***	0.015**
	(0.037)	(0.010)	(0.019)
Log (total compensation)	-0.004**	-0.005**	-0.004**
	(0.017)	(0.027)	(0.027)
Tenure of CEO	-0.001***	-0.002***	-0.001***
	0.000	0.000	0.000
Performance $\times 10^{-2}$	-0.103***	-0.002**	-0.022***
	0.000	(0.026)	0.000
Log (Sales)	0.005***	0.001	0.001
	(0.001)	(0.483)	(0.332)
Market-to-book	-0.003**	-0.005**	-0.002
	(0.031)	(0.017)	(0.313)
Debt-to-assets	0.003	0.024**	0.020**
	(0.729)	(0.022)	(0.015)
Dual	-0.011***	-0.011***	-0.010***
	(0.002)	(0.004)	(0.003)
Inst. Block Holder	0.012***	0.012***	0.010***
	0.000	(0.002)	(0.005)
Out directors	0.001	0.006	0.007
	(0.944)	(0.594)	(0.541)
Family dummy	-0.005	-0.004	-0.004
	(0.310)	(0.467)	(0.352)
Technology	0.018*	0.026**	0.013
	(0.057)	(0.019)	(0.142)
Manufacturing	0.002	0.004	-0.001
	(0.704)	(0.944)	(0.868)
Services	0.011	0.011	0.004
	(0.229)	(0.255)	(0.560)
Trade	0.009	0.014	0.011
	(0.260)	(0.153)	(0.192)
Observations	4142	4142	4121

Marginal effects from the Logit estimation of lagged option compensation and the probability of forced CEO turnover. The marginal effects are evaluated at the means of the data. The dependent variable (FORCED) equals 1 if the current CEO is forced out during the following fiscal year. Option comp is the ratio of option compensation to total compensation in previous year. Total Compensation includes salary, bonus, other annual compensation, restricted stock and stock options granted during the year and long term incentive payouts. Stock ownership is the percentage equity holdings of CEO. Performance is measured in terms of Return on assets (ROA), return on equity (ROE), and one-year stock returns and is net of two digit SIC industry averages. Market to Book is [Book Value of Debt + Market Value of Equity]/ [Book Value of Assets]. Debt-to-assets is the ratio of total long term debt to total assets. Dual dummy equals 1 if the CEO is

also the chairman of the board. Inst. Block holder dummy equals 1 if institutions own more than 5 percent of company stock. Out directors is the ratio of outside directors to total directors. Family dummy equals 1 if the CEO belongs to the founding family. Year dummies are not reported. P-values are in parentheses. *, ** and *** denote significance at 10%, 5% and 1% levels respectively.

The marginal effect of relative performance is negative and significant in all measures which provide support to the existing literature that poorly performing CEOs are more likely to be terminated. Among other variables of interest, the effect of institutional block holders on the likelihood of termination is positive and significant. Hence the presence of an institutional block holder (5% or more) increases the likelihood of termination. However, the CEOs who are also chairmen of their boards face lower likelihood of termination. All other variables are of the expected signs, though size is significant only in one specification. Moreover, both founding family dummy and the board composition do not seem to have any significant effect on the probability of forced termination.

2. Sensitivity of Forced Turnover Probability to Option Compensation

Table 3 shows marginal effects and forced turnover probabilities when the option share in total compensation changes from the 25th percentile of the sample to the 90th percentile and all other variables stay at their means. Panels A, B and C represent industry adjusted performance measures of ROA, ROE and Stock Returns. In all three specifications we can see that the marginal effect of option compensation increases substantially when the option share increases from the 25th percentile to the 90th percentile. Similarly, the turnover probability almost doubles when option share increases from the 25th percentile to the 90th percentile.

Table 3
Sensitivity of forced turnover probability to option compensation

A. Performance: Industry adjusted return on assets

	50th Percentile	75th Percentile	90th Percentile
Marginal Effect	0.0127	0.0156	0.0222
Forced Turnover Probability	0.0157	0.0192	0.0230

B. Performance: Industry adjusted return on equity

	50th Percentile	75th Percentile	90th Percentile
Marginal Effect	0.0174	0.0227	0.0222
Forced Turnover Probability	0.0178	0.0220	0.0272

C. Performance: Industry adjusted stock returns

	50th Percentile	75th Percentile	90th Percentile
Marginal Effect	0.0139	0.0172	0.0206
Forced Turnover Probability	0.0163	0.0202	0.0244

The marginal effects reported are from the Logit estimation of the effect of lagged option compensation on forced turnover. The marginal effects are calculated at mean values of data except for the option compensation which is calculated at 50th, 75th and 90th percentiles.

3. Option Compensation and Forced Turnover: Impact of CEO Influence

There is growing literature that reports that powerful CEOs influence their compensation. These influential CEOs are also less likely to be terminated for poor performance. We use two proxies for CEO influence: CEO tenure and inside/outside orientation. Specifically we classify a CEO as influential if she has been in her current job for more than the median tenure of her industry or was appointed CEO from inside the firm. Table 4 presents summary statistics of the insider/outsider and long/short tenure sample. An interesting thing to note is that influential CEOs, those who have been appointed from within the firm and those who remain in their jobs longer than the median CEO of their industries, both receive option compensation which is less than the outsiders or short tenure CEOs.

Table 4
Summary statistics: Influence of CEO

	Succession Type			Tenure as CEO		
	Insider Median	Outsider Median	p-values	Long Median	Short Median	p-values
Option Comp (%)	0.232	0.359	0.000	0.250	0.277	0.020
Total Comp (000's)	1553.23	1380.23	0.068	1500.41	1483.46	0.739
CEO Tenure (years)	7.000	6.000	0.011	11.000	4.000	0.000
CEO Stock Ownership (%)	0.400	0.500	0.108	1.297	0.295	0.000
Sales ($ millions)	1320.10	710.08	0.000	762.82	784.16	0.555
Market-to-book	1.637	1.809	0.007	1.770	1.671	0.000
Debt to assets (%)	0.554	0.500	0.000	0.509	0.543	0.000
Outside Directors (%)	0.750	0.714	0.001	0.727	0.727	0.921
Industry Adjusted ROA (%)	1.284	1.127	0.742	1.464	1.079	0.020
Industry Adjusted ROE (%)	3.084	3.518	0.672	2.974	2.261	0.036
Industry Adjusted Stock Returns (%)	(5.997)	(9.352)	0.109	(6.020)	(6.241)	0.843

Succession type means insider (outsider) if the CEO was selected from within (outside) the company. Long (short) tenure equals 1 if the CEO tenure exceeds (is less than) the two digits SIC industry median tenure

Table 5 presents results of the impact of option compensation of influential CEOs on forced turnover probability. We do this by interacting an influence dummy variable with lagged option compensation. This dummy equals 1 if the CEO tenure exceeds the two-digits SIC industry median tenure for columns 1-3. For columns 4-6 it equals 1 if the CEO was appointed from inside the firm and has been with the company for at least two year before being appointed as CEO. The marginal effect of option compensation can be interpreted as the impact of option compensation on forced turnover for the less influential CEOs. On the other hand, the impact of option compensation for the influential CEO is the sum of the interaction variable (influence × option compensation) and option compensation. The sample size for the insiders (1-3) reduces significantly because of the missing dates at which the CEO joined the company.

Table 5
Option compensation and forced turnover: Impact of CEO influence

	Industry Adjusted ROA [1]	Industry Adjusted ROE [2]	Industry Adjusted Returns [3]	Industry Adjusted ROA [4]	Industry Adjusted ROE [5]	Industry Adjusted Returns [6]
Influence × Option $Share_{t-1}$	-0.008	-0.009	-0.008	-0.030	-0.049**	-0.043*
	(0.369)	(0.353)	(0.359)	(0.119)	(0.026)	(0.056)
Option $comp_{t-1}$	0.017**	0.022**	0.018**	0.051***	0.083***	0.069***
	(0.027)	(0.008)	(0.016)	(0.007)	0.000	(0.001)
Log (total compensation)	-0.004**	-0.005**	-0.004**	-0.014**	-0.015**	-0.012
	(0.014)	(0.023)	(0.026)	(0.031)	(0.040)	(0.102)
Tenure of CEO	-0.001**	-0.001***	-0.001**	-0.003***	-0.003***	-0.003***
	(0.018)	(0.008)	(0.011)	(0.001)	(0.001)	(0.004)
Performance×10^{-2}	-0.105***	-0.002**	-0.022***	-0.366***	-0.008*	-0.051***
	0.000	(0.024)	0.000	0.000	(0.069)	(0.001)
Log (Sales)	0.005***	0.001	0.001	0.008*	-0.002	-0.001
	(0.001)	(0.514)	(0.352)	(0.068)	(0.674)	(0.852)
Market-to-book	-0.003**	-0.005**	-0.002	-0.007*	-0.010**	-0.005
	(0.031)	(0.017)	(0.326)	(0.064)	(0.046)	(0.233)
Debt-to-assets	0.004	0.025**	0.021**	-0.008	0.065***	0.059***
	(0.702)	(0.020)	(0.013)	(0.741)	(0.009)	(0.006)
Dual	-0.011***	-0.011***	-0.010***	-0.029***	-0.029***	-0.031***
	(0.002)	(0.004)	(0.003)	(0.001)	(0.005)	(0.002)
Inst. Block Hold	0.012***	0.012***	0.011***	0.021**	0.029***	0.028**
	0.000	(0.002)	(0.005)	(0.029)	(0.010)	(0.011)
Out directors	0.001	0.007	0.008	0.037	0.042	0.028
	(0.896)	(0.548)	(0.512)	(0.223)	(0.239)	(0.405)
Family dummy	-0.004	-0.004	-0.004	-0.021**	-0.021*	-0.020*
	(0.339)	(0.488)	(0.378)	(0.024)	(0.059)	(0.056)
Technology	0.018*	0.027**	0.013	0.026	0.034	0.024
	(0.053)	(0.017)	(0.133)	(0.162)	(0.157)	(0.255)
Manufacturing	0.002	0.001	-0.001	-0.019	-0.028**	-0.028**
	(0.690)	(0.930)	(0.879)	(0.104)	(0.043)	(0.029)
Services	0.012	0.012	0.005	-0.004	-0.008	-0.015
	(0.217)	(0.241)	(0.534)	(0.807)	(0.608)	(0.258)
Trade	0.009	0.015	0.011	-0.004	-0.002	-0.003
	(0.257)	(0.148)	(0.190)	(0.754)	(0.926)	(0.835)
Observations	4142	4142	4121	1497	1497	1495

Marginal effects from the Logit estimation of lagged option compensation and the probability of forced CEO turnover. The marginal effects are evaluated at the means of the data. The dependent variable (FORCED)

equals 1 if the current CEO is forced out during the following fiscal year. Option comp is the ratio of option compensation to total compensation in previous year. Reputation in 1-3 is a dummy that equals 1 if the CEO tenure is greater than the median tenure of his industry and in 4-6 equals 1 if the CEO was an outsider. Total Compensation includes salary, bonus, other annual compensation, restricted stock and stock options granted during the year and long term incentive payouts. Stock ownership is the percentage equity holdings of CEO. Performance is measured in terms of Return on assets (ROA), return on equity (ROE), and one-year stock returns and is net of two digit SIC industry averages. Market to Book is [Book Value of Debt + Market Value of Equity]/ [Book Value of Assets]. Debt-to-assets is the ratio of total long term debt to total assets. Dual is a dummy variable that equals 1 if the CEO is also the chairman of the board. Inst. Block holder equals 1 if an institution owns more than 5 percent of company stock. Out directors is the ratio of outside directors to total directors. Family equals 1 if the CEO belongs to the founding family. Year dummies are not reported. P-values are in parentheses. *, ** and *** denote significance at 10%, 5% and 1% levels respectively.

We can see that option compensation is positively and significantly related to the likelihood of forced turnover for CEOs who are less influential i.e. those who have been in their current jobs for less than the median tenure of their industries (columns 1-3) or were appointed as CEOs from outside the firm (columns 4-6). For CEOs who are influential Wald tests do not reject the hypothesis that the sum of the interaction variable and option compensation is significantly different from zero in all six specifications. Hence, we conclude that for the influential CEOs option compensation is not related to the likelihood of forced turnover.

4. Option Compensation and Forced Turnover: Impact of Governance

We also test if governance structure of a firm affects the relationship between option compensation and forced CEO turnover. We use Gompers, Ishii, and Metrick (2003) governance index to categorize firms into poorly or better governed firms. High G-index dummy equals 1 if the firm's G-index exceeds its two digits SIC industry median and zero otherwise. A high G-index implies poor governance. Table 6 shows summary statistics of high vs. low G-index firms. We can see that poorly governed firms give their CEOs not only higher total compensation but also higher option based compensation compared to the better governed firms (with low G-index). We multiply the high G-index dummy with the option compensation variable to see how the impact of option compensation changes when firm is poorly governed. The marginal effect of option compensation can be interpreted as the impact of option compensation on forced turnover for the low G-index or better governed firms. On the other hand, the impact of option compensation for firms with poor governance is the sum of the interaction variable (High-G × option compensation) and option compensation.

Results are provided in Table 7. The marginal effect of option compensation is positive and significant in all three specifications. This implies that firms that have better governance structures higher option compensation is positively related to the likelihood of forced turnover. For poorly governed firms, however, the Wald tests do not reject the hypothesis that the sum of the interaction variable and option compensation is different from zero. There seems to be no effect of option compensation on the likelihood of forced turnover in such firms. Governance therefore seems to affect the relationship between option compensation and the likelihood of termination.

Table 6
Summary statistics for the high and low governance index

	Governance Index		
	High Median	Low Median	p-values
Option Comp (%)	0.281	0.252	0.003
Total Comp (000's)	1959.64	1296.67	0.000
CEO Tenure (years)	7.000	7.066	0.238
CEO Stock Ownership (%)	0.300	0.800	0.000
Sales ($ millions)	1556.69	570.77	0.000
Market-to-book	1.632	1.765	0.000
Debt to assets (%)	0.570	0.499	0.000
Outside Directors (%)	0.750	0.714	0.000
Industry Adjusted ROA (%)	1.218	1.218	0.988
Industry Adjusted ROE (%)	3.372	2.260	0.001
Industry Adjusted Stock Returns (%)	(6.083)	(6.186)	0.980

High (low) index equals 1 if the G-index of the firm exceeds (is less than) the two digit SIC industry median G- index.

Table 7
Option compensation and forced turnover: Impact of governance

	Industry Adjusted Return on Assets (ROA)	Industry Adjusted Return on Equity (ROE)	Industry Adjusted Stock Returns
High G-index × Option share$_{t-1}$	-0.019**	-0.022**	-0.022***
	(0.018)	(0.018)	(0.010)
Option comp$_{t-1}$	0.018***	0.023***	0.020***
	(0.005)	(0.001)	(0.001)
Log (total compensation)	-0.004**	-0.005**	-0.004**
	(0.020)	(0.031)	(0.023)
Tenure of CEO	-0.001***	-0.002***	-0.001***
	0.000	0.000	0.000
Performance×10^{-2}	-0.099***	-0.002**	-0.022***
	0.000	(0.028)	0.000
Log (Sales)	0.005***	0.002	0.002
	0.000	(0.263)	(0.127)
Market-to-book	-0.003**	-0.005**	-0.002
	(0.021)	(0.014)	(0.296)
Debt-to-assets	0.004	0.024**	0.020**
	(0.693)	(0.017)	(0.015)
Dual	-0.010***	-0.011***	-0.010***
	(0.002)	(0.003)	(0.002)
Inst. Block Hold	0.012***	0.012***	0.010***
	0.000	(0.001)	(0.003)

Out directors	0.002	0.006	0.007
	(0.885)	(0.606)	(0.508)
Family dummy	-0.005	-0.004	-0.005
	(0.282)	(0.418)	(0.310)
Technology	0.018*	0.025**	0.012
	(0.053)	(0.019)	(0.142)
Manufacturing	0.002	0.001	-0.001
	(0.685)	(0.926)	(0.906)
Services	0.010	0.010	0.004
	(0.246)	(0.279)	(0.622)
Trade	0.008	0.013	0.010
	(0.288)	(0.179)	(0.223)
Observations	4142	4142	4121

Marginal effects from the Logit estimation of lagged option compensation and the probability of forced CEO turnover. The marginal effects are evaluated at the means of the data. The dependent variable (FORCED) equals 1 if the current CEO is forced out during the following fiscal year. Option comp is the ratio of option compensation to total compensation in previous year. Hi G-index equals 1 if the firm's G-index is higher than its industry median and zero otherwise. Total Compensation includes salary, bonus, other annual compensation, restricted stock and stock options granted during the year and long term incentive payouts. Performance is measured in terms of Return on assets (ROA), return on equity (ROE), and one-year stock returns and is net of two digit SIC industry averages. Market to Book is [Book Value of Debt + Market Value of Equity]/ [Book Value of Assets]. Debt-to-assets is the ratio of total long term debt to total assets. Dual dummy equals 1 if the CEO is also the chairman of the board. Inst. Block holder dummy equals 1 if the institutions own more than 5 percent of company stock. Out directors is the ratio of outside directors to total directors. Family dummy equals 1 if the CEO belongs to the founding family. Year dummies are not reported. P-values are in parentheses. *, ** and *** denote significance at 10%, 5% and 1% levels respectively.

V. ROBUSTNESS

A. Using Alternative Definition of Forced Turnover

We check the robustness of our benchmark results to various specifications and definitions. First we test if the relationship between option compensation and forced turnover for high and low option compensation CEOs remains same when use a different and less restrictive definition of forced turnover. As defined in section 3 we construct an alternative measure of forced turnover, FORCED2 that includes FORCED our first measure of forced turnover and also includes changes due to mergers and acquisitions and those who were reported retired before the age of 60 years. The results with this broader definition of forced turnover are given in Table 8.

It is clear from the table that lagged option compensation continues to be positively and significantly related to the likelihood of forced turnover for CEOs who receive proportion of option compensation which is higher than median of their industries. However, for CEOs whose option compensation is less than the industry median, this relationship seems to be negative but insignificant. All other variables have the same sign and we don't see any surprises there. Hence our main result that option compensation and the likelihood of forced turnover are positively related does not change when we use a different definition of forced turnover.

Table 8
Option compensation and forced turnover: Alternative definition of forced turnover

	Industry Adjusted Return on Assets (ROA)		Industry Adjusted Return on Equity (ROE)		Industry Adjusted Stock Returns	
	High	Low	High	Low	High	Low
Option $comp_{t-1}$	0.046**	-0.034	0.055**	-0.030	0.040**	-0.024
	(0.029)	(0.413)	(0.016)	(0.487)	(0.041)	(0.588)
Log (total comp)	-0.011**	-0.004	-0.011**	-0.004	-0.006	-0.004
	(0.024)	(0.256)	(0.036)	(0.252)	(0.188)	(0.232)
Tenure of CEO	-0.002**	-0.002***	-0.002**	-0.002***	-0.002**	-0.002***
	(0.038)	(0.007)	(0.031)	(0.005)	(0.038)	(0.007)
Performance$\times 10^{-2}$	-0.204***	-0.083**	0.004	0.000	-0.049***	-0.008
	0.000	(0.013)	(0.122)	(0.684)	0.000	(0.290)
Log (Sales)	0.009***	0.002	0.000	0.000	0.001	0.000
	(0.009)	(0.474)	(0.936)	(0.982)	(0.884)	(0.989)
Market-to-book	-0.003	-0.003	-0.005*	-0.004	0.001	-0.003
	(0.245)	(0.353)	(0.077)	(0.232)	(0.671)	(0.434)
Debt-to-assets	-0.018	0.064***	0.024	0.075***	0.018	0.072***
	(0.407)	0.000	(0.328)	0.000	(0.331)	0.000
Dual	-0.011	-0.012*	-0.010	-0.012*	-0.009	-0.011
	(0.171)	(0.085)	(0.247)	(0.098)	(0.231)	(0.129)
Inst. Block Hold	0.021**	0.002	0.020**	0.002	0.016*	0.001
	(0.013)	(0.812)	(0.042)	(0.864)	(0.072)	(0.910)
Out directors	-0.027	-0.006	-0.010	-0.005	-0.009	0.004
	(0.288)	(0.831)	(0.704)	(0.872)	(0.707)	(0.883)
Family dummy	-0.001	0.007	0.001	0.009	0.002	0.010
	(0.960)	(0.584)	(0.967)	(0.481)	(0.886)	(0.429)
Technology	0.019	0.063**	0.031	0.068**	0.008	0.062**
	(0.242)	(0.028)	(0.100)	(0.023)	(0.611)	(0.027)
Manufacturing	-0.003	0.014	-0.005	0.013	-0.008	0.011
	(0.814)	(0.264)	(0.714)	(0.318)	(0.481)	(0.382)
Services	0.016	0.030	0.017	0.027	0.003	0.025
	(0.419)	(0.232)	(0.421)	(0.268)	(0.830)	(0.295)
Trade	0.024	0.022	0.035	0.027	0.027	0.023
	(0.261)	(0.261)	(0.175)	(0.208)	(0.212)	(0.258)
Observations	2104	2121	2104	2121	2097	2105

Marginal effects from the Logit estimation of lagged option compensation and the probability of forced CEO turnover. The marginal effects are evaluated at the means of the data. The dependent variable (FORCED2) includes FORCED1 and all CEO changes related to control and CEOs who retired before the age 60. Option Comp is the ratio of option compensation to total compensation in previous year. High (low) is the sample where the CEO's option based compensation is greater (less) than the sample median. Total Compensation includes salary, bonus, other annual compensation, restricted stock and stock options granted during the year and long term incentive payouts. Stock ownership is the percentage equity holdings of CEO. Performance is measured in terms of Return on assets (ROA), return on equity (ROE), and one-year stock returns and is net of two digit SIC industry averages. Market to Book is [Book Value of Debt + Market Value of Equity]/

[Book Value of Assets]. Debt-to-assets is the ratio of total long term debt to total assets. Dual dummy equals 1 if the CEO is also the chairman of the board. Inst. Block holder dummy equals 1 if institutions own more than 5 percent of company stock. Out directors is the ratio of outside directors to total directors. Family dummy equals 1 if the CEO belongs to the founding family. Year dummies are not reported. P-values are in parentheses. *, ** and *** denote significance at 10%, 5% and 1% levels respectively.

Table 9
Option compensation and forced turnover: Controlling for the CEO equity ownership

	Industry Adjusted Return on Assets (ROA)		Industry Adjusted Return on Equity (ROE)		Industry Adjusted Stock Returns	
	High	Low	High	Low	High	Low
Option $comp_{t-1}$	0.027**	-0.011	0.033**	-0.009	0.022**	-0.009
	(0.019)	(0.473)	(0.021)	(0.579)	(0.046)	(0.579)
Log (total comp)	-0.004	-0.002	-0.005	-0.002	-0.002	-0.002
	(0.121)	(0.235)	(0.170)	(0.264)	(0.389)	(0.243)
Tenure of CEO	-0.001	-0.001***	-0.001	-0.002***	-0.001	-0.002***
	(0.263)	(0.001)	(0.148)	(0.001)	(0.154)	(0.001)
Stock Ownership	-0.001**	-0.000	-0.001**	-0.000*	-0.001**	-0.000*
	(0.035)	(0.114)	(0.020)	(0.098)	(0.031)	(0.096)
Performance×10^{-2}	-0.099**	-0.049**	0.002	0.001	-0.024***	0.005
	0.000	(0.011)	(0.126)	(0.307)	0.000	(0.279)
Log (Sales)	0.005**	0.002	0.001	0.000	0.001	0.000
	(0.008)	(0.187)	(0.649)	(0.869)	(0.457)	(0.922)
Market-to-book	-0.002	-0.002	-0.004	-0.003	-0.000	-0.002
	(0.154)	(0.260)	(0.104)	(0.185)	(0.814)	(0.292)
Debt-to-assets	-0.002	0.007	0.021	0.016*	0.013	0.016*
	(0.875)	(0.366)	(0.157)	(0.066)	(0.196)	(0.068)
Dual	-0.005	-0.006	-0.004	-0.005	-0.003	-0.006
	(0.213)	(0.123)	(0.420)	(0.168)	(0.367)	(0.142)
Inst. Block Hold	0.018**	0.002	0.020***	0.001	0.0152**	0.001
	0.000	(0.625)	0.000	(0.798)	(0.002)	(0.871)
Out directors	-0.007	0.006	0.002	0.007	0.001	0.006
	(0.617)	(0.530)	(0.923)	(0.531)	(0.923)	(0.555)
Family dummy	-0.009**	0.008	-0.010	0.012	-0.008	0.012
	(0.046)	(0.292)	(0.115)	(0.194)	(0.100)	(0.194)
Technology	0.011	0.016	0.018	0.021	0.004	0.018
	(0.232)	(0.237)	(0.128)	(0.184)	(0.612)	(0.189)
Manufacturing	-0.003	0.005	-0.006	0.004	-0.006	0.004
	(0.541)	(0.359)	(0.399)	(0.467)	(0.248)	(0.479)
Services	0.003	0.011	0.003	0.011	-0.003	0.009
	(0.757)	(0.345)	(0.779)	(0.364)	(0.631)	(0.390)
Trade	0.005	0.005	0.009	0.008	0.005	0.008
	(0.576)	(0.429)	(0.426)	(0.348)	(0.536)	(0.337)
Observations	2045	2071	2045	2071	2038	2057

Marginal effects from the Logit estimation of lagged option compensation and the probability of forced CEO turnover. The marginal effects are evaluated at the means of the data. The dependent variable (FORCED) equals 1 if the current CEO is forced out during the following fiscal year. Option comp is the ratio of option compensation to total compensation in previous year. High (low) is the sample where the CEO's option compensation is greater (less) than the sample median. Total Compensation includes salary, bonus, other annual compensation, restricted stock and stock options granted during the year and long term incentive payouts. Stock ownership is the percentage equity holdings of CEO. Performance is measured in terms of Return on assets (ROA), return on equity (ROE), and one-year stock returns and is net of two digit SIC industry averages. Market to Book is [Book Value of Debt + Market Value of Equity]/ [Book Value of Assets]. Debt-to-assets is the ratio of total long term debt to total assets. Dual dummy equals 1 if the CEO is also the chairman of the board. Inst. Block holder dummy equals 1 if institutions own more than 5 percent of company stock. Out directors is the ratio of outside directors to total directors. Family dummy equals 1 if the CEO belongs to the founding family. Year dummies are not reported. P-values are in parentheses. *, ** and *** denote significance at 10%, 5% and 1% levels respectively.

B. Controlling for CEO Equity Ownership

Although we have used various controls for CEO influence, one other important determinant of forced turnover may be the stock ownership of the CEO. We check if the inclusion of CEO stock ownership besides his total compensation has any impact on the relationship of option compensation on forced turnover. Denis, Denis, and Sarin (1997) document that the probability of top executive turnover is negatively related to the ownership stake of officers and directors. We also test if our results are sensitive to any entrenchment effects of CEO equity ownership. Table 9 gives the results. Again, option compensation is positively related to the likelihood of forced turnover only for CEOs whose share of option compensation exceeds the industry median. All other variables have the same expected signs. Thus our benchmark regressions do not change when we control for the entrenchment/control effects of CEO equity holdings.

C. Other Robustness Checks

We use other robustness checks to test the sensitivity of our results. The results are available on request. First, we use two lags of option compensation and find that our results do not change. Using more than one lags not only tests the robustness of our benchmark results but also helps in mitigating concerns about the simultaneity of compensation and the likelihood of termination which is common in all corporate finance. Another concern may be firm risk which may have implications both for the proportion of options in total compensation and the likelihood of forced turnover. Aggarwal and Samwick (1999) show the pay-performance sensitivity of executive compensation is related to the volatility of stock prices. In order to see if our results are sensitive to firm risk, we run our benchmark regressions with 5 year stock return volatility as a control variable and find similar results. Thus firm risk does not seem to affect the relationship between option compensation and forced termination.

VI. CONCLUSION

We study the relationship between the proportion of option compensation in the total compensation of a CEO and the likelihood of forced turnover during the 1990s. Our results indicate that CEOs who receive higher option compensation are more likely to lose their jobs for poor performance. However, the positive relation between option

compensation and forced turnover does not hold for influential CEOs (i.e. those with long tenures and inside appointments) and firms with poor governance structures. Our results are robust to various measures of firm performance, alternative definition of forced turnover, more than one lags of option compensation, inclusion of total compensation, CEO equity ownership and firm risk.

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